

EXISTENCE-OK

# History of all Medicine

Natural History of Medicine

**Integrative Medicine**

Review Edited and Compiled Histories of Medicines by

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**Abstract:** This is the History of every Medicine from the indigenes point of view and not another race or tribe smearing the other for dominance in Nature from the period of paradise through the time of good and evil, to correct the fall of the health of humankind back to the tree of life that is living with an addition of spirit instead of living carnally with soul alone. Humans become smarter when they live in their spirit that is all knowing to become true human beings. Read the Medicines traditional or/ and complementary to you.

**Brief about the reviewer/ author/s:**

Professor Oko Offoboche was nominated as Head of Department by an Institute and University in the United States before he was awarded a Professorship in Philosophy of Metaphysics by a United States University; before then he had a Doctorate degree in Philosophy of Metaphysics, a Doctorate of Science in Information Systems, a Master of Science in Information Systems Management and bachelor degree in Information Systems and Metaphysics. Professor Offoboche has a degree in Acupuncture from a Nigerian College and an International diploma in Acupuncture from a University in Sri Lanka, an Advanced Certificate in Traditional Chinese Medicine in a Tianjin University in China, Diplomas in Natural Medicine from one of the old Academy in Lagos. Professor Oko Offoboche had a max CGPA. He is in many associations covering his disciplines internationally and locally. He was given professor status by the All Certified Professionals of Traditional, Complementary and Alternative Medicine, African University of Natural Medicine in view that is a branch of Nigerian Council of Physicians. He is a Fellow in many bodies including; Fellow of Association of Integrative Medicine Practitioners, Fellow of Institute Information Management, Fellow of Information Management Consultants. His late father was a medical doctor who specialized as a gynaecologists with doctorate degree and his late grandfather was a revered native doctor.

Metaphysicians at a high level see what was already there before physical records were kept; that is why it was better for humankind that I compile all records of medicine for easy use by future generations. I implore the authors that it is better for students not to search for different parts of medicine, but be pleased their works were chosen to be like the bible (that was compiled) for medicine.

Why the author was proficient to write this?

**met·a·phys·ics** [mètə fɪzɪks]

noun

1. **philosophy of being:** the branch of philosophy concerned with the study of the nature of being and beings, existence, time and space, and causality (takes a singular verb)
2. **underlying principles:** the ultimate underlying principles or theories that form the basis of a particular field of knowledge (takes a plural verb)  
Symmetry is part of the metaphysics of quantum mechanics.
3. **abstract thinking:** abstract discussion or thinking (takes a singular verb) <sup>c</sup>

**Authors and works added by reviewer:**

1. Dr. B. L. Dickson; The Black Race; DNA And Why!?
2. Rochelle Forrester; The History of Medicine
3. Wagner; The Origins and History of Medicine and Medical Practiced
4. History of use of Traditional Herbal Medicines
5. H. J. O'D. Burke-Gaffney; The history of medicine in the African countries
6. Ekeopara, Chike Augustine Ph.D1, Rev. Ugoha, Azubuike; The Contributions of African Traditional Medicine to Nigeria's Health Care Delivery System; Origins of Traditional Medicine
7. WHO; Traditional and Modern Medicine: Harmonizing the Two Approaches
8. Caloriesmix; Daily Nutrition Fact
9. Thomas Nelson; A History of Medicine
10. Microsoft® Encarta® 2009. © 1993-2008 Microsoft Corporation: Circulation of the Blood, Physicians, Medical Ethics
11. Dr. Jenny Scutcliffe and Nanacy Duin; A History of Medcined
12. Tarik Catic, Ivona Oborovic, Edina Redzic, Aziz Sukalo, Armin Skrbo, Izet Masic; Traditional Chinese Medicine - an Overview
13. Ravishankar, B and Shukla, V.J.; INDIAN SYSTEMS OF MEDICINE: A BRIEF PROFILE
14. Yogacharya Dr Ananda Balayogi Bhavanani; YOGA THERAPY: AN OVERVIEW

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15. Paolo Bellavite, Anita Conforti, Valeria Piasere and Riccardo Ortolani; Immunology and Homeopathy.
  1. Historical Background
16. Urs Haefeli; The History of Magnetism in Medicine
17. Florida Academy; The History of Massage Therapy
18. A van Tubergen, S van der Linden; A brief history of spa therapy
19. Jaime Schultz; A History of Kinesiology
20. Abbé Mermet; Radiesthesia History
21. Roy Porter, The Cambridge Illustrated History of Medicine
22. A Brief History of Aromatherapy
23. Music Therapy in Traditional African Societies: Origin, Basis and Application in Nigeria
24. Dariush Mozafarian and David S. Ludwig, The 2015 US Dietary Guidelines – Ending the 35% Limit on Total Dietary Fat
25. Peter Whoriskey of Washington Post, The U.S. government is poised to withdraw longstanding warnings about cholesterol - The Washington Post
26. Dr. Robert F. Stern and Mitchell Bebel Stargrove; The History of Naturopathic Medicine
27. Wikipedia; Asahi Health, Thalassotherapy, Imhotep, History of Acupuncture, Reflexology, Shiatsu, Traditional Tibetan medicine, Traditional Korean medicine, Indian Systems of Medicine: A Brief Profile, Siddha system of medicine, Unani system of medicine, List of forms of alternative medicine, Feng shui, Qigong, History of Use of Traditional Herbal Medicines, Herbal Medicine, Medicinal Plants, Origin of Traditional Medicine, Traditional Medicine, Traditional African Medicine, Alternative Medicine, Health in Nigeria, Healthcare in Nigeria, Siddha medicine, Crystal Healing is Metaphysics, The History of Physical Therapy, Electrohomeopathy, The Autogenic Training Method, Anthroposophy, Apitherapy, Bibliotherapy, Chelation therapy, Thai Massage, Japan Kampo, Reiki, Rolfing, Biodanza, Speleotherapy, Arab medicine, Unani Medicine, Traditional Mongolian medicine, Herbal Medicine, Medicinal Plants, Traditional Medicine, Alternative Medicine, Health in Nigeria, A History of Metaphysics, Spiritual Medicine, Osteopathic Philosophy and History, Craniosacral therapy, Origins and History of Chiropractic, Electrohomeopathy, Bioresonance Therapy, Anthroposophic medicine, The Autogenic Training Method, Alexander Technique Science, Apitherapy, Aquatic therapy, Chromotherapy, Energy medicine, Feldenkrais Method, Horticultural therapy, Myofascial release, Hydrotherapy, Numerology, Orthopathy, Radionics, Urine therapy, Wellness (alternative medicine), A Brief History of Aromatherapy, Paraherbalism.
28. Oko Offoboche; existence-ok.com

### Forward

Most Natural Medicine Professional Members have more than one discipline; Integrative Medicine is more than one form of Medicine by a practitioner of Medicine: it can be conventional (allopathic) medicine and complementary or traditional medicine. Many Natural Medicine Practitioners have qualifications to the highest level of scientific and arts degrees; that they know how to measure on ground in a way that it is the exact measure in the sky or depth of the sea by understanding gravity pressure on matter. Medicine starts from native medicine to traditional medicine to become complementary medicine. Conventional medicine is complementary to traditional medicine.

In Nigeria, Natural Medicine has scientists who have reached the top of their scientific field that came together to rescue African Traditional Medicine from extinction by allopathic physicians who allowed western influence dissuade them from their ancestral medicine, yet they need it more to have masters and PhD training status in Nigeria; contrary to their activities, pharmacists because of their masters that is pharmacognosy have aided in the development of traditional medicine. Although it was the professors of Medicine as Federal Ministers that agreed to all in TCAM that exists in Federal Ministry of Health in Nigeria which was because of their training requirements. When there was Ebola (another form of Lassa fever) in Lagos Nigeria, government physicians went on strike, private hospitals were open and natural medicine practitioners came to the rescue. As they are physicians with more than one form of medical background.

Most natural medicine practitioners produce remedies, but most allopathic physicians cannot produce drugs unlike their occidental or oriental colleagues that can produce medicinal substances to prove the name medicine. Bachelor degree medical practitioners are allowed to be called doctors because of continuous programme development (CPD) that makes them resident doctors until they have a PhD to be consultants.

The purpose of this compilation review work is not to mock the authors of the various works compiled here for easy use by medical students and professionals, the purpose of this work is to review the history of medicine from the point of the indigenes and/ or practitioners of the history written by adding the spiritual insight of the people of Africa at the time from thought forms that the conventional colonial medicine removed the spiritual part of medicine that was part of the way of the first practioners of science and medicine called alchemy, which is now dispirited as chemistry etc. Nothing written by the author was altered out of place, only those in the beginning on African had italic additions only from the point of the dark skinned Africans at the time, but for some all parts were not taken out, as the references on their work can only be on their work, because they were not required for the information to be reviewed. I thank the authors of all the works and I want them to know that I informed Copyright Clearance Centre and sent a message to every author that required it, if not all used here were referred to under the heading of their work and the reference here with the pagination superscripted after the title of the work in reference.

Prof. O. Offoboche



**Preamble**

Genesis 3:13-15 and Genesis 4:13-17

**The Black Race; DNA And Why!? <sup>u</sup>**

Summary:

*"The white society needs Black people believing that we came from nothing more than slaves in order to maintain their dominance over us"!*

Are you aware that DNA analysis performed upon mummies of several Egyptian Pharaohs in 2012 by DNA-tribes, an American based DNA analysis company, scientifically proven that the ancient Egyptians were in fact Africans? Carbon date testings have also scientifically proven that the ancient kingdom was built by Africans thousands of years long before the Arabs and Europeans arrived theirs during the 7th century.

These scientific findings have been suppressed from mainstream media circulation to uphold the white society's lies that the ancient Egyptians of Africa were ridiculously Europeans, and to conceal the fact that Africans were living in Pyramids while Europeans were still living in caves. White historians whitewashed ancient history to propagate the myth of white racial superiority over Black people. The white society needs Black people believing that our history is inferior to theirs in order to maintain their dominance over us. The practice is known as Orwellian propaganda. They therefore conceal the fact that Africans educated Greece's first scholars, and civilized Europe; this included introducing science, mathematics, philosophy, art, agriculture and even the daily bath to Europeans.

"Those that know must teach." - African Proverb

In 2012 and 2013 DNA tribes, an American company that specializes in DNA analysis, conducted testing on the mummies of Pharaoh Tutankhamen, Ramses III, Ramses IV and several others scientifically proven that the ancient Egyptians were in fact Africans. Their DNA matches proved that they belonged to human Y chromosome group E1b1a. This is the Y chromosome group of Black Sub Saharan Africans as pictured below.

Another group of mummies from the Amarna period of Egyptian pharaohs were also tested by DNA Tribes, in 2013. The conclusion of those testing were that those mummies autosomal profiles were also Africans. Their DNA profiles matches the present day populations of the African Great Lakes region and Southern Africa. Subsequent analysis of the autosomal profile of the mummy of Pharaoh Rameses III also concluded that his matched the genetic profiles of the population of the Great Lakes region Africans as well. These findings were reported in the DNA Tribe's digest on February 2013. Carbon date testings have also scientifically proven that the ancient kingdom was built by Africans thousands of years long before the Arabs and Europeans arrived theirs during the 7th century. These scientific findings have been suppressed from mainstream media circulation to uphold the white society's lies that the ancient Egyptians of Africa were ridiculously Europeans, and to conceal the fact that Africans were living in Pyramids while Europeans were still living in caves. White historians whitewashed ancient history to propagate the myth of white racial superiority over Black people. They conceal the fact that Africans educated Greece's first scholars, and civilized Europe; this included introducing science, mathematics, philosophy, art, agriculture and even the daily bath to Europeans.

Although Egypt is located in Africa, and all of its Pyramids, and the Great Sphinx, were built by Africans thousands of years long before the Greeks and Arabs arrived there in the 7th century - this has been proven by carbon dating testings- the white society nonetheless will not acknowledge the ancient

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Egyptians of Africa were in fact Africans. This isn't because they don't know. White historians are well educated. They attend prestigious universities and are most certainly taught, within them that all of the great monuments of Africa's ancient Egypt were already built, thousands of years, long before the arrivals of the Greeks and Arabs in the 7th century. Modern Egyptians are merely descendants from Arabs who whitened the population. In fact, the pyramids and the Sphinx were built thousands of years long before the arrival of any non-Africans into Africa. White historians know that the true and original Egyptians were in fact Africans, but conceals this fact from the public. Because they've deliberately stolen Africa's glorious history of Egypt and falsely portrays it as being theirs. The practice is known as Orwellian propaganda.

Orwellian propaganda are societal conditions created and sustained by misinformation, distortions of facts, denial of truth, and even the manipulation of the past to falsely exalt the white society. White historians justifies these unethical practices as being merely the spoils of war; thus saying that it's customary for conquerors to distort facts and re-write history to favor themselves. However, the true reason it's being done is much more nefarious and self-serving of the white society.

The true reason it's being done is because white social scientists theorizes that a people's future is predestined by the history they're taught to believe about themselves. According to their theory a aspiring history is necessary to acquire a aspiring future because people references their future capabilities based upon their past achievements. It's the process of imparting information which best enable people to realize their highest potential. People reference messages about their particular group to acquire their self-images and assess their potential and capabilities in relation to these messages. Also according to the theory, truth is not important to inspire a people's future, what's only important is what's perceived as true. Because people function based upon their perceptions of what's true rather than what's actually is. Therefore, to give their racial group a past that inspires their future, white social scientists and white historians whitewashed the past. More specifically, they've made their racial group appear more significant throughout history than they truly were. Therefore, the collective self-esteems of Caucasians have been falsely bolstered at the expense of Africans.

### Case Point and Proof:

Do you know that there exists substantial proof that the Great Sphinx of Giza is a sculpted head of an Black person?

There exist a reputable historian's eye witness account, written testimony and an artist rendering proving that the Great Sphinx is a sculpted head of an African Man? These are the types of evidence that a person might take to court to win their case. However, the system of white supremacy has always suppressed all evidence that contradicts the myth of white superiority and falsehood of Black inferiority. This includes hiding all evidence that the Sphinx is the sculpted head of a Black African.

Most of us have heard the story that when Napoleon's army arrive in Egypt on July 1 1798, he ordered that cannons be used to deface the Negroid face of the Great Sphinx of Giza. However, most people are not aware that there does exist substantial evidence proving that the face of the Sphinx was in fact an African Negroid man before it was defaced.

During the French invasion into Egyptian Napoleon was accompanied by a French diplomat, author, archaeologist and artist named Dominique Vivant Baron Denon.

Before the defacing of the Sphinx, Baron Denon asked Napoleon to allow him to first draw an illustration of the massive Sphinx of Giza before its face was destroyed. Napoleon agreed to the request and allowed Denon to draw a picture of the Sphinx before its defacement.

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Soon after Vivant's sketch was complete Napoleon ordered the nose and lips shot off the Sphinx! Napoleon's objective for defacing the Sphinx was to remove the negro features. However, the true features of the Sphinx survived in the Vivant Denon drawing. This attached drawing of the Sphinx's is a true copy of that original sketch drawn by Denon. It's given signed completion date is July 1 1798. This date affirms that it was drawn shortly after the French invasion into Egypt. Vivant clearly captured the facial features of the Sphinx and they are clearly Negroid as stated by the eye witness Herodotus. The drawing shows that the Sphinx's features were clearly that of a Negroid African before it was damaged. Seeing the Sphinx with distinct negroid features also establishes that the ancient Egyptians were in fact a black culture.

This drawing was later published in the 1803 in an issue of Universal Magazine. Vivant Denon described the Sphinx as an African woman.

Here is also the written account about the Sphinx of Giza in Denon's own words:

"...Though its proportions are colossal, the outline is pure and graceful; the expression of the head is mild, gracious, and tranquil; the character is clearly African, but the mouth, and lips of which are thick as most Negroes, has a softness and delicacy of execution truly admirable; it seems real life and flesh. Art must have been at a high pitch when this monument was executed; for, if the head wants what is called style, that is the say, the straight and bold lines which give expression to the figures under which the Greeks have designated their deities, yet sufficient justice has been rendered to the fine simplicity and character of nature which is displayed in this figure..."

-- The Sphinx of Giza image (above) is from the Freeman Institute Black History Collection

Vivian Denon was a well-respected diplomat. He was appointed as the first Director of the Louvre French museum by Napoleon after the Egyptian campaign of 1798–1801, and his drawing of the Sphinx displaying its original Negroid features are commemorated in the Denon Wing of the modern museum.

He also wrote in his two-volume *Voyage dans la basse et la haute Egypte* ("Journey in Lower and Upper Egypt") published in 1802, that the original Egyptians were Black skin Negroes and that the sculpted face of the Sphinx was of the same Negro racial type before it was defaced by Napoleon's army.

Dominique Vivant Baron Denon

continued to insist up until his death on 27 April 1825 that that the original face of the Sphinx was that of an African Negro before Napoleon had it was destroyed by cannon fire. In 1787, French orientalist Count Constantine de Volney travelled to Egypt and also described the population as "black with woolly hair", and "true Negroes of the same type as all native-born Africans". The reason why most Black people are unaware that there exist a reputable eye witness account, written testimony and an artist rendering affirming that the colossal Great Sphinx is in fact that of a Black African is because this information has been intentionally suppressed from the public distribution by the ruling elites.

When history's proven most nefariously deceitful and racist group controls the information, narratives, imageries that the world receives and perceives as true, they will naturally always manipulate and distort facts, and even history, to favor themselves. It's simply who they are, and the way they've always been. They have manipulated the entire world to see thing their way through Orwellian propaganda.

THE ORIGINAL NEFERTITI BUST IS A PROVEN FAKE. IT WAS CREATED BY A EUROPEAN ARTIST AND USED TO PROPAGATE THE FALSEHOOD THAT THE ANCIENT EGYPTIANS WERE EUROPEANS. THIS NEW BUST PROPAGATES THE SAME FALSEHOOD!

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The original Bust of Nefertiti, from which this newly revealed bust is modeled after, has been proven to be an Egyptology Fraud created by an artist commissioned by Ludwig Borchardt. It was a deliberate attempt to make her look European.

According to a Swiss art historian, the bust is less than 100 years old. Henri Stierlin has said the stunning work that will later this year be the showpiece of the city's reborn Neues Museum was created by an artist commissioned by Ludwig Borchardt, the German archaeologist credited with digging Nefertiti out of the sands of the ancient settlement of Amarna, 90 miles south of Cairo, in 1912.

In his book, *Le Buste de Nefertiti – une Imposture de l'Égyptologie?* (The Bust of Nefertiti – an Egyptology Fraud?), Stierlin has claimed that the bust was created to test ancient pigments. But after it was admired by a Prussian prince, Johann Georg, who was beguiled by Nefertiti's beauty, Borchardt, said Stierlin, "didn't have the nerve to make his guest look stupid" and pretended it was genuine.

Berlin author and historian Edrogon Ercivan has added his weight to the row with his book *Missing Link in Archaeology*, published last week, in which he has also called Nefertiti a fake, modelled by an artist on Borchardt's statuesque wife.

Public and political enthusiasm about the find at the time gave the artefact its "own dynamic" and led to Borchardt ensuring it was kept out of the public gaze until 1924, the authors have argued.

He kept it in his living room for the next 11 years before handing it over to a Berlin museum, since when it has been one of the city's main tourist attractions.

The statue was famously admired by Adolf Hitler, who referred to it as "a unique masterpiece, an ornament, a true treasure".

### THE NEFERTITI BUST IS FAKE

The archaeologist who claimed to have found the bust was actually going to reproduce a new sculptor of the Queen wearing a necklace he knew she had owned. He was also experimenting with colour tests with ancient pigments found at the digs. After completing the bust in 1912, the copy was admired so much by a German Prince; the Archaeologist couldn't sum up the courage to tell the Prince it was a fake.

### THE SCIENTIFIC COMMUNITY KNEW THERE WERE HUGE ANOMALIES WITH THE BUST

'...The bust has no left eye and was never crafted to have one. This is an insult for an ancient Egyptian who believed the statue was the person themselves...' He also said the shoulders were cut vertically in the style practised since the 19th century while, "Egyptians cut shoulders horizontally" and that the features were accentuated in a manner recalling that of Art Nouveau. It was impossible to scientifically establish the date of the bust because it was made of stone covered in plaster, he said. "...The pigments, which can be dated, are really ancient.." he added.

### ARCHAEOLOGIST AT THE TIME NEVER MENTIONED THE FIND AT THE SITE - IT WAS NEVER LISTED UNTIL 11 YEARS AFTER THE APPARENT DISCOVERY - THE ARCHAEOLOGIST DIDN'T EVEN SUPPLY A DESCRIPTION

Stierlin also listed problems he noted during the discovery and shipment to Germany as well as in scientific reports of the time. French Archaeologists present at the site never mentioned the finding and neither did written accounts of the digs. The earliest detailed scientific report appeared in 1923, 11 years after the discovery. The archaeologist "...didn't even bother to supply a description, which is amazing for an exceptional work found intact..". Borchardt 'knew it was a fake', Stierlin said. "...He left the piece for 10 years in his sponsor's sitting-room. It's as if he'd left Tutankhamen's mask in his own sitting-room..".

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Apart from anything else, the bust looks nothing like the 'real' Nefertiti images, it's as if someone has attempted to make her look European. The other pictured artifacts are true authenticated images of Nefertiti showing she's Black.

There is a relief depicting of Nefertiti that is carved from Limestone displaying her with prominent African features. It's kept at the Ashmolean Museum, Oxford

Archeologists also found a statue of the body of Queen Nefertiti from the Kingdom, Dynasty, reign of Amenophis IV-Akhenaten, BC Quartzite. The body of Nefertiti has a body shape that is clearly an Africans. It's kept at the Louvre Museum | Paris

There's also many more carvings and paintings depicting Nefertiti with her husband and children that are also all depicted as Africans. We've been bamboozled by whites. They've stolen our ancient African history and portrays it as theirs.

The white society sits upon a throne of white exalting lies created and sustained by Orwellian propaganda.

Case, Point, and Proof:

The white society teaches us that the world's first scholars were the Greeks and that it was they that civilized the world. However, all of Europe's Greek scholars received their formal education in Africa's ancient Egypt. The Greeks openly admitted that their knowledge originated from Africa. When Isocrates wrote of his studies in the book *Busirus*, he said that "I studied philosophy and medicine in Africa's Egypt."

The white society teaches us that the father of medicine was a Greek named Hippocrates. However, the true father of medicine was an African named Imhotep. Imhotep was practicing medicine and writing on the subject 2,200 years before Hippocrates, the so called father of modern medicine, was even born. Imhotep is the author of an Egyptian medical text written on Papyrus, which contains almost 100 anatomical terms and describes 48 injuries and their treatment.

The history we've been taught also distorts many facts in order to give themselves credit for most inventions made by Black people.

Case Point and Proof:

White historians teach us that Thomas Edison is responsible for lighting up the world. But here are the facts to the contrary:

Thomas Edison and Lewis Latimer were both each simultaneously working on inventing their lightbulbs. Edison merely rushed to have his lightbulb patented first. However once Edison patented his lightbulb, NO companies purchased, nor mass produced it. Because it was deemed not efficient enough. It light very dimly and only lasted a few minutes. When Lewis Latimer patented his lightbulb it was deemed significantly more proficient, therefore it was purchased and mass produced. Lewis Latimer was also dispatched around the world to oversee the installations of his lightbulbs. Therefore, it was in fact Lewis Latimer that actually lit up the entire world. But because Latimer was Black, our racist whitewashed history books falsely claims that it was Edison that light up the world.

White historians also teach us that Henry Ford invented the first automobile. It was actually a African American inventor and carriage company entrepreneur named Charles Richard Patterson that built the first automobile. The C.R Patterson & son's company starting out as a carriage building firm in 1873. In the early 1900's Patterson and his son converted the company from a carriage business to a automobile manufacturer. It was released in 1905 and sold for \$850. It had a four-cylinder Continental engine. C.R

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Patterson began making automobiles before Henry Ford and his automobiles were considered more sophisticated. C.R. Patterson and Sons were forced out of business by Henry Ford. In 1939, the company closed its big wooden doors.

But because Paterson was Black, our racist whitewashed history books falsely claims that it was Ford that invented the first automobile.

The hidden reality is that in spite of cultural traumas wrought by the injustices of white racism and slavery most inventions that have revolutionized the world were in fact either invented by a Black person, or were inspired by an earlier invention by a Black person. It's actually the genius minds of Black people that moves the entire world forward.

“When a well-packaged web of lies has been sold gradually to the masses over generations, the truth will seem utterly preposterous and its speaker a raving lunatic.” -Dresden James.

I know that for some of you that declaration may be a hard pill to swallow, given how negatively Black people are depicted within the white society. We are constantly portrayed as the Blacks leeches of white society that benefits from the genius of white minds. However, the reality is the exact opposite from what the white society has manipulated so many to believe.

Here's a relevant fact that they exclude from their whitewashed history books:

After slavery was abolished in the U.S. in 1865, beginning from 1870 and 1940, African Americans filed 726 invention patents. For a people to go directly from being enslaved - were they were denied an education - to then producing so much inventions in such a short time span is astounding. Furthermore, those numbers of patent applications submitted by African Americans more than doubled those submitted by whites during the same time frame. Even while being enslaved many Africans invented many things, but the patent rights were awarded to their white slave owners.

As stated earlier: Most inventions that have revolutionized the world were in fact either invented by a Black person, or were inspired by an earlier invention by a Black person.

Case, Point, and Proof:

If you enjoy using the internet thank

Philip Emeagwali, a Nigerian computer scientist, is regarded by many as being the father of the Internet. He invented the super computer in 1987. It was his formula that used 65,000 separate computer processors to perform 3.1 billion calculations per second in 1989. That feat led to computer scientists comprehending the capabilities of supercomputers and the practical applications of creating a system that allowed multiple computers to communicate. Philip Emeagwali also invented the accurate weather forecasting system in 1990. He also used his mathematical and computer expertise to develop methods for extracting more petroleum from oil fields.

If you enjoy sending emails thank a African American name Emmit McHenry. McHenry created a complex computer code whereby ordinary people can now surf the web or have e-mails without studying computer science. He created what we know today simply as .com.

If you enjoy your digital cellphone thank an African American name Jesse Eugene Russell. He is an inventor and electrical engineer that invented digital cellular technology. He pioneered the field of digital cellular communication in the 1980s through the use of high power linear amplification and low bit rate voice encoding technologies and received a patent in 1992 (US patent #5,084,869) for digital cellular base

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station design. Jesse Russell holds several patents and is a key person to the invention of the modern cell phone.

If you enjoy using your PC monitor thank an African American named Dr. Mark Dean. Dean is the Inventor/Computer scientist and engineer responsible for developing a number of landmark technologies, including the modern color PC monitor, the Industry Standard in 1981. In 1999, Dean also led a team of programmers to develop one of the stepping stones of modern day computer technology— the first gigahertz chip. The CMOS microprocessor chip is remarkable because it processed a billion calculations and large amounts of data in a second. Dean hold 20 individual patents.

If you enjoy using your GPS thank Gladys Mae West - an African American mathematician known for her contributions to the mathematical modeling of the shape of the Earth, and her work on the development of the satellite geodesy models that were eventually incorporated into the Global Positioning System (GPS).

Without Black people there would not exist skyscrapers. This is because Black people invented the elevator, the air conditioning, and central heating. Alexander Miles invented the Elevator, Fredrick Jones invented the air condition, and Alice Parker, a Black woman, invented the heating furnace in 1919 which provided central heating.

Dr. Thomas O. Mensah is a Ghanaian born chemical engineer and inventor. Is the inventor of fiber optics and nanotechnology. He was awarded 7 USA and worldwide patents in fiber optics. In all, he has some 14 patents.

Dr. Patricia Bath, an African American scientist invented, and patented in 1988 the cataract laserphaco probe that help save the eye sight of millions. Millions of people around the world unknowingly owes their eyes sight to this Black woman.

Mark Hannah developed the 3D graphics technology that now used in many major Hollywood movies

Shirley Ann Jackson made several telecommunications breakthroughs which led to the touch-tone phone, caller I.D. and call waiting.

Marie Van Brittan Brown invented the home surveillance security system.

Henry Sampson invented the non-digital cellular phone in 1983.

Did you know that the Sanitary Pad was developed by a Black woman name Mary Beatrice Davidson. Until sanitary pads were created, women used all kinds of reusable fabrics to absorb menstrual flows.

Mary's invention was initially rejected. The first company that showed interest rejected it because of racial discrimination. The world had no choice, her invention was too important to be ignored. It was later accepted in 1956, 30 years later. She received five patents for her inventions. One of her other inventions is the bathroom tissue holder, which she co-invented with her sister. The patent number was US 4354643.

There is more:

Gerald A Lawson invented the first home video game system with inter changeable cartridges.

Percy L. Julian invented the process of synthesis which led to the birth control pill and improvement in cortisone production.

There is more:

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Matthew A. Cherry, is the inventor of the tricycle. In May 1888, Cherry received his patent for the tricycle.

G.T. Sampson invented the clothes drier in 1892.

George R. Carruthers invented the ultra-violet camera spectrograph

In 1885, two Black inventors, L.S. Burridge and N.R. Marsham, invented the typewriter

J. Gregory invented the motor

Six African American scientists were essential in the making of the first atomic bomb. One was J. Ernest Wilkins, one of the world's leading mathematicians who earned his PhD at the age of seventeen.

Alexander Miles invented the Elevator and safety devices for elevator.

Patent no 371,207

Alice Parker, a Black woman, is credited with inventing the heating furnace in 1919 which provided central heating.

Garret A. Morgan invented the automatic traffic signal and the gas mask.

Edmond Berger invented the spark plug.

J.B. Winters invented the fire escape ladder.

John L. Love invented the Pencil sharpener 23- 11-189 Patent # 594114.

Fredrick Jones invented the air conditioner.

John A. Johnson invented the wrench

John Standard invented the refrigerator

Lewis Howard Latimer invented the electric lamp and the filament for the light bulbs.

The small Pox Inoculation method was brought from Africa by African named Onesimus

Phillip Downing invented the letter drop mail box 10-27-1892

John Burr invented the Lawn mower

Marjorie Joyner holds the patent for the permanent hair wave machine.

Lloyd Hall created the chemical compound that preserves meat

S.H. Love invented improvements to military guns 22-4-1919

S.H. Love invented improvements to the vending machine 1-21-1933

W.A. Lovette invented the advanced printing press

Thomas J. Martin invented the fire extinguisher 3-26-1872

W.D. Davis invented the riding saddle 10-6-1895

There is more:



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Do you know that the first successful open heart surgery on this planet was performed by a Black surgeon within a Black owned Hospital?

Dr. Daniel Hale Williams

(1856-1931) founded Provident Hospital and Training School for Nurses (the first black-owned hospital in America) in 1891.

And he performed the first successful open heart surgery in 1893. Following the surgery white surgeons from around the country and the world came to learn from Dr Williams. Many white surgeon had attempted the surgery early but their patients died.

In 1940, Dr. Charles Drew, another African American doctor achieved yet another medical pioneering break through. In his short life of only 46 years, Charles revolutionized blood storage. His refrigerated "blood mobiles" stored blood at a temperature to prolong its shelf life. This further revolutionized blood storage and plasma banks for WWII.

WHILE INSPIRING THEIR RACIAL GROUP THEY DO THE OPPOSITE TO BLACK PEOPLE BY TEACHING US THAT AFRICANS WERE UNCIVILIZED AND ILLITERATE BEFORE THE EUROPEANS INVADED, AND THEREFORE HAS NO SIGNIFICANT HISTORY:

But here are the facts to the contrary:

The first being that the world's oldest university is located in Africa.

Timbuktu University:

The Timbuktu University (in Mali, Africa) and its library are older than any of those found within the Western world. It was composed of three schools, namely the Masajid of Djinguereber, the Masajid of Sidi Yahya, and the Masajid of Sankore. During the 12th century, the university had an enrollment of around 25,000 students from Africa. In Timbuktu, there are about 700,000 surviving books. They are written in Mande, Suqi, Fulani, Timbuctu, and Sudani. The contents of the manuscripts include math, medicine, poetry, law and astronomy. This work was the first encyclopedia in the 14th century before the Europeans got the idea later in the 18th century, 4 centuries later.

Furthermore, long before the Europeans invaded Africa, it was Africans- when we called ourselves Moors - that civilized Europe. This included introducing science, math, philosophy, and even the daily bath to Europeans. Queen Isabella of Spain bragged that she had only bathed twice in her whole life. Queen Elizabeth I, claimed that she was the cleanest woman in all of Europe, for reportedly bathing once a month.

There's More:

Africa is also the cradle of mathematics.

The world's oldest mathematical tools were discovered in Africa.

The Ishango Mathematic Tool.

The Ishango Mathematical Tool was invented by Africans dating as far back as 22000 years ago, in the Upper Paleolithic era. The Ishango tool is an attestation of the practice of arithmetic in ancient Africa.

There was also discovered in Africa another mathematical tool.

The Lebombo Mathematical Tool.

The Lebombo Tool is indeed the oldest known mathematical artifact in the world. It is even older than the Ishango bone. Discovered in the 1970s in Border Cave, a rock shelter on the western scarp of the Lebombo Mountains in an area near the border of South Africa and Swaziland (now Eswatini).

Great Zimbabwe:

Great Zimbabwe is an ancient city in the south-eastern hills of Zimbabwe near Lake Mutirikwe and the town of Masvingo - originally called the Shona civilization. The stone city spans an area of 7.22 square kilometres (2.79 square miles) which, at its peak, could have housed up to 18,000 people.

These gigantic brick buildings and walls were erected nearly 2000 years ago. It is recognized as a World Heritage site by UNESCO.

The world's largest man made structure was built by Africans:

There exist in Africa within the ancient Nigerian city of Benin the ruins of a Great Wall four time larger than the Great Wall of China.

The Great Wall of Benin in Edo state Nigeria was the largest man made structure in the history of the world. The walls are four times longer than the Great Wall of China and consumed 100 times more materials than the pyramid of Giza. The walls extended for some 16,000 kilometers in all and covered a space of 6,500 square miles. It is estimated that it took over 150 million hours of digging to construct and were all built by the Edo people.

In all, they are four times longer than the Great Wall of China, and consumed a hundred times more material than the Great Pyramid of Cheops. It's perhaps the largest single archaeological phenomenon on the planet." Source: Wikipedia, Architecture of Africa." Fred Pearce the New Scientist 11/09/99.

Even before the full extent of the city walling had become apparent the Guinness Book of Records carried an entry in the 1974 edition that described the city as: "The largest earthworks in the world carried out prior to the mechanical era." – Excerpt from "The Invisible Empire", PD Lawton, African Historical Ruins.

Sadly, in 1897, Benin City and its Great Wall was destroyed by British forces under Admiral Harry Rawson - in what has come to be called the Punitive expedition. The city was looted, blown up and burnt to the ground. This expedition destroyed about 1,100 years of Benin history and one of the evidence of African civilization. The expeditionary force was made up of 1,200 British soldiers.

It brought an end to the great Benin Kingdom and led to the looting numerous Benin historical artefacts. A collection of the famous Benin Bronzes are now in the British Museum in London. Part of the 700 stolen bronzes by the British troops were sold back to Nigeria in 1972.

The monumental building achievements of Africa's ancient Egyptians also proves that Africans were not illiterate nor uncivilized.

All that we learn from the oppressors are lies that falsely exalts themselves and falsely marginalizes us. The collective self-esteems of the white masses have been falsely bolstered at the expense of the collective self-esteems of the Black masses.

The white educational system's failure to adequately provide Black students with a racially affirming curriculum as it routinely does for White students is actually essential for maintaining white dominance. Because for a ruling class to maintain its position of social dominance over its oppressed population, they

### History of all Medicine

must condition the oppressed from a very early age to accept their own subordinate status and to adhere to the authority of the dominant society.

To do so, the education given to the oppressed, from the time that their minds are young and most impressionable, must be the type that denies them of a racially and culturally affirming curriculum. When the oppressed population is denied a fully racially and culturally affirming education, even the brightest among them may have little, if any, hope of mentally extracting themselves from their assigned low, dominated position in life.

Dr. B. L. Dickson

Metaphysics/ Spirituality

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## 1.0 History of Medicine <sup>z</sup>

Medicine (Latin medicus, “physician”), the science and art of diagnosing, treating, and preventing disease and injury. <sup>c</sup>

*Natural Medicine begins after paradise, when good and evil began. But to understand why natural medicine is of nature, we have to go all the way to when paradise began that caused creation; which allowed the immunity of humanity to weaken because of carnal living instead of spiritual living that came because the way to life (that is spirit) was cut off after the fall of the first man to attain spiritual completion. This made man prone to diseases. The Universe has viruses that are formed by the reaction of particles in space that falls into our atmosphere around 800,000,000 (eight hundred million) a day, in which plants that are always outside make direct contact with them and the most effective plant amongst them to overcome anyone of them is the very plant used to treat the sick.*

### 1.1.0 Learning Objectives <sup>d</sup>:

- Appreciate natural medicine and medical practice history.
- Explore the domains of natural medicine and medical practice management.
- Understand the natural forces of change affecting natural medicine practice.
- Develop natural perception on changes affecting natural medical practice.
- Comprehend the significance of the natural medical practitioner.

#### 1.1.0.1 List of forms of alternative medicine <sup>w</sup> (although WHO has dropped alternative, it is used because of the author)

Some with history and origin in the list of articles covering alternative medicine topics are used.

A  
Activated charcoal cleanse  
Acupressure  
Acupuncture  
Affirmative prayer  
Alexander technique  
Alternative cancer treatments  
Animal-Assisted Therapy  
Anthroposophical medicine  
Apitherapy  
Applied kinesiology  
Aquatherapy  
Aromatherapy  
Art Therapy  
Asahi Health

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Astrology

Attachment therapy

Auriculotherapy

Autogenic training

Autosuggestion

Ayurveda

### B

Bach flower therapy

Balneotherapy

Bates method

Bibliotherapy

Biodanza

Bioresonance therapy

Blood irradiation therapies

Body-based manipulative therapies

Body work (alternative medicine) or Massage therapy

### C

Chelation therapy

Chinese food therapy

Chinese herbology

Chinese martial arts

Chinese medicine

Chinese pulse diagnosis

Chakra

Chiropractic

Chromotherapy (color therapy, colorpuncture)

Cinema therapy

Coding (therapy)

Coin rubbing

Colloidal silver therapy

Colon cleansing

Colon hydrotherapy (Enema)

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Craniosacral therapy

Creative visualization

Crystal healing

Cupping

D

Dance therapy

Detoxification

Detoxification foot baths

Dietary supplements

Dowsing

E

Ear candling

Earthing

Eclectic medicine

Electromagnetic therapy

Electrohomeopathy

Equine-assisted therapy

Energy medicine

- Magnet therapy

- Reiki

- Qigong

- Shiatsu

- Therapeutic touch

- Energy psychology

F

Faith healing

Fasting

Feldenkrais Method

Feng shui

Five elements

Flower essence therapy



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Functional medicine

G

German New Medicine

Grahamism

Grinberg Method

Gua sha

Graphology

H

Hair analysis (alternative medicine)

Hatha yoga

Havening

Hawaiian massage

Herbalism

Herbal therapy

Herbology

Hijama

Holistic living

Holistic medicine

Homeopathy

Home remedies

Horticultural therapy

Hydrotherapy

Hypnosis

Hypnotherapy

I

Introspection rundown

Iridology

Isolation tank

Isopathy

J

Jilly Juice

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### L

Laughter therapy

Light therapy

### M

Macrobiotic lifestyle

Magnetic healing

Manipulative therapy

Manual lymphatic drainage

Martial arts

Massage therapy

Massage

Medical intuition

Meditation

- Mindfulness meditation

- Transcendental meditation

- Vipassana

Meridian (Chinese medicine)

Mega-vitamin therapy

Mind–body intervention

- Alexander technique

- Aromatherapy

- Autogenic training

- Autosuggestion

- Bach flower therapy

- Feldenkrais method

- Hatha yoga

- Hypnotherapy

Moxibustion

Myofascial release

### N

Naprapathy

## History of all Medicine

Natural Health

Natural therapies

Naturopathic medicine

New thought

Neuro-linguistic programming

Nutritional healing

Nutritional supplements

Numerology

O

Orthopathy

Osteopathy

P

Pilates

Postural Integration

Pranic healing

Prayer

Psychic surgery

Prokarin

Paula method healing exercises

Q

Qi

Qigong

Quantum healing

R

Radionics

Rebirthing

Recreational Therapy

Reflexology

Reiki

Rolfing Structural Integration

Rosen Method

S

Salt Therapy

Self-hypnosis

Shiatsu

Siddha medicine

Sonopuncture

Sound therapy

Spiritual mind treatment

Structural Integration

Support groups

T

T'ai chi ch'uan

Tantra massage

Tao yin

Thai massage

Thalassotherapy

Therapeutic horseback riding

Therapeutic touch

Tibetan eye chart

Traditional Chinese medicine

History of traditional Chinese medicine

Traditional Korean medicine

Traditional Japanese medicine

Traditional Mongolian medicine

Traditional Tibetan medicine

Trager approach

Transcendental meditation

Trigger point

Tui na

U

Unani medicine

Urine therapy

Urography

V

Vaginal steaming

Vegetotherapy

Visualization (cam)

Visualization

W

Water cure (therapy)

Wellness (alternative medicine)

Wuxing (Chinese philosophy)

Y

Yoga

Ashtanga yoga

Amrit yoga

Ashtanga vinyasa yoga

Bikram yoga

Hatha yoga

Iyengar yoga

Kundalini yoga

Siddha yoga

Sivananda yoga

Tantric yoga

Viniyoga

Vinyasa yoga

Yoga Therapy

Daoyin Taoist Yoga

Z

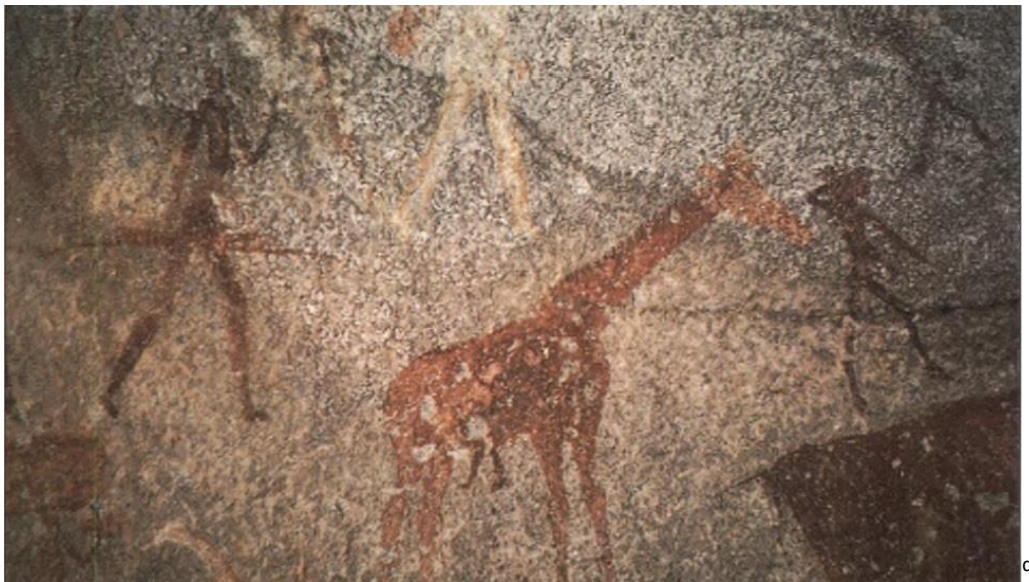
Zang fu

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### 1.1.0.2 Introduction <sup>m</sup>

Illness and injury are as old as *fallen* humankind. *Though, true humanity should normally not be measured by human remains but by artifact, because human beings were not dying until humankind's fall*; Stone Age human remains show evidence of diseases such as arthritis, tuberculosis, inflammations, dental problems, leprosy bone tumours, scurvy, spinal tuberculosis, cleft spine, osteomyelitis, sinusitis and various congenital abnormalities and injuries. These illnesses show in human skeletal remains and if more complete human remains were available, it is likely a much greater span of diseases would be apparent. Agreed that human beings do not like pain, death and suffering there was a clear need to try and find a cure for diseases and injuries.

The curing and prevention of disease usually involves an explanation of the cause of the disease. In the absence of knowledge of germs (bacteria and viruses) and of human anatomy and physiology stone age humans ascribed disease, injuries and death to supernatural forces, just as other inexplicable events such as storms, earthquakes and volcanic eruptions were considered to be caused by supernatural forces. This led to the need for a method of influencing the supernatural forces which required a person with knowledge of the supernatural world who could communicate with and placate the gods or spirits that caused the disease and injury. Priests, shamans, witch doctors and medicine men were often responsible for protecting the health of Stone Age humans by means of appropriate rituals and spells. A cave painting of what is considered to be a Stone Age medicine man dating from around 15,000 BCE is on the cave walls of the **Les Trois Freres** cave in the Pyrenees.



Stone Age medicine men would most likely have supplemented their spells and rituals with the use of various herbs, roots, leaves and animal parts and other medicines. Given the body's natural tendency to heal itself and placebo effects, *to the non-spiritual they will think it would have been difficult for pre-historic healers to work out whether their spells and herbs were actually working, but in truth, by their spirit they knew*. Colonial medicine taught that only in recent times with modern written records, statistical techniques and double blind studies involving control groups, can it be reasonably clear if a particular medicine is working.

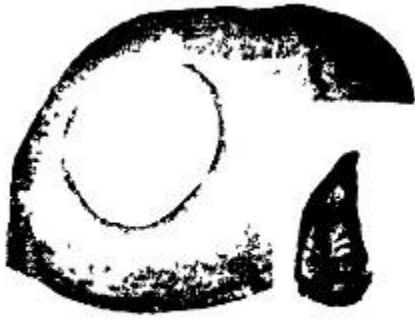
The earliest clear example of a surgical operation is trepanning which involves boring a hole into the skull. This operation was first carried out in Neolithic times using stone tools. Some of the patients survived as shown by healing around the holes and some skulls even had several holes bored in them, indicating

### History of all Medicine

repeated operations. It is not clear why such a painful operation was carried out, but it may have been to allow evil spirits that were causing migraines, epilepsy or madness to escape from the patient's skull. It is also likely other surgical operations, such as the lancing of abscesses and the sewing up of wounds with bone or flint needles, were performed, but there is no clear evidence of this.



*A male cranium from Patallacta, Peru, shows four trepanned holes – experts believe all the wounds had healed eventually.*



Experiments to illustrate trephining by means of a flint scraper, showing two stages of the operation



The "Thames" skull, probably of Neolithic Age, showing trephined opening



Skull of Early Bronze Age, found in Bute. Opening may be result of trephining



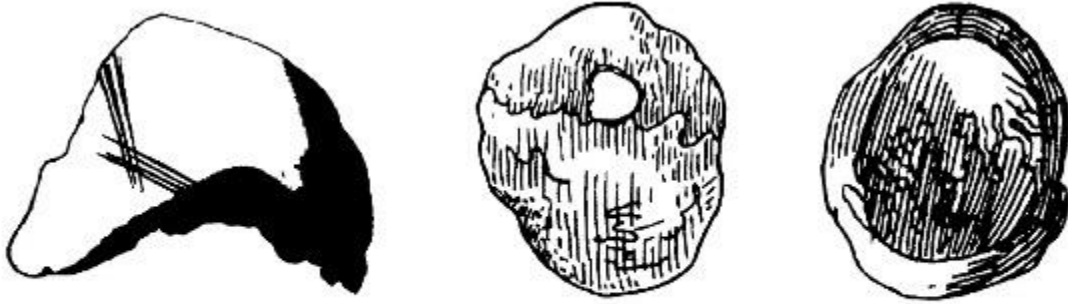
Ancient Peruvian skull, cross-cut trephining



Ancient Peruvian skull, multiple trephining at different dates



b



Cranial amulets from dolmens in France (l.) An irregular fragment with margin of trephined hole in centre of the lower margin ( $\frac{1}{2}$  natural size) The other two specimens (natural size) are "rondelles," one of them perforated for use as a charm



Trepanned Skull <sup>c</sup>

Trepanning, the procedure of cutting a hole in the skull, is the earliest known medical operation. Some anthropologists believe that trepanning was performed on people with mental illnesses to drive out evil spirits from their heads. This skull dates from the Inca civilization.

Daniele Pellegrini/Photo Researchers, Inc.

When nomadic hunter-gatherers first began to settle in permanent villages, which grew into towns and then cities, new health problems arose. Large numbers of people concentrated in small areas meant disease would quickly spread through populations. The domestication of animals resulted in many diseases spreading from animals to humans such as measles, smallpox and tuberculosis from cattle and flu from pigs and dogs. However, a further result from living in cities was the development of writing which allowed a more organized medical profession and the possibility of accurate recording of symptoms and remedies.

Writing began in Mesopotamia before 3,000 BCE when it was invented by the ancient Sumerians. The Sumerians wrote on clay tablets and one such tablet contains lists of drugs, chemical substances and

### History of all Medicine

plants used for medical purposes. Magic and religion however played a major role in Mesopotamian medicine as injury and disease were considered to be caused by gods, demons, evil spirits and witchcraft. Numerous magic spells, incantations and sacrifices were available to combat particular diseases and correct recitation was necessary for an effective cure. Whether a patient would survive or not could be divined by examining the liver of a sacrificed sheep or goat. The Code of Hammurabi, a law code made by a Babylonian King, sets out medical fees for various services and penalties for errors made by the doctor. Services referred to involved, the opening of an abscess, the treatment of broken limbs, eyes and intestinal complaints.

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### 1.1.0.3 Post-Colonial Medicine Error

They also made mistakes with a lot of fatalities with their industrialization, but such mistakes are not put in simple history, but only when you choose to study more. But for medicines in Africa, they stigmatized them in history, forgetting that you do not insult the place of your fore father's that your ancestors migrated from, because it backfires. It is not true that post-colonial medicine is the best medication, because nature that is original, produces the best medicine that complements the harm of the treatment that synthetic medicine does not do.

Modern medicine or better put, post-colonial medicine (because the medical practices was for their economic colonization of the minds of other races), also made terrible mistakes that were not physically done on the scull but were physically done on the body of the person by their dietary guidelines mistakes:

#### **The U.S. government is poised to withdraw longstanding warnings about cholesterol <sup>x</sup>**

The nation's top nutrition advisory panel has decided to drop its caution about eating cholesterol-laden food, a move that could undo almost 40 years of government warnings about its consumption.

The group's finding that cholesterol in the diet need no longer be considered a "nutrient of concern" stands in contrast to the committee's findings five years ago, the last time it convened. During those proceedings, as in previous years, the panel deemed the issue of excess cholesterol in the American diet a public health concern.

The finding follows an evolution of thinking among many nutritionists who now believe that, for healthy adults, eating foods high in cholesterol may not significantly affect the level of cholesterol in the blood or increase the risk of heart disease.

The greater danger in this regard, these experts believe, lies not in products such as eggs, shrimp or lobster, which are high in cholesterol, but in too many servings of foods heavy with saturated fats, such as fatty meats, whole milk, and butter.

[Scientists have figured out what makes Indian food so delicious]

The new view on cholesterol in food does not reverse warnings about high levels of "bad" cholesterol in the blood, which have been linked to heart disease. Moreover, some experts warned that people with particular health problems, such as diabetes, should continue to avoid cholesterol-rich diets.

While Americans may be accustomed to conflicting dietary advice, the change on cholesterol comes from the influential Dietary Guidelines Advisory Committee, the group that provides the scientific basis for the "Dietary Guidelines." That federal publication has broad effects on the American diet, helping to determine the content of school lunches, affecting how food manufacturers advertise their wares, and serving as the foundation for reams of diet advice.

The panel laid out the cholesterol decision in December, at its last meeting before it writes a report that will serve as the basis for the next version of the guidelines. A video of the meeting was later posted online and a person with direct knowledge of the proceedings said the cholesterol finding would make it to the group's final report, which is due within weeks.

After Marian Neuhouser, chair of the relevant subcommittee, announced the decision to the panel at the December meeting, one panelist appeared to bridle.

## History of all Medicine

“So we’re not making a [cholesterol] recommendation?” panel member Miriam Nelson, a Tufts University professor, said at the meeting as if trying to absorb the thought. “Okay ... Bummer.”

Members of the panel, called the Dietary Guidelines Advisory Committee, said they would not comment until the publication of their report, which will be filed with the Department of Health and Human Services and the Department of Agriculture.

[Here’s what the government’s dietary guidelines should really say]

While those agencies could ignore the committee’s recommendations, major deviations are not common, experts said.

Five years ago, “I don’t think the Dietary Guidelines diverged from the committee’s report,” said Naomi K. Fukagawa, a University of Vermont professor who served as the committee’s vice chair in 2010. Fukagawa said she supports the change on cholesterol.

Walter Willett, chair of the nutrition department at the Harvard School of Public Health, also called the turnaround on cholesterol a “reasonable move.”

“There’s been a shift of thinking,” he said.

But the change on dietary cholesterol also shows how the complexity of nutrition science and the lack of definitive research can contribute to confusion for Americans who, while seeking guidance on what to eat, often find themselves afloat in conflicting advice.

Cholesterol has been a fixture in dietary warnings in the United States at least since 1961, when it appeared in guidelines developed by the American Heart Association. Later adopted by the federal government, such warnings helped shift eating habits -- per capita egg consumption dropped about 30 percent -- and harmed egg farmers.

Yet even today, after more than a century of scientific inquiry, scientists are divided.

Some nutritionists said lifting the cholesterol warning is long overdue, noting that the United States is out-of-step with other countries, where diet guidelines do not single out cholesterol. Others support maintaining a warning.

The forthcoming version of the Dietary Guidelines -- the document is revised every five years -- is expected to navigate myriad similar controversies. Among them: salt, red meat, sugar, saturated fats and the latest darling of food-makers, Omega-3s.

As with cholesterol, the dietary panel’s advice on these issues will be used by the federal bureaucrats to draft the new guidelines, which offer Americans clear instructions -- and sometimes very specific, down-to-the-milligram prescriptions. But such precision can mask sometimes tumultuous debates about nutrition.

“Almost every single nutrient imaginable has peer reviewed publications associating it with almost any outcome,” John P.A. Ioannidis, a professor of medicine and statistics at Stanford and one of the harshest critics of nutritional science, has written. “In this literature of epidemic proportions, how many results are correct?”

Now comes the shift on cholesterol.

## History of all Medicine

Even as contrary evidence has emerged over the years, the campaign against dietary cholesterol has continued. In 1994, food-makers were required to report cholesterol values on the nutrition label. In

2010, with the publication of the most recent "Dietary Guidelines," the experts again focused on the problem of "excess dietary cholesterol."

Yet many have viewed the evidence against cholesterol as weak, at best. As late as 2013, a task force arranged by the American College of Cardiology and the American Heart Association looked at the dietary cholesterol studies. The group found that there was "insufficient evidence" to make a recommendation. Many of the studies that had been done, the task force said, were too broad to single out cholesterol.

"Looking back at the literature, we just couldn't see the kind of science that would support dietary restrictions," said Robert Eckel, the co-chair of the task force and a medical professor at the University of Colorado.

The current U.S. guidelines call for restricting cholesterol intake to 300 milligrams daily. American adult men on average ingest about 340 milligrams of cholesterol a day, according to federal figures. That recommended figure of 300 milligrams, Eckel said, is "just one of those things that gets carried forward and carried forward even though the evidence is minimal."

"We just don't know," he said.

Other major studies have indicated that eating an egg a day does not raise a healthy person's risk of heart disease, though diabetic patients may be at more risk.

"The U.S. is the last country in the world to set a specific limit on dietary cholesterol," said David

Klurfeld, a nutrition scientist at the U.S. Department of Agriculture. "Some of it is scientific inertia."

The persistence of the cholesterol fear may arise, in part, from the plausibility of its danger.

As far back as the 19th century, scientists recognized that the plaque that clogged arteries consisted, in part, of cholesterol, according to historians.

It would have seemed logical, then, that a diet that is high in cholesterol would wind up clogging arteries.

In 1913, Niokolai Anitschkov and his colleagues at the Czar's Military Medicine Institute in St. Petersburg, decided to try it out in rabbits. The group fed cholesterol to rabbits for about four to eight weeks and saw that the cholesterol diet harmed them. They figured they were on to something big.

"It often happens in the history of science that researchers ... obtain results which require us to view scientific questions in a new light," he and a colleague wrote in their 1913 paper.

But it wasn't until the 1940s, when heart disease was rising in the United States, that the dangers of a cholesterol diet for humans would come more sharply into focus.

Experiments in biology, as well as other studies that followed the diets of large populations, seemed to link high cholesterol diets to heart disease.

Public warnings soon followed. In 1961, the American Heart Association recommended that people reduce cholesterol consumption and eventually set a limit of 300 milligrams a day. (For comparison, the yolk of a single egg has about 200 milligrams.)

## History of all Medicine

Eventually, the idea that cholesterol is harmful so permeated the country's consciousness that marketers advertised their foods on the basis of "no cholesterol."

What Anitschkov and the other early scientists may not have foreseen is how complicated the science of cholesterol and heart disease could turn out: that the body creates cholesterol in amounts much larger than their diet provides, that the body regulates how much is in the blood and that there is both "good" and "bad" cholesterol.

Adding to the complexity, the way people process cholesterol differs. Scientists say some people – about 25 percent -- appear to be more vulnerable to cholesterol-rich diets.

"It's turned out to be more complicated than anyone could have known," said Lawrence Rudel, a professor at the Wake Forest University School of Medicine.

As a graduate student at the University of Arkansas in the late 1960s, Rudel came across Anitschkov's paper and decided to focus on understanding one of its curiosities. In passing, the paper noted that while the cholesterol diet harmed rabbits, it had no effect on white rats. In fact, if Anitschkov had focused on any other animal besides the rabbit, the effects wouldn't have been so clear -- rabbits are unusually vulnerable to the high-cholesterol diet.

"The reason for the difference -- why does one animal fall apart on the cholesterol diet -- seemed like something that could be figured out," Rudel said. "That was 40 or so years ago. We still don't know what explains the difference."

In truth, scientists have made some progress. Rudel and his colleagues have been able to breed squirrel monkeys that are more vulnerable to the cholesterol diet. That and other evidence leads to their belief that for some people -- as for the squirrel monkeys -- genetics are to blame.

Rudel said that Americans should still be warned about cholesterol.

"Eggs are a nearly perfect food, but cholesterol is a potential bad guy," he said. "Eating too much a day won't harm everyone, but it will harm some people."

Scientists have estimated that, even without counting the toll from obesity, disease related to poor eating habits kills more than half a million people every year. That toll is often used as an argument for more research in nutrition.

Currently, the National Institutes of Health spends about \$1.5 billion annually on nutrition research, an amount that represents about 5 percent of its total budget.

The turnaround on cholesterol, some critics say, is just more evidence that nutrition science needs more investment. Others, however, say the reversal might be seen as a sign of progress.

"These reversals in the field do make us wonder and scratch our heads," said David Allison, a public health professor at the University of Alabama at Birmingham. "But in science, change is normal and expected."

When our view of the cosmos shifted from Ptolemy to Copernicus to Newton and Einstein, Allison said, "the reaction was not to say, 'Oh my gosh, something is wrong with physics!' We say, 'Oh my gosh, isn't this cool?' "

Allison said the problem in nutrition stems from the arrogance that sometimes accompanies dietary advice. A little humility could go a long way.

“Where nutrition has some trouble,” he said, “is all the confidence and vitriol and moralism that goes along with our recommendations.”

### **The 2015 US Dietary Guidelines – Ending the 35% Limit on Total Dietary Fat <sup>y</sup>**

Every 5 years, the US Departments of Agriculture and Health and Human Services jointly release the Dietary Guidelines for Americans. These guidelines have far-reaching influences across the food supply, including for schools, government cafeterias, the military, food assistance programs, agricultural production, restaurant recipes, and industry food formulations. An accurate revision of the Dietary Guidelines is crucial to the health of millions of people. Integral to this process is the Dietary Guidelines Advisory Committee (DGAC) report, just released, prepared by appointed scientists who systematically review the literature and provide evidence-based recommendations to the Secretaries of Agriculture and Health and Human Services. In the coming months, the Secretaries will review the DGAC recommendations; consider comments from the public, academics, advocacy groups, and industry; and finalize the Dietary Guidelines.

In the new DGAC report, one widely noticed revision was the dropping of dietary cholesterol as a “nutrient of concern.” This surprised the public, but is concordant with scientific evidence demonstrating no appreciable relationship between dietary cholesterol and serum cholesterol or clinical cardiovascular events in general populations. The DGAC should be commended for this evidence-based change.

A far less noticed, but more momentous, change was the new absence of any limitation on total fat consumption. The DGAC neither listed total fat as a nutrient of concern, nor proposed any limitation on its consumption. Rather, they concluded, “Reducing total fat (replacing total fat with overall carbohydrates) does not lower CVD risk Dietary advice should put the emphasis on optimizing types of dietary fat and not reducing total fat.” Limiting total fat was also not recommended for obesity prevention; instead, the emphasis was on evidence-based healthful food-based diet patterns higher in vegetables, fruits, whole grains, seafood, legumes, and dairy products; and lower in meats, sugar-sweetened foods and drinks, and refined grains.

With these quiet statements, the DGAC boldly reversed nearly 4 decades of focus on reducing total fat. Starting in 1980, the Dietary Guidelines emphasized limiting dietary fat, initially to <30% of calories and then, in 2005, to between 20–35% of calories. Throughout, the main rationale was to lower saturated fat and dietary cholesterol, rather than any clear evidence for direct harms of total fat. This reasoning overlooked the complex lipid and lipoprotein effects of saturated fat, including minimal effects on Apo-B in comparison to carbohydrate; this explains why substitution of saturated fat with carbohydrate does not lower cardiovascular risk. Moreover, a global limit on total fat inevitably lowers intake of unsaturated fats, among which nuts, vegetable oils, and fish are particularly healthful. Most relevantly, this limitation did not account for harms of starches and sugars, the most common replacement when dietary fat is reduced. Indeed, the 1980 Dietary Guidelines recommended that intake of “complex carbohydrates” be increased, largely based on theoretical considerations (carbohydrate contains fewer calories per gram than does fat) instead of evidence for health benefits.

As with other scientific fields from physics to clinical medicine, nutritional science has advanced dramatically in recent decades. The 2015 DGAC report, for the first time, is consistent with the accumulated evidence for lack of efficacy of recommending high-carbohydrate, low-fat diets to the general population for any major endpoint, including heart disease, stroke, cancer, diabetes, or obesity.

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Related to this, the 2015 DGAC renews the 2005 and 2010 Dietary Guidelines call to restrict both added sugars and refined grains. For decades, complex carbohydrates were considered a foundation of a healthful diet, e.g. as evidenced by the Food Guide Pyramid base. This was revised in 2005, based on consistent evidence for harms of starches and sugar. Yet, refined grains continue to represent the largest category of calories in the US food supply, including white bread, white rice, and most chips, crackers, cereals, and bakery desserts. Both industry and consumers have been unsuccessful in meaningfully reducing refined carbohydrates, a failure likely exacerbated by decades of focus on lowering total dietary fat. Recognizing this harmful confusion, the 2015 DGAC specifically concludes that, “consumption of ‘low-fat’ or ‘nonfat’ products with high amounts of refined grains and added sugars should be discouraged.” Yet, more than 70% of Americans continue to exceed the optimal amount of refined grain consumption. Dropping the limitation on total fat should make it easier for industry, restaurants, and the public to increase healthful fats and proteins while reducing refined grains and added sugars.

The US Departments of Agriculture and Health and Human Services should follow the evidence-based, scientifically sound DGAC report and remove any limit on total fat consumption in the final 2015 Dietary Guidelines. Yet, this represent only one policy tool to influence American diets, and others should follow suit. For example, the Nutrition Facts Panel, separately regulated by the US Food and Drug Administration, lists % daily values for several key nutrients on packaged foods. Remarkably, this Panel still has not been updated to revise the outdated 30% limit on dietary fat, obsolete for almost 15 years. The Nutrition Facts Panel should now be revised to drop total fat, as well as dietary cholesterol, from among the listed nutrients, while adding contents of both refined grains and added sugars. Notably, only adding added sugars, a current proposed change, insufficiently acknowledges the harms of – and implicitly encourages – the intake of refined grains. The US Department of Agriculture should also modernize its Smart Snacks in School standards, removing the 35% restriction on total fat from the criteria. The Institute of Medicine should also update its report, now nearly 15 years old, on dietary reference intakes for energy, total fat, and other macronutrients.

The current restriction on total fat affects virtually all aspects of the American diet, including school meals (which currently ban whole milk, but allow sugar-sweetened non-fat milk), government procurement for offices and the military, meals for the elderly, and guidelines for food assistance programs that together provide 1 in 4 meals consumed in the US. The restriction on fat also drives food industry formulations and marketing, as evidenced by the heavy promotion of fat-reduced desserts, snacks, salad dressings, processed meats and other products of questionable nutritional value. Not surprisingly, a majority of Americans are still actively trying to avoid dietary fat, which is typically replaced by refined carbohydrates including highly processed grains, potato products, and added sugars. The limit on total fat presents an impediment to public health, promoting harmful low-fat foods, encouraging high intakes of starch and sugar, and discouraging the restaurant and food industry from providing products and meals high in healthful fats. Based on the accumulated new scientific evidence, the Dietary Guidelines for Americans, Nutrition Facts Panel, Smart Snacks in School standards, and Institute of Medicine should remove the 35% limit on total dietary fat. This scientifically sound change will have major positive influences on the US food supply, food industry formulations and marketing, and public perception and understanding of evidence-based dietary priorities.

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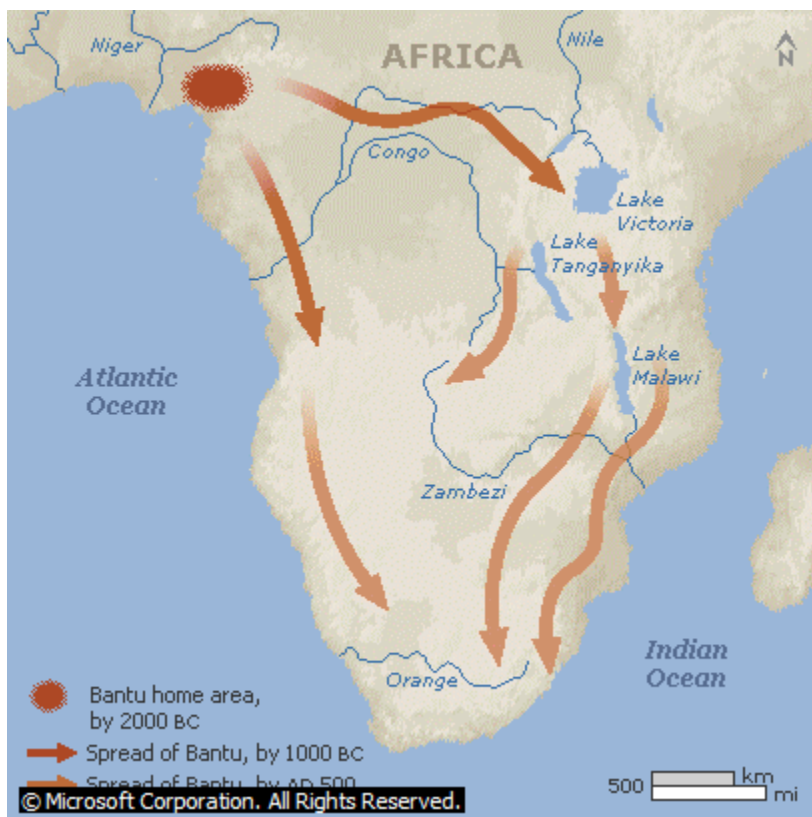


### 1.2.0 Medicine in Africa (Eden extension)

*Eden (most of it is in Nigeria and then most of Cameroon as the center and extending to other countries around Africa)*

*The place of language and migration origin is the origin of humanity. That is where you can trace the true origin of Medicine, which is why it started that was to complement the fall of humans from life that is spirit that did everything. Nigeria is clearly the most cursed land on Earth that shows from the failed state of governance to the waste of human capital because of indigenes that want to stick to their status quo; Nigerians are the most educated group in the USA, yet in the most educated state in Nigeria that every family has a professor, they are the most poor in unutilized potential.*

*After which people were driven to the east as stated in religious scriptures, in which Sumerians began the physical way of living with the hardship of the curse. Any Occidental disputing this should ask the skilled oriens where most of their techniques originated from that the Orientals perfected.*

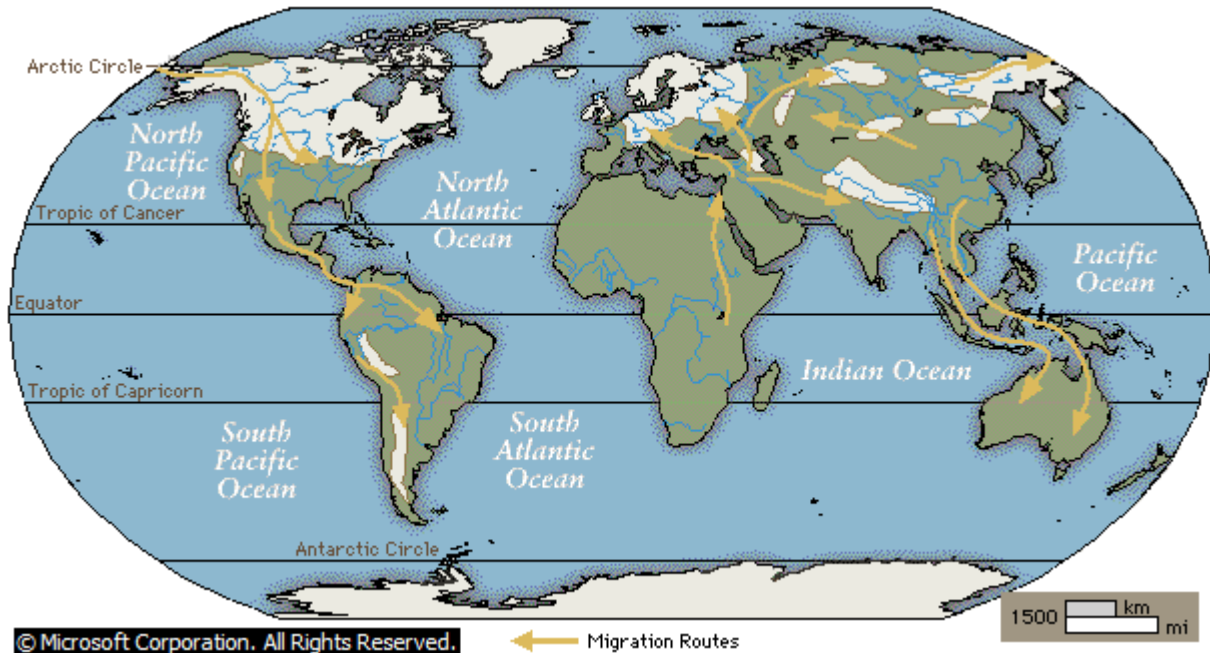


#### Bantu Migration

Today, close to 100 million people across the southern half of Africa speak related languages, collectively known as Bantu languages. Linguistic evidence shows that the root Bantu language emerged in what is now Nigeria and Cameroon by 2000 bc. By 1000 bc, in a series of migrations, Bantu speakers had spread south to the savanna lands of Angola and east to the Lake Victoria region. Over the next 1500 years they scattered throughout central and southern Africa, interacting with and absorbing indigenous populations as they spread.

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### Ancient Routes of Migration

Physical barriers, including deserts, mountain ranges, and bodies of water, inhibited ancient people's migrations. In addition, migrating groups tended to seek a habitat similar to the ones they had left.

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*The dark Africans that remained in the heat that caused the Sahara Desert to separate the rest of the world from sub-Saharan Africa, learnt better hygiene like brushing, washing and bathing that they taught the occidentals when the dark skinned Africans were called the Moors. Now, online, the moors have been manipulated to be the Arabs only; the question everyone should think about is how can there be mud in the Middle East. Mud is in the swampy areas that are a lot in West Africa and Central Africa where the Moors were. Most of the idols of gods are seen with wooly hair and big broad nose in Scotland, Mexico etc. Even the bible has the Ethiopian teaching what Jesus (Prophet Isa) meant in the Acts of the Apostles. Also the independence of Nigeria has been manipulated online from the original eleven names of ten men and one woman.*

Health Care: -

1. *Brushing: brush the front of the teeth up and down, brush the crown, brush the back of the teeth outwards, and then brush your tongue looking at the mirror. Then, pull on the mucus and phlegm in the throat to remove bad breath. The villagers in sub-Saharan Africa always used water to rinse their mouth*

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*after eating. Brush the back of the tongue to remove mouth ordour and uncomfortable feeling in the mouth.*

*2. Shaving: shave downwards, clean-shave (shave downwards then, upwards) for those that don't develop bumps (hair growing inwards)*

*3. Cutting hair: it is best to trim the hair than to shave-off the hair around the body or the head, your hair is for a purpose. The style of cutting the side of the hair lower than the rest of the hair by the whites was done by the dark skinned Africans when they were looked up to by the Arcadians.*

*4. Bathing: wash your face twice with soap as you bathe if you have oily skin, once for dry skin, bathe twice or thrice a day. Always scrub the soles of your feet at least once a week. Wash your hair with a lot of soap to lather and there will be no dandruff. Use sponge to scrub of dead old skin to prevent body odor. Blow your nostrils with water while bathing or after a dusty environment. Dropping castor oil at night before you sleep clears worms etc. from the eyes after about six months.*

*5. If the urge to go to toilet comes in uncomfortable circumstances, lay down with your belly facing upwards and it will subside the feeling; but if your stomach is troubling you, lay with your stomach downwards and it will reduce. Which delays you until the right circumstances to use the toilet or the person getting the medication are available.*

*6. When you sleep and in your dreams, you are always caught or you do not win, straighten your legs and you will always win and will never be caught.*

*7. When eating an orange cut twice, giving four parts, bite the center of the fruit and pull your teeth to the central part of the fruit that was cut to take out all the seeds, then you can enjoy the seedless fruit.*

*The colonialist humiliation of the dark skinned as not able to have developed any structure, is the loss of their knowledge about the spirit and soul treatment, as they only treat the body, so their psychology cannot treat the mind effectively but suppress the information when the spirit should have been let to treat the mind. Those who left from Africa to stay abroad do not know the knowledge of the spirit like their traditional rulers that are not allowed to leave the thrown to stay abroad because the knowledge is passed down to the leaders. Everyone in the village is trained by their family to be a native doctor by showing them the plants in their native dialect and their medicinal value to keep them always well, where those who know more than others that pass down that knowledge to their descendants (either by prayer or laying of hands as it was with Abraham to Jacob in the Bible or Koran) are regarded as the native doctor of the village that knows more; those without western civilization do not know sickness until something alien enters their community, because of the herbs they eat in their food that has usually all the required nutrients and medication they need with assorted meats from water, land and air. Which is contrary to the colonialists' false information that they passed to their government to allow colonization and use of the human resources that coveted their neighbours goods. Yet science proves that Homo Sapiens are those that left from Africa as Bible Enoch etc. to populate the rest of the world by inter breeding with other species.*

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### 1.2.0.1 Egypt <sup>m</sup>

Our knowledge of ancient Egyptian medicine comes from certain medical papyri and from the embalming of Egyptian dead. The papyri contain various descriptions of magic spells designed to drive out the demon causing a particular disease and of various prescriptions, including the dosage for particular diseases. Drugs used included castor oil, hartshorn, bile and fat from animals and copper sulphate. Treatment was prescribed for wounds and bruises and surgical instruments appear to have been used and broken bones were treated with splints. *The ancient Egyptians made shoes for each foot, one for the left and the right, based on spiritual insight; contrary to the colonialist shoe making that was designed for both legs that are usually not the same.*

The Egyptian practice of embalming and the favourable conditions of Egypt for the natural preservation of bodies shows us some of the diseases the Egyptians suffered from. Arthritis and inflammation of the periosteum and osteomyelitis were common. Spinal deformations and spinal tuberculosis, gout and virulent osteomas have been found in Egyptian mummies. Tooth decay was as common as in modern times and there is good evidence of kidney stones and gall stones, appendicitis and stomach and intestinal troubles. The lower classes in particular suffered from infectious diseases such as plague, smallpox, typhus, leprosy, malaria, amoebic dysentery and cholera and various parasitic diseases. *The Egyptian embalming is based on the idea of them returning to their alien leaders.*

Egyptian physician's knowledge of anatomy was not extensive despite the practice of embalming. This is because embalming was carried out by specialist technicians and not by physicians. Knowledge of internal organs was largely limited to an awareness of their outward appearance.

### 1.2.0.3 Imhotep <sup>w</sup>

Imhotep (/ɪmˈhoʊtɛp/; Ancient Egyptian: ʾi-m-ḥtp "the one who comes in peace"; fl. late 27th century BCE) was an Egyptian chancellor to the Pharaoh Djoser, possible architect of Djoser's step pyramid, and high priest of the sun god Ra at Heliopolis. Very little is known of Imhotep as a historical figure, but in the 3,000 years following his death, he was gradually glorified and deified.

Imhotep  
Ancient Egyptian: Jj m ḥtp



Burial place

Saqqara (probable)

Other names

Asclepius (name in Greek) Imouthes (also name in Greek)

|              |  |
|--------------|--|
| Occupation   | History of all Medicine<br>chancellor to the Pharaoh Djoser and High |
| Priest of Ra |  |
| Years active | c. 27th century BCE  |
| Known for    | Being the architect of Djoser's step pyramid                         |

Greek Manetho variants:

Africanus: Imouthes Eusebius: missing Eusebius, AV: missing

Traditions from long after Imhotep's death treated him as a great author of wisdom texts and especially as a physician. No text from his lifetime mentions these capacities and no text mentions his name in the first 1,200 years following his death. Apart from the three short contemporary inscriptions that establish him as chancellor to the Pharaoh, the first text to reference Imhotep dates to the time of Amenhotep III (c. 1391–1353 BCE). It is addressed to the owner of a tomb, and reads:

The wab-priest may give offerings to your ka. The wab-priests may stretch to you their arms with libations on the soil, as it is done for Imhotep with the remains of the water bowl.

— Wildung (1977)

It appears that this libation to Imhotep was done regularly, as they are attested on papyri associated with statues of Imhotep until the Late Period (c. 664–332 BCE). Wildung (1977) explains the origin of this cult as a slow evolution of intellectuals' memory of Imhotep, from his death onward. Gardiner finds the cult of Imhotep during the New Kingdom (c. 1550–1077 BCE) sufficiently distinct from the usual offerings made to other commoners that the epithet "demigod" is likely justified to describe his veneration.

The first references to the healing abilities of Imhotep occur from the Thirtieth Dynasty (c. 380–343 BCE) onward, some 2,200 years after his death.

Imhotep is among the few non-royal Egyptians who were deified after their deaths, and until the 21st century, he was one of nearly a dozen non-royals to achieve this status. The center of his cult was in Memphis. The location of his tomb remains unknown, despite efforts to find it. The consensus is that it is hidden somewhere at Saqqara.

Historicity

Imhotep's historicity is confirmed by two contemporary inscriptions made during his lifetime on the base or pedestal of one of Djoser's statues (Cairo JE 49889) and also by a graffito on the enclosure wall surrounding Sekhemkhet's unfinished step pyramid. The latter inscription suggests that Imhotep outlived

Djoser by a few years and went on to serve in the construction of Pharaoh Sekhemkhet's pyramid, which was abandoned due to this ruler's brief reign.

### Architecture and engineering



The step pyramid of Djoser

Imhotep was one of the chief officials of the Pharaoh Djoser. Concurring with much later legends, egyptologists credit him with the design and construction of the Pyramid of Djoser, a step pyramid at Saqqara built during the 3rd Dynasty. He may also have been responsible for the first known use of stone columns to support a building. Despite these later attestations, the pharaonic Egyptians themselves never credited Imhotep as the designer of the stepped pyramid, nor with the invention of stone architecture.

### Deification

#### God of medicine

Two thousand years after his death, Imhotep's status had risen to that of a god of medicine and healing. Eventually, Imhotep was equated with Thoth, the god of architecture, mathematics, and medicine, and patron of scribes: Imhotep's cult was merged with that of his own former tutelary god.

He was revered in the region of Thebes as the "brother" of Amenhotep, son of Hapu – another deified architect – in the temples dedicated to Thoth.:v3, p104. Because of his association with health, the Greeks equated Imhotep with Asklepios, their own god of health who also was a deified mortal.

According to myth, Imhotep's mother was a mortal named Kheredu-ankh, she too being eventually revered as a demi-goddess as the daughter of Banebdjedet. Alternatively, since Imhotep was known as the "Son of Ptah",:v?, p106 his mother was sometimes claimed to be Sekhmet, the patron of Upper Egypt whose consort was Ptah.

### Post-Alexander period

The Upper Egyptian Famine Stela, which dates from the Ptolemaic period (305–30 BCE), bears an inscription containing a legend about a famine lasting seven years during the reign of Djoser. Imhotep is credited with having been instrumental in ending it. One of his priests explained the connection between the god Khnum and the rise of the Nile to the Pharaoh, who then had a dream in which the Nile god spoke to him, promising to end the drought.

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A demotic papyrus from the temple of Tebtunis, dating to the 2nd century CE, preserves a long story about Imhotep. The Pharaoh Djoser plays a prominent role in the story, which also mentions Imhotep's family; his father the god Ptah, his mother Khereduankh, and his younger sister Renpetneferet. At one point Djoser desires Renpetneferet, and Imhotep disguises himself and tries to rescue her. The text also refers to the royal tomb of Djoser. Part of the legend includes an anachronistic battle between the Old Kingdom and the Assyrian armies where Imhotep fights an Assyrian sorceress in a duel of magic.

As an instigator of Egyptian culture, Imhotep's idealized image lasted well into the Roman period. In the Ptolemaic period, the Egyptian priest and historian Manetho credited him with inventing the method of a stone-dressed building during Djoser's reign, though he was not the first to actually build with stone. Stone walling, flooring, lintels, and jambs had appeared sporadically during the Archaic Period, though it is true that a building of the size of the step pyramid made entirely out of stone had never before been constructed. Before Djoser, Pharaohs were buried in mastaba tombs.

## Medicine

Egyptologist James Peter Allen states that "The Greeks equated him with their own god of medicine, Asklepios., although ironically there is no evidence that Imhotep himself was a physician."

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#### 1.2.0.4 Colonial Medicine Influence <sup>T</sup>

This is a comprehensive survey of the colonial history of medicine in some seventeen African countries that would be monumental where the colonialist emotionally thought for the people as God had cursed; and is proposed to take as a theme a pattern which runs throughout the story, a pattern which seems to indicate that the short history of medicine in the Commonwealth countries in Africa-for in its significant aspects it spans little more than a century-is largely the history of their medical services; and it is the development of medicine through those services that I shall try to sketch very broadly and with, inevitably, many gaps.

Before the opening of Africa to exploration, settlement, trade and missionary enterprise, the African people were not exposed to tremendous stresses and the mortality was immense. For medical treatment, they relied upon their indigenous practitioners, usually-although not always accurately-referred to as witch-doctors. These medicine-men practiced largely by spiritual suggestion, incantations, charms and remedies; but with their knowledge of herbs and roots, they often discovered by intuition, which the colonial medical practitioners saw as perhaps by serendipity, a number of effective indigenous drugs. Some of these, indeed, have more recently been shown to have real therapeutic value and are known to be effective in conditions such as diarrhea and some of the intestinal parasitic diseases. These discoveries were empiric: but then so were many of our own; and relative to cultural development, there is little basic difference between the application of their concoctions and the practice of carrying potatoes in the pocket as a cure for rheumatism. Nevertheless, their approach knew something of science: disease was held-as it is held in many fractals that the colonialists saw as primitive African communities today-to be the result of the direct activity of spirits, who had to be placated, yet the modern world now operates in similar fractal condition that if they had mastered, the world will not be in difficulty. Tribal mores were strong and the influence of the physical environment in the sense that we know it today was not considered.

The dawning of western medicine began gradually as exploration and settlement developed. Sporadic contributions had been made in the eighteenth century as a result of observations made by individual naval and military surgeons and missionary doctors, but these contributions were not appreciated fully at the time and their immediate influence was small. However, some classic records remain. One of these was the account in 1803 by Thomas Winterbottom, Physician to the Colony of Sierra Leone from 1792 to 1796, of the Africans in Sierra Leone and 'the present state of medicine among them'. This is commonly claimed to contain the first English account of sleeping sickness.

In fact, that account was given by John Atkins, a naval surgeon, who practiced in West African waters and who met the disease on the Guinea Coast in 1721.' In his description of 'the sleepy Distemper in Negroes', in his book *The Navy Surgeon* [1734], he states: 'Their sleeps are sound, and sense and feeling very little: for pulling, drubbing, or whipping will scarce stir up sense or power enough to move, and the moment you cease beating, the smart is forgot'.

To these somewhat Draconian diagnostic measures were added a schedule of treatment which sounds a little drastic to our ears, but was no doubt not without benefit to the patient: 'bleeding in the jugular, quick purges, stematories, vesicatories, acupuncture, seton, fontanels, and Sudden Plunges in the Sea: the latter is most effectual when the distemper is new, and the patient is not yet attended with a drivling at mouth or nose'. It is the charlatan method of treatment that the colonialists used to make our colonial medical practitioners to be dependent on the prescription of their imported medicine to make our economy dependent on the occidental economic system.



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Nevertheless, a sound basis had been established by educated naval surgeons who were concerned not only with the maladies prevailing in warm climates but with those incidents to getting there. The navigators venturing to Africa and elsewhere owed much to such far-sighted pioneers as Gilbert Blane and James Lind.

A great deal of the early provision of medical facilities for Africans was owed to missionary enterprise. The example of David Livingstone contributed largely to the establishment of medical work as a recognized part of missionary activity. Others were soon to follow and medical missionary work rapidly expanded in West, East and South Africa through the efforts of various churches who increasingly provided training for their members and the establishment of hospitals, dispensaries and other medical facilities.

For example, John Abercrombie in 1841 founded the Edinburgh Missionary Society for training medical students for missionary work. Yet in 1849 it was estimated that there were only 40 medical missionaries in the whole world. In 1863, lay doctors were associated with the Holy Ghost Fathers in 'Zanzibar; and the Universities' Mission to Central Africa and the Church Missionary Society started medical missionary services in various parts of Africa. The latter Society founded Livingstone College for instructing missionaries in the elements of practical medicine in 1893 and in 1897 founded a hospital in Uganda. The White Fathers had started work in the regions of the great lakes in East Africa in 1878 and in 1899 the White Sisters instituted health work there.

Within the British sphere of influence in Africa, it is not surprising that the first glimpses of activity should have been seen in the West African territories. Sierra Leone was among the oldest of these. When a free settlement of Negro slaves from Nova Scotia was begun there in 1787, through the vision of the philanthropist Granville Sharp, it was almost wiped out by disease at the very beginning. Although conditions apparently improved, through the use of ordinary basic methods of hygiene, the improvement benefited largely the settlers and their families alone. Health conditions throughout West Africa were bad; and yellow fever, malaria and other conditions took a toll so great that there was a constant struggle with disease, handicapped by a lack of knowledge. That remarkable woman Mary Kingsley in her *West African Studies*, published in 1899, 13 deplored prevailing apathy and noted that 'no trouble is taken to pull down the death-rate by Science'. Although the Africans who relied on their herbal preventive measures never knew this diseases effect. Africa had been protected from global pandemics by the Sahara Desert.

While expeditions and the various Chartered Companies had provided such medical assistance as they could, it was sparse and not easy to come by. Indeed even two years after Sierra Leone had been handed over to the Crown in 1808, a Commission of Inquiry, referring to the medical department, stated: 'The provisions for this department, in a recent parliamentary vote, were a first and second surgeon, an apothecary and his assistants; and were these offices filled up in a suitable way they might have been sufficient to effect their purpose but such is the proportion of the salaries to the efficiency and ability required in the officers, that no competent person could be found to accept the first two posts'.

The early Administrations in Africa had at first mainly devoted the provision of medical services, through force of circumstances, to the needs of existing establishments. The wider extension of these to the African communities as a whole had to wait upon further knowledge, better communications, more staff and more money. The 'insalubrity' of the climate blamed by the earlier observers as the source of illnesses in Tropical Africa was a misnomer: for the major enemy of progress was not the climate, but the mosquito; yellow fever, malaria, filariasis and diseases not then identified as arthropod-borne had dominated the scene and frustrated the efforts of pioneers to establish permanent health conditions.

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Malaria wrecked many expeditions and some of these are vividly described by Gelfand in his monograph *Rivers of Death*. With the first proof of the role of a blood-sucking insect as a vector of parasites pathogenic to man, Manson in 1879 had started a movement-for it was no less-which was to influence the future of tropical medicine and hygiene for all time. As one of his biographers, Alcock, wrote, Manson's discovery 'merely as a scientific achievement laid open a large new territory for investigation, started a flood of new ideas, and thus paved the way for fresh conquests over ignorance'. The encouragement and influence which Manson gave to Ronald Ross, culminating in his demonstration that mosquitoes were vectors of malaria parasites, is now familiar history: but although Ross's discoveries were first made in India, his further application of this knowledge to parasitic disease profoundly affected the health of all tropical countries and Africa was one of the first to gain. In 1899, Ross visited Sierra Leone and not only identified the vector of human malaria there, but subsequently set out proposals for dealing with it. In 1901 he prepared a report on the main measures required to reform health conditions in West Africa. Later he was to visit Lagos in Nigeria and Accra in the (then) Gold Coast and other investigations were to follow. In 1909 that great pioneer of tropical hygiene, Sir William Simpson, visited various parts of West Africa to study the existing organization of the medical services, particularly from the public health aspect. His very full report showed that while curative medicine had made considerable strides as a result of newer knowledge, prevention of disease-especially as regards the great mass of indigenous people-had made little progress: 'the conditions that have changed', he wrote, 'belong to the individual rather than to the locality'.

The appearance of Mary Kingsley's book and Ross's investigations took place at about a period when a great step was taken in the organization of medical services in Africa and elsewhere. A far-sighted Colonial Secretary, Mr. Joseph Chamberlain, on the advice of Manson, addressed the General Medical Council and the principal British Medical Schools in 1888 with the proposal that medical officers appointed to tropical territories should have a special knowledge of tropical diseases. Ten years later in a despatch to all Governors of Colonies he advised that a special school for training in tropical medicine should be set up and that this subject should be taught on a wider scale in the principal medical schools in the United Kingdom. The London School of Tropical Medicine was founded in 1899: but it was not, in fact, the first, for a similar school had been established in Liverpool, earlier in the same year, not by government initiative but by the enthusiasm of a great captain of industry, Mr. (later Sir) Robert Jones, whose interests in the West Coast of Africa were considerable. The pattern of the present organization of medical services in Africa may be said to have taken shape in the establishment of an amalgamated West African Medical Service in 1902. Similar groupings were to follow: The East African Medical Services were amalgamated in 1903, though they separated later, but again achieved some closer union. The eventual logical step was the establishment of a Colonial Medical Service with appointments made in London, but with their own local administrations yet with a similar structure which varied according to their local requirements.

In East Africa, for example, although the pattern of development followed lines similar to those in West Africa, there were a number of differing local factors which required special approaches. In East Africa generally there were eventually many Asian immigrants, and numerous European settlers in highland areas, and thus the racial distribution differed from that in West Africa. In Kenya, the medical department was first organized in 1905, when control of the country passed to the Colonial Office, although there had been a few medical officers in the days of the Chartered Company. In Uganda, there was a Government Hospital in Kampala in 1908, but Mulago Hospital, opened as a general hospital in 1922, was to become eventually the now magnificent teaching hospital for the medical school of the East African University College in Makerere. Uganda was indeed early in the field of training African medical personnel. From an initial course of training in Mengo in 1917, there developed in time the medical school with full facilities

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for professional training which now exists. The ravages of sleeping sickness which plagued Uganda in the opening years of this century was a particular factor in stimulating a new attitude in the provision of health services for Africans. In some infected areas, as many as 200,000 persons died.

This resulted, among other awakenings, in a stimulus to the Royal Society to send commissions to study African sleeping sickness and one result of the heightened interest in this alarming disease was the foundation by the Colonial Office in 1908 of the Sleeping Sickness Bureau in London, formed to collect and distribute information on this disease. This organization was the forerunner of the Bureau of Hygiene and Tropical Diseases whose abstracting Bulletins are still a guiding light to current literature on tropical medicine and hygiene. The development of medicine and medical services in Tanganyika was a natural extension of the groundwork inherited from the former German East Africa. When the country became a Mandated Territory under British administration in 1923 medical services went ahead. The history of their development has been admirably related by Clyde. In Zanzibar, Nyasaland and the High Commission Territories of Basutoland, Bechuanaland and Swaziland, development took place slowly on the general pattern suited to their local conditions.

In South Africa, already with a long medical history, a Ministry of Public Health was established in 1919. Here, development of medical services which had been occurring steadily for more than two hundred years was naturally more sophisticated than that of its neighbours and it has progressed along western lines. The large factors of mining and of immigrant labour on a large scale from neighbouring countries posed, however, special problems of their own.

The medical problems of Southern Rhodesia were similar to those of the Union, though malaria was a greater problem. Northern Rhodesia (now Zambia) has had problems of sleeping sickness and the additional health questions posed by the large amount of labour in its copper mines. In 1948, Southern Rhodesia acquired a Minister of Health and the Medical Department was subdivided into curative and preventive services.

While Egypt and the Sudan no longer fall within the scope of this survey, their past contributions to the development of medicine in African countries of the Commonwealth have been considerable. A great deal of intensive work on tropical diseases, especially on schistosomiasis, has been carried out in these countries, much of it by Commonwealth workers in two world wars; and the contributions made by the Wellcome Tropical Research Laboratories in Khartoum, equipped by Henry Wellcome in 1902, and the training of Sudanese in the Kitchener School of Medicine founded in 1924 have been significant landmarks.

The pioneer work of such great figures as Balfour and Chalmers is well known. It would not be practicable within the compass of a single lecture-and it would in any case, be extremely boring to the listener-to list the detailed forms which medical developments took in the different countries. Basically, the ground structure was the same; a central administration, medical staff deployed on regional and district bases, with hospitals of varying grades, health centres, dispensaries and ancillary staff according to the needs and the resources of particular areas. In addition, there are general and specialized laboratories, and, in larger centres, research institutes, sleeping sickness organizations where these are required, mass campaigns against endemic diseases and-as in Nigeria-mobile units derived from these and now used as 'shock troops' for dealing with epidemics, surveillance and other activities. Today in the independent countries, the pattern tends to be that of Ministries of Health, rather than of the former Medical Departments.

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Most important are the training centres, which vary from full-scale medical schools, such as those in Ibadan in Nigeria, Makerere in Uganda, and the University of Rhodesia, to others training more specifically various grades of medical auxiliaries medical assistants with a broad training not up to graduate status, laboratory technicians, field assistants and various dispensers and 'Aides', all with a degree of knowledge sufficient to deal with the kind of problems which might be encountered at their level in the field. The emphasis on training today is on prevention and many campaigns are frequently sponsored by W.H.O., after which not only are the local staff encouraged to maintain the work themselves, but where possible the machinery is integrated into the general public health services.

It must not be thought, however, that medicine in Africa has developed solely from the efforts of the territorial administrations. Reference has already been made to the great work carried out by the medical missions. In addition, the increase in the industrial, agricultural, commercial, mining and other forms of development brought with it many companies and other agencies. Several of these have their own medical staff, some of them highly organized. Not only, therefore, is occupational hygiene finding its place in the new Africa, but these agencies have much to contribute to health in general both alone and in association with governmental enterprise.

To discuss the prevailing diseases of the African countries in the Commonwealth would be a story in itself. In any case most of the diseases commonly called tropical are present there as elsewhere, and perhaps the only truly indigenous one is African trypanosomiasis. It would not perhaps be out of place, however, to note that as the means of controlling these diseases improve and are extended, they will bring more into perspective the importance of the cosmopolitan diseases. These have always been there, less obtrusive perhaps because of the more specifically tropical conditions, but likely to be more so as the pattern of living changes. Cerebrospinal meningitis has been constantly present and has caused many serious epidemics, especially in West Africa, during the century. Measles is a prominent killing disease of African children. Tuberculosis is a major problem and despite modern advances in treatment and prevention these measures are commonly restricted or modified by logistics and cost, though some notable advances have been made. Venereal disease is widespread.

Occupational disease is likely to become more prominent as development advances. The wide studies and knowledge of virus diseases have served to uncover many infections which were hitherto not identified. For example, it is only in recent decades that the extent of poliomyelitis in Africa has been recognized. Of special interest is the recognition of increasing numbers of infections caused by arboviruses, some indeed having been identified originally in Africa. Two of these are of special interest. Chikungunya virus was first isolated as a result of a study of a dengue-like outbreak in Tanganyika in 1952. Now it is a well-recognized member of the arbovirus group and its incidence has been shown far afield, as in its association with haemorrhagic and dengue-like fevers in such countries as India and Thailand. O'Nyong-Nyong fever, also a dengue-like disease, was identified in Uganda in 1959. Of particular interest was a finding that it showed some interference with outbreaks of malaria and this phenomenon is being pursued.

A very topical subject, with an African history, is Burkitt's tumour, a lymphoma notably found in African children. It was given prominence by Burkitt in Uganda in the 1960s but has since been detected widely in many other countries, in various subjects and forms. Epidemiological studies showed a striking association between topographical, meteorological and other features and conditions favourable to mosquito breeding. This suggested a possible arbovirus aetiology and vigorous studies are being pursued, not only in Africa, but in many virus research institutes in Europe and the United States, on this aspect of the subject. The implications of these studies in the investigation of a possible role of viruses in

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the aetiology of cancer are enormous; and although a number of viruses have been isolated from Burkitt's tumours, none in fact has so far been incriminated as being causative. ·

What were the factors which influenced the course of medicine in Africa from the first gropings of the mid-nineteenth century to the vast developments in the twentieth? There were a number, at first sight unrelated, but to some degree overlapping and they weave between them an enlightening story of medico-social evolution. The central point of all this was the African himself, with his soil, his animals, his tribal mores, a whole environment which was engaged in a constant struggle with two formidable foes—poverty and parasites. Although Africa at the time never needed money for anything other than on market days because, trade by barter for every day requirements was normal.

Basically, there were certain operating factors. There was the more enlightened attitude of the Colonial Administrations. There was the co-operation of missionary, governmental and non-governmental agencies in the joint application of knowledge and resources. There was the opening up of trade, industry, commerce and communications and with it the provision of men, money and momentum to apply practical measures. There was a vast and rapid increase in scientific knowledge and research with the discovery of new drugs, antibiotics, insecticides and the application of public health engineering. There was the development of W.H.O. with its help and guidance. There was the effect of wars, especially two world wars, which influenced the application of practical medical measures, both for better and for worse. There was the impact of migration and urbanization, with all the consequent results of the breaking of tribal and family ties and the exposure to tuberculosis, venereal and other diseases of overcrowding. There was the achievement one by one, of national independence by African countries and of a new status and pattern of living. Above all there were two outstanding factors, the recognition of the over-riding importance of preventive rather than solely curative medicine and the education, particularly the health education, of the peoples themselves.

The South African war had produced a striking object lesson in the need for preventive medicine in the field. For some 7,000 men killed in action, for example, there were 57,000 affected by typhoid. The First World War broke out with a knowledge of tropical medicine already established on a sound basis: but there was still much to learn and a great stimulus was provided by the urgent necessity for protecting troops against disease in the field; and tropical medicine emerged enriched by its experience and triumphant in a newer knowledge which was soon applied to the problems of peace. The Second World War found the African countries better equipped for the formidable tasks which faced them; and while the civil medical departments were greatly depleted, they were constantly learning the new lessons which the various campaigns in different regions of Africa and elsewhere had taught them. The introduction of many synthetic antimalarials, drugs for use against sleeping sickness, schistosomiasis and other helminthic diseases and the use of sulphones for leprosy played a notable part. The development of D.D.T. and related insecticides, and later of organophosphorus and other types of insecticides, provided new weapons against the vectors of disease. Improved molluscicides strengthened the control of schistosomiasis. The development of a safe and effective yellow fever vaccine has had so striking an effect that yellow fever—once the scourge of Africa—is now a comparative rarity there.

Antibiotics, curative in so many diseases, reduced the incidence of yaws to a manageable proportion in many areas. But these 'wonder drugs' and pesticides were soon to show their limitations. Resistance of parasites and vectors developed in a number of areas, but fortunately many of these drugs and pesticides were replaced by newer discoveries. The application of the newer measures was, furthermore, beset by formidable difficulties, logistic, sociological and financial, so that the general eradication of insect-borne disease in rural areas of Africa is not yet in sight.

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Meanwhile, the human element, as one might expect, dominated much of the scene. Industrialization and urbanization, already referred to, played an increasing part. The rapid development of the great mining areas in Kimberley and the Rand had brought workers from many parts of Africa. Other developments in West and East Africa brought their own problems. The copper mines in Zambia needed measures to combat occupational disease. Fortunately, where mining activities were adequately controlled, such organizations as the Silicosis Bureau and the arrangements for regular examination of labourers dealt adequately with such occupational diseases and their consequences and they have been reduced to appreciably low proportions.

Soon after World War II the drive for independence in the African countries took on a new momentum. When these countries achieved their independence one by one, they were left with a great legacy of highly efficient medical and public health organization, built on the western pattern and with the machinery ready to take over. But machinery is not enough: once again the human element is paramount. All those in the medical services, expatriate and indigenous, had been largely trained in the ways of western medicine: but few had been trained to the quite specific needs of medicine in Africa, their priorities and the best ways in which to apply them. It became apparent and much recent writing has supported this-that much training for medicine in Africa should be carried out in Africa and that until education is much more widespread the number of conventionally trained doctors cannot hope to deal single handed with the vast health problems of rural Africa. The standards of medical qualification must not be reduced: but the emphasis needs to be put on the specific problems to be faced in rural Africa. Much groundwork remains to be done in health education, by 'selling' to the people the needs for health and above all to show them how to apply the basic measures themselves. Much of this can best be done in the field through the influence of Africans themselves, who can translate the concepts of modern science in terms which their people can understand; and this should be encouraged throughout the social scale from the Medical Officer of Health to the Village Headman. Fortunately, in many countries facilities for training are being developed in increasing numbers.

Meanwhile, the goal must be the eventual application of full scientific measures, the increasing education of fully qualified doctors, adapted where necessary to local needs, but with the use of every discipline which modern science has to offer: and this implies not just medical science but sociology, psychology and all those approaches necessary to meet in a humanitarian way the cultural needs of the people concerned. The first priority is not for expensive equipment: it is for enlightened doctors. Fortunately, research is not lacking and indeed in many parts of Africa has reached a high state of maturity. One can but look, for example, at such agencies originally formed, as the East and West African Councils for Medical Research, the East African Medical Survey, the East African Tsetse and Trypanosomiasis Research and Reclamation Organization, the Viral Research Institutes in Entebbe and Lagos, the West African Institute for Trypanosomiasis Research and numerous other institutions, committees and research laboratories either former or existing. Many pilot schemes on the control of diseases in various parts of Africa have pointed the way to wider measures.

The many developments medicine in Africa have achieved some remarkable results and indeed some of the projects undertaken are themselves classics in the history of tropical health. A few examples may give some indication of the compass of some of these undertakings. One was the introduction of sleeping sickness settlements in East Africa associated so closely with the name of George MacLean, though it eventually involved a tremendous combined operation of many disciplines and agencies. The basic concept was that in bush country infested with tsetse flies in Tanganyika where *Trypanosoma rhodesiense* infection occurred there were some natural clearings unattractive to the fly and with relatively small populations.

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The purpose of the scheme was to enlarge those areas and to transfer to those new clearings people from villages in bush areas which were infested with tsetse flies. This meant a complete change of their way of life and the development of a new environment which would embrace all the necessities for the growth of self-supporting communities. This was resettlement on a vast scale, with provision of water supplies, dwellings, farm animals and the development of crops. Whole communities were thus separated from tsetse flies and hence from infection with sleeping sickness. A similar system was also applied in country of a different kind such as that adjacent to rivers and lakes where *T. gambiense* was the parasite, and various methods of approach were carried out in other parts of East and West Africa.

In West Africa a system of selective clearing was introduced, and it was in Nigeria that a classical undertaking was made in resettlement and formation of thriving communities in an area heavily infected with *T. gambiense* sleeping sickness. This was in the Anchau area where a scheme was undertaken to control the vector flies in a corridor of some 70 x 10 miles.<sup>t</sup> This ultimately resulted in the disappearance of trypanosomiasis in man and animals and the people themselves maintained the area which they had cleared.

Both of these enterprises called for closely planned and executed operations not only by the medical department, but by administrative, veterinary and agricultural departments. This underlines what cannot be repeated too often regarding public health advances in Africa, namely that it is not just a departmental problem, but one which involves close consultation and activity between all the agencies and disciplines which contribute to the full development of the African in his environment.

Brief reference may be made to two other projects which illustrate the need to foresee the implications for community health in the undertaking of large-scale industrial schemes in Africa and the hazards of man-made obstacles to health. The Volta River hydro-electric scheme in Ghana posed many problems, not the least of which was the settlement and protection of people from disease resulting from flood. Measures had to be taken to deal with such conditions as malaria, ankylostomiasis, and schistosomiasis, and this involved careful planning and execution by the health authorities. The construction of the Kariba Dam in the Zambesi Valley raised comparable problems and a comprehensive medical organization was developed to deal with them. Detailed accounts of these approaches have been written and would repay reading.

It is clear from the foregoing that clinical medicine, while it must always have its proper compassionate place in relieving individual suffering in Africa, should develop hand in hand with increasing preventive efforts. It is curious that in western countries the greatest advances in therapeutics have occurred in the last half century, while preventive medicine was already taking shape in the Victorian era. In tropical Africa the position was, in a sense, reversed. The first gropings after the control of tropical diseases were based on the use of such drugs and empiric treatments as were available, but the concept of prevention had to await the newer knowledge of transmission of disease and of its control. It is true that the prophylactic use of some of the newer drugs may be the only means, by reason of limited communications, men and money, for mass prevention of a number of diseases in rural areas of Africa. But in others wider preventive measures, whether against diseases, vectors or ignorance, are the means in which increasing hope must be placed in the future.

In the development of medicine in Africa from scientific ignorance to organized community health the groundwork is sound and the pattern clear and flexible enough to be adapted to various local needs: yet it must be repeated that however well organized the practical measures, the future must depend on increasing education of the people themselves. The problems are basically African problems and their solutions must ultimately rest with trained Africans at increasing levels of general, health and medical

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education. For some time to come many developing countries will need expert outside help and guidance in solving their medical problems. Such is already available through links with some British universities and other institutions who second staff to the needy countries, and by fellowships and other forms of aid enabling experts to spend periods in some of the former British African Territories to help in ad hoc projects or in an advisory capacity. In time, the Africans will take over completely themselves; but whatever form their medical facilities may take, the objectives will be the same-to pursue war on what President Nyerere of Tanzania succinctly described as 'poverty, ignorance and disease?' so that the peoples of Africa may be capable of leading full and healthy lives, free from the hazards which decimated their forefathers and many of those, too, who went to Africa to help them. To this objective Commonwealth Medicine has been proud to contribute in the past and is proud to continue to contribute in the interim in that tradition so well summarized in the motto of the Royal Society of Tropical Medicine and Hygiene, *Zonae torridae tutamen*.

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### 1.2.1 Mesopotamian <sup>c</sup>

Medicine in Assyria and Babylonia was influenced by demonology and magical practices. Surprisingly accurate terra-cotta models of the liver, then considered the seat of the soul, indicate the importance attached to the study of that organ in determining the intentions of the gods. Dreams also were studied to learn the gods' intentions.

While magic played a role in healing, surviving cuneiform tablets indicate a surprisingly empirical approach to some diseases. The tablets present an extensive series of medical case histories, indicating a large number of medical remedies were used in Mesopotamia, including more than 500 drugs made from plants, trees, roots, seeds, and minerals. Emollient enemas were given to reduce inflammation; massage was performed to ease gastric pain; the need for rest and quiet was stressed for some diseases; and some attention was paid to diet. Water was regarded as particularly important, since it was the sacred element of the god Ea, the chief among the numerous healing gods. The serpent Sachan was also venerated as a medical deity.

### 1.2.2 Israeli/ Palestinian <sup>c</sup>

Hebrew medicine was mostly influenced by contact with Mesopotamian medicine during the Assyrian and Babylonian captivities. Disease was considered evidence of the wrath of God. The priesthood acquired the responsibility for compiling hygienic regulations, and the status of the midwife as an assistant in childbirth was clearly defined. Although the Old Testament contains a few references to diseases caused by the intrusion of spirits, the tone of biblical medicine is modern in its marked emphasis on preventing disease. The Book of Leviticus includes precise instructions on such varied subjects as feminine hygiene, segregation of the sick, and cleaning of materials capable of harboring and transmitting disease. Although circumcision, the surgical removal of the foreskin on the male's penis, is the only surgical procedure clearly described in the Bible, common medical practices include wounds dressed with oil, wine, and balsam. The leprosy so frequently mentioned in the Bible is now believed to have embraced many skin diseases, including psoriasis.

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### 1.2.2.1 Thalassotherapy<sup>w</sup>

Thalassotherapy (from the Greek word thalassa, meaning "sea") is the use of seawater as a form of therapy. It also includes the systematic use of sea products and shore climate. There is no scientific evidence that thalassotherapy is effective.

Some claims are made that thalassotherapy was developed in seaside towns in Brittany, France during the 19th century. A particularly prominent practitioner from this era was Dr. Richard Russell, whose efforts have been credited with playing a role in the populist "sea side mania of the second half of the eighteenth century", although broader social movements were also at play. In Póvoa de Varzim, Portugal, an area believed to have high concentrations of iodine due to kelp forests, and subject to sea fog, the practice is in historical records since 1725 and was started by Benedictine monks; it expanded to farmers shortly after. In the 19th century, heated saltwater public baths opened and became especially popular with higher classes.

Others claim that the practice of thalassotherapy is older: "The origins of thermal baths and related treatments can be traced back to remote antiquity. Romans were firm believers in the virtues of thermalism and thalassotherapy.

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### 1.2.3 Chinese Medicine <sup>m</sup>

The earliest Chinese medicine, in common with most other ancient civilizations, assumed disease and illness were caused by the gods or by demons. The correct remedies for illness involved ritual exorcisms and appeals to the Gods.

A more naturalistic explanation of illness developed with the belief in Yin and Yang. The Yin and Yang principles were considered to control everything and their interaction controlled the functioning of the human body. Yin was feminine, soft, cold, moist, receptive, dark, and associated with water, while Yang was masculine, dry, hot, creative, bright, and associated with fire. Human health depended on a balance between Yin and Yang. Further factors effecting disease were wind, rain, twilight and brightness of day so there was a total of six disease making influences. Any of these six influences could upset the balance of Qi, which was a vital spirit similar to breath or air, which existed throughout the human body.

Chinese knowledge of anatomy was very limited due to a strict prohibition on the dissection of the human body. Chinese belief concerning the inner organs was largely erroneous. They believed there were five “firm” organs that acted as receiving organs and lay opposite five “hollow” organs who served the purpose of evacuation. The firm organs were the heart, spleen, lungs, liver and kidneys. The heart was considered to be the place of wisdom and judgment while the liver and the lungs were associated with the soul. The male’s right kidney was seen as the source of sperm and its connection with the passage of urine was not understood. The hollow organs were the bladder, gall bladder, colon, small intestine and the stomach.

Chinese doctors attempted to make a diagnosis by studying the state of the pulse. This practice known as sphygmology involved attempting to recognize some very subtle variations in the pulse. There were considered to be 51 different varieties of pulse which were to be taken in 11 different areas of the body. Chinese doctors were attempting to obtain far more information from the pulse, than it could possibly provide.

Acupuncture, aimed to restore the balance of Yin and Yang, and involved inserting needles into particular parts of the body. There were 388 areas of the body into which the needles could be inserted and they needed to be inserted at the correct time, based upon the weather, the time of day and the phases of the moon. The needles were left in anything from five to fifteen minutes. Acupuncture does appear to be effective for pain relief as the needles seem to make the body produce endorphins, the body’s own natural painkillers. Claims have been made that acupuncture can cure many diseases including muscle, bone, respiratory and digestive disorders. A further Chinese treatment was Moxa which involved inflicting a slight burn on the skin. It was considered to be a treatment for a vast range of complaints such as diarrhoea, abdominal pains, anaemia, vertigo, nose bleeding, gout, toothaches and headaches.

#### 1.2.3.1 Traditional Chinese Medicine - an Overview <sup>p</sup>

Background: Traditional Chinese medicine, which is the basis of the Chinese culture heritage, has a long history of 5000 years and it has significantly contributed to the survival of their nation and its prosperity. Over time, various theories have been systematized and developed in order to maintain and improve the health of the Chinese population. Objective: The objectives of the paper are: a) to present the historical development of traditional Chinese medicine, b) to explain the basic principles on which traditional Chinese medicine is based on and c) the basic methods of treatment and most common herbal remedies used in traditional Chinese medicine. Methods: The paper is of descriptive nature, and numerous and informative literature was used for its writing, mainly texts from books and articles published in indexed journals retrieved from the world online databases. Results and Discussion: The first records of traditional

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Chinese medicine date back to the Huang Di period, and the first record is from a book called NeiJing and it represents the theoretical foundation of traditional Chinese medicine.

Over thousands of years, progress has been made in this area and numerous dynasties have invested resources and knowledge to maintain and develop it. The Han Dynasty and the Tang Dynasty produced some of the best physicians and connoisseurs of traditional medicine, and the Ming Dynasty contributed perhaps most of all. Immediately after the end of the Opium Wars, the Western world evaluated traditional Chinese medicine as a feudal and scientifically unproven method. Since then, the Chinese authorities have focused on preserving the integrity of their traditional medicine, and at the end of the 20th century, the World Health Organization accepted traditional Chinese medicine as a scientifically based method of treatment and gave it the name Complementary Medicine. The theory of Chinese traditional medicine is based on several principles: qi theory, the concept of yin-yang, the theory of the five elements, the concept of zang-fu organs, and the theory of meridians and parallels. Conclusion: Traditional Chinese medicine has made a significant contribution to the development of modern medicine during its long history, as well as one of its most difficult and complicated aspects the acupuncture, which requires extensive knowledge of all concepts of traditional Chinese medicine and perfect precision.

### 1. BACKGROUND

History is full of mythology in the case of the Three Kings of Heaven who are revered as the founders of Chinese civilization. Fu Hsi, for who is believed to have ruled 2000 years before Christ, is the legendary founder of the first Chinese dynasty. His most important inventions included writing, painting, music, original mythical trigrams, and the yin-yang concept. Both the Ching or Rule of Change that is respected as one of the oldest Chinese books has been attributed to Fu Hsi.

The invention of key agricultural and farming techniques has been attributed to Shen Nung, another Heavenly Emperor. When the emperor, who is also known as the Divine Peasant, saw that his people were suffering from disease and poisoning he taught them to sow five kinds of grain and he personally studied thousands of plants so that people know which are medicinal and which are poisonous. In his experiments with poisons and antidotes, Shen Nung tried as many as seventy different poisons in one day. After collecting many drugs in the first major study of herbal medicine and after presenting a magnificent example of selfless devotion to medical research, Shen Nung died after a failed experiment. During a century of rule, Huang Ti, the last of the three legendary Heavenly Emperors, gave his people a wheel, a magnet, an observatory, a calendar, the art of measuring heart rate, and the Huang-ti Nei Ching (Yellow Emperor's Canon of Internal Medicine) —a text that inspired and guided Chinese medical thought over 2500 years. Like many ancient texts, the Nei Ching has been corrupted over the centuries with additions, cutouts, and typographical errors. Scholars agree that the existing text is very old, perhaps even dating back to the first century BC, but the time of its compilation is polemical.

Most historians believe that the existing text was composed at the beginning of the T'ang dynasty (618-907). Other medical texts have once overshadowed it but most of the classics of Chinese medicine can be considered an interpretation, commentary, and supplement to the Yellow Emperor's Code (CANON). Although the Inner Canon is appraised as one of the oldest and most influential texts of classical Chinese medicine, studies of medical manuscripts that were buried with their owners, probably during the second century BC, and found in Mawangda, Hunan in the 1970s provided a new insight into early Chinese medical thought. As the newly discovered texts are analyzed, scholars are beginning to understand the philosophical foundations of Chinese medicine and the ways in which educated physicians from the fourth to the first century BC managed to distance themselves from shamans and other folk healers. Physicians were apparently still researching approaches in psychology, pathology, and therapy that differed from

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those found in the Inner Canon (text). Therapists in older texts included medical drugs, exorcism, magical and religious techniques, and surgical procedures, but acupuncture, the main therapeutic technique in the Inner Canon, is not described in the Mawangdui manuscripts.

### 2. OBJECTIVE

The objectives of the paper are: a) to present the historical development of traditional Chinese medicine, b) to explain the basic principles on which traditional Chinese medicine is based on and c) the basic methods of treatment and most common herbal remedies used in traditional Chinese medicine.

### 3. METHODS

To write this paper, we used the scientific literature from articles that are stored in scientific databases and available by the Internet, and represent a reliable source.

Books stored in libraries in the Sarajevo Canton were also used as a source for writing the article, most of which were found in the National and University Library in Sarajevo.

Among them are books: Liu Z, Liu L. Essentials of Chinese medicine. Vol. 1. Springer. 2009; Lloyd J. U. Origin and history of all the pharmacopeial vegetable drugs, chemicals and preparations with bibliography. Read Books; 2008;

Gurley B, Wang P, Gardner S. Ephedrine-type alkaloid content of nutritional supplements containing Ephedra sinica (Ma-huang) as determined by high performance liquid chromatography. J Pharm Sci 1998; 87: 1547-1553. Used articles are quite recent and have been published in indexed journals, which means that their content is verified and reliable. In order to write a part of the paper on medicinal plants that traditionally originate from China, these books were used: Kovačević N., entitled "Fundamentals of Pharmacognosy" and the book "History of Medicine" by Magner LN. which is stored in the library of pharmaceutical company Bosnalijek Sarajevo. The book is of high quality and it offers a variety of content on the development of medicine and pharmacy over their long history.

This paper also contains numerous illustrations that complement the quality presentation of Traditional Chinese Medicine and their sources are cited in the legends below the figures (1-22).

### 4. RESULTS

The history of traditional Chinese medicine

The first records on Traditional Chinese Medicine (TCM) date back to 5000 years ago. The TCM encompasses Han medicine, as well as the theories and practices of various national minorities from China such as Miao, Dai, Mongols and Tibetans. The first records of TCM appear from the period 2698-2598 BC, during the era of Huangdi or the Yellow Emperor. However, the duties and responsibilities of physicians were defined only later, in 1122



Figure 1. Bian Que—the oldest known physician from the area of today’s China and author of the Bian Que Neijing book dedicated to traditional Chinese medicine Available at: [https://upload.wikimedia.org/wikipedia/commons/e/e0/Chinese\\_woodcut%2C\\_Famous\\_medical\\_figures%3B\\_Portrait\\_of\\_Bian\\_QUE\\_Wellcome\\_L0039317.jpg](https://upload.wikimedia.org/wikipedia/commons/e/e0/Chinese_woodcut%2C_Famous_medical_figures%3B_Portrait_of_Bian_QUE_Wellcome_L0039317.jpg).

Accessed: March 9, 2017.

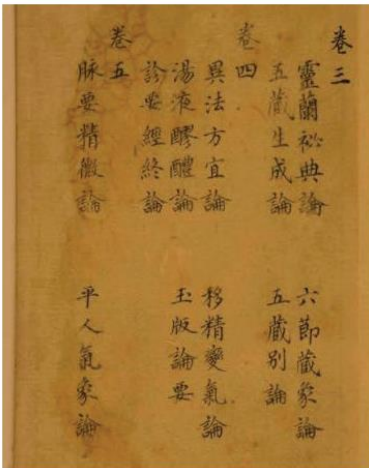


Figure 2. Paragraph from The Neijing, first part (Su Wen). Available at: [https://en.wikipedia.org/w/index.php?title=File:The\\_Su\\_Wen\\_of\\_the\\_Huangdi\\_Neijing.djvu&page=3](https://en.wikipedia.org/w/index.php?title=File:The_Su_Wen_of_the_Huangdi_Neijing.djvu&page=3)

Accessed: March 9, 2017.

BC, during the Zhou dynasty. At the time, every large estate had its own physician, and it was characteristic that physicians were paid when the householders were healthy, not when they would get ill. Thus, the primary concern of physicians was maintaining health and preventing disease, not treatment. TCM is the oldest continuously practiced, scientific medical system in the world. It certainly should not be classified as a term of folk medicine, nor quackery, because TCM is a complex and precise health care system created from the efforts of great Chinese minds to understand the secrets of the functioning of the human body (3). In its beginnings, TCM was a practical and effective art based on observations and experience

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with the application of philosophical principles such as Yin and Yang or wu-xing (the theory of the five elements).

The basic thinking was that health can be maintained if there is a balance of the human body with the inner spirit and the outer environment. For this reason, diagnosis and treatment were based on finding of disbalance and its return to normal state.

One of the oldest physicians is Bian Que (Figure 1) or Qin Yueren of Hebei Province who lived in 500 BC. He was known as an excellent diagnostician with excellent pulse examination and acupuncture therapy skills. According to historical records, he is the author of the Bian Que Neijing book used during the Han Dynasty. Unfortunately, the book wasn't preserved.

However, the publication of The Neijing (Canon of Internal Medicine of the Yellow Emperor) is the most significant book on TCM, which established the theoretical foundations of the medical system itself and philosophical theory. The writing of this book took hundreds of years, all the way from 770 to 221 BC. Astronomical and geographical observations, as well as theories about the existence of the human being, medicine, science, culture and philosophy can be found in the book. The book consists of two parts: Su Wen and Ling Shu. The first part of the book deals with the general principles of health and standard methods of diagnosis and treatment, and the second part is more specialist-oriented on the art of acupuncture and moxibustion (Figure 2).

The Han dynasty (206 BC to 220 AD) is considered one of the most important dynasties for the development of TCM and was marked by physicians such as Zhang Zhongjing and Hua Tuo.

Hua Tuo (Figure 3) was born in Anhui Province and is one of the most famous physicians of ancient China and one of the first known surgeons in China. Hua Tuo is known for being the first to invent anesthesia and deepen his knowledge of human anatomy. Practicing acupuncture and herbal remedies, he used simple methods using a small number of acupuncture points and prepared herbal remedies with simple herbal formulas. He was a practitioner of Qi Gong and invented the theory of five animals that is still used today (tiger, deer, bear, monkey and crane).

Even as a child, Hua Tuo lost his father and had to find a job. The fate was such that he was employed in a local herbal pharmacy. While working there, he carefully observed the practice of the physicians at the time. At a time when Hua Tuo was growing up, there was turbulent political turmoil and constant fighting. He was not a member of the army or an elite citizen, but he was spending time with the poor and dedicated his life to helping them, so he was also known as the "folk physician". He soon became very famous, but despite the offer to become the king's personal physician, he refused the offer. Hua Tuo was known that if the cause of the disease could not be removed with acupuncture or herbs, the only solution was to surgically remove the cause.

It is documented that Hua Tuo used the Figure 2. Paragraph from The Neijing, first part (Su Wen). Available at: [https://en.wikipedia.org/w/index.php?title=File:The\\_Su\\_Wen\\_of\\_the\\_Huangdi\\_Neijing.djvu&page=3](https://en.wikipedia.org/w/index.php?title=File:The_Su_Wen_of_the_Huangdi_Neijing.djvu&page=3) Accessed: March 9, 2017.



Figure 3. Hua Tuo and illustration of performing a surgery on a patient.

Available at: <http://www.acupuncturetoday.com/mpacms/at/article.php?id=31781>.

Accessed: March 11, 2017.

so-called Ma Fei San herbal formula in patients which had the effects of anesthesia and then performed surgery. One of the problems Hua Tuo noticed was that there were always a lot of sick people, more than he could cure. Therefore, he devised the Wu Qin Xi theory (the theory of five animals) which basically provided instructions on physical exercises, and which imitated the movements of a tiger, deer, monkey, bear, and crane. Unfortunately, as with most geniuses and influential historical figures, Hua Tuo ended his life in prison with the death penalty. Cao Cao, the ruler of the Wei kingdom, had severe headaches, presumably a migraine, which Hua Tuo first cured with simple acupuncture. However, Hua Tuo refused to stay in the castle and returned to his sick wife and people. Not long after, Cao Cao brought him back to his court and forbade him to leave it. The problem was that it was no longer possible to cure migraines with herbs or acupuncture, so Hua Tuo suggested surgery and surgical removal of the cause. Cao Cao considered it an attempted murder and sentenced him to death. During his captivity, he transferred all his knowledge to paper, but the guards did not want to preserve his works, so it was all lost along with him.

On the other hand, Zhang Zhongjing (Figure 4) is the most famous physician of all time in China and is considered a holy figure in medicine, something like Hippocrates in Western medicine. He wrote a work called Shang Han Za Bing Lun (treatment of febrile illnesses and various diseases) which contained over 100 effective formulas that are still used today. Zhang introduced such a system that the treatment was carried out on the basis of the differentiation of the syndrome in the patients.



Figure 4. Zhang Zhongjing – Chinese ancient doctor who is considered the most important physician from the ancient era (150 – 219 AD). Available at:

<https://www.britannica.com/biography/Zhang-Zhongjing>.

Accessed: March 11, 2017.

Unfortunately, due to various political turmoil and numerous battles, very little historical data about his life has been preserved.

Not long after, during the Jin-Yuan dynasty, the theories of TCM were further developed and advanced with the establishment of four branches of TCM. Liu Wansu found the so-called cooling school where the basic principle was treatment with herbs that cause a feeling of cooling in patients. Zhang Zhihe found a school of “attack” based on the use of diaphoretics, emetics and purgatives to attack pathogens and expel them from the body. Li Dongyuan advocated a theory that focused on all diseases being caused by damage to the stomach/spleen, most commonly caused by uncoordinated eating, drinking, work, or seven excessive emotions. Ultimately, Zhu Danxi was a devotee of preparing various tonics, especially those that cleansed the kidneys and liver. He believed that people get sick because they enjoy the pleasures and immoral things in this world too much which would upset the balance of yin.

The greatest success and development of TCM was experienced during the Ming Dynasty (1368-1644), culminating in the publication of the Compendium of Material Medica (Figure 5) by Li Shizhen. Li Shizhen dedicated himself to gathering the most important and credible medical experiences over 30 years and singled out a total of 1,094 herbal medicines, 443 animal medicines and 354 mineral medicines. For each drug, an adequate name, source, form and medical history were prescribed, as well as the manner in which it was collected, prepared, stored and dosed.

The basics of Traditional Chinese Medicine Modern TCM theory has emerged from the naturalistic philosophies of ancient China with special influences of experiences that have accumulated through generations and generations. TCM may seem outdated and charlatan today, but it is a complete, integrated method of interpreting human physiology and pathological changes in the body. The most important concepts of TCM are qi, yinyang and the theory of the five elements (wuxing). Theoretical concepts of specific TCM include the doctrine of zheng ti guang nian, the concepts of viscera and



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compassion (zangfu xue shuo), channels and networks (jingluo), bodily substances (qi, blood, essence and body fluids qi xue jing jinye) and pathological agents (bing yin). All these theories, together with the methodologies of the four methods (si zhen) and basic discrimination (bian zheng) form the theoretical basis of TCM. Each of the therapeutic methods of TCM, such as acupuncture and moxibustion (zhenjiu), Chinese herbology (zhongyao fang), and Chinese therapeutic massage (zhongyi tuina) are based on the above mentioned theoretical foundations.

Concept of Qi theory The basic concept of qi theory is that qi is the basic substance from which the entire universe is built and that all objects in the universe are born by the transformation of qi. Ancient philosophers argued that qi could exist in two states: dispersion and condensation, and these two states

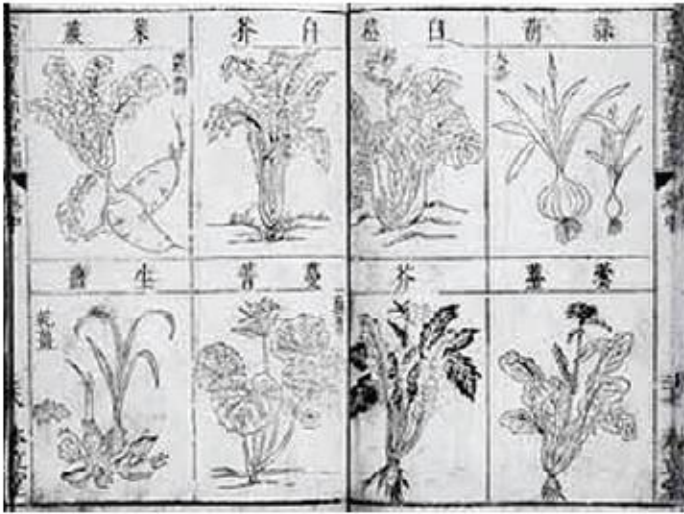


Figure 5. Fragment from the book Compendium of Material Medica which was written by Li Shizhen. Available at: <https://commons.wikimedia.org/wiki/>

File: Compendium\_of\_Materia\_Medica\_2.jpg.

Accessed: March 12, 2017.

of qi determine two modes of perception in human: one having a form and one without a form. When qi is in a state of dispersion then we speak about a state without form. It is a state that does not occupy any limited space and does not possess a definite and stable form. In contrast, when it is in a state of condensation then it possesses its own form or shape. In this state it can occupy a limited space and possess the final and stable form of any of the objects. The most interesting thing is that qi can pass from one state to another to infinity. From a medical point of view, qi is a substance that permeates the human body and they together form one whole. Chi is considered the basic substance of the human body and once it is in a dispersed state—the body dies. Something in line with the yin-yang theory, which will be explained later, there are two types of qi—Yang qi and Yin qi. Yang qi is described as lightness, purity, activity and warmth, while Yin qi is just the opposite. Therefore, the celestial vault is composed of Yang Chi, while the earth is formed of Yin Chi, and their combination and unification created all living and non-living matter on Earth, including humans, animals and plants. The fact that every living matter in the world is different from each other is the result of a different combination of the two types of qi.

According to the qi concept, there are two types of change in the universe. One type of change is quantitative and it is difficult to notice and occurs gradually and is only measured quantitatively, not qualitatively. The second change is qualitative and it occurs when the quantitative change has reached its

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maximum and then there is a transmutation of one thing into another. All of this can be related to TCM because it combines the effects of seasonal changes on the vital activities of the human body.

In addition, TCM attaches great importance to the diversity and specificity of geographical locations and orientations, which is in line with one of the most difficult relationships to explain, and that is the relationship between space and time and the principles of dynamic change in the universe.

The concept of Yin-Yang According to ancient Chinese philosophy, yin and yang represent two essentially opposite categories. At first, their understanding was simple, describing the turning of the face or back to sunlight. It was later introduced into the theory that yin and yang refer to almost all imaginable opposites, such as time, position, side of the world, state, etc. Ancient Chinese philosophers wisely observed that for every phenomenon there are two opposing aspects with each other. Thus, yang is represented by phenomena such as speech, active state, external, upper, warm, light, while yin is associated with opposite phenomena: silence, inactive state, internal, lower, cold, dark (Figure 6).

Yin and yang theory have four fundamental foundations, known as the four relations of yin yang:

- opposition,
- interdependence and coherence,
- intermediate consumption and support and
- intertransformation.

As already stated, yin yang theory is used to describe a universal qualitative standard. One of the basic aspects is certainly yin which exists as the very opposite of yang. Heaven and earth, sun and moon, night and day, inside and outside are manifestations of the dual intrinsics of the universe.

In the context of medicine, the upper body is yang, and it is related to the lower body which is yin. However, the front of the body is yin, while the back of the body is yang. Likewise, the medial part of the body is yin and the lateral part is yang. Most importantly, the inner part of the body represents yin, while the outer part is yang. Inside the yin, or inside the body, there are so-called zang organs (called viscera) and which are considered solid and belong to yin, while fu organs belong to yang. Diseases that manifest with symptoms such as fever or excessive metabolic activity belong to yang, while the opposite is yin. The fast and short pulse is yang, while the slow and long pulse is yin (Table 1).

Since yin and yang form one whole, they are also interdependent. The whole is defined by the existence of two opposites such as fire and water, hot and cold, interior and exterior. In the field of medicine this can be seen in the relationship of structure and function. The structure is in any case yin, while the function is yang. A sufficient amount of the substance (structure) in the form of, for example, body fluid, healthy tissue, etc., enables the normal function of the organism. Only when the process is functional can adequate recovery occur and such a balance between structure and function is the basis of healthy

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|                        |                         |
|------------------------|-------------------------|
| Yin                    | Yang                    |
| Water                  | Fire                    |
| Cold                   | Hot                     |
| Inside                 | Outside                 |
| Slow                   | Fast                    |
| Passive                | Active                  |
| Stillness              | Motion                  |
| Downward motion        | Upward motion           |
| Inward motion          | Outward motion          |
| Dark                   | Bright                  |
| Inhibition             | Excitation              |
| Weakness               | Strength                |
| Hypoactivity           | Hyperactivity           |
| Structure              | Function                |
| Internal organs        | Body surface            |
| <i>Zang</i> organs     | <i>Fu</i> organs        |
| Lower body parts       | Upper body parts        |
| Front part of the body | Back part of the body   |
| Medial aspect of limbs | Lateral aspect of limbs |
| Right side             | Left side               |
| Qi                     | Blood                   |

Table 1. Basics of yin yang opposites that are used in Traditional Chinese Medicine

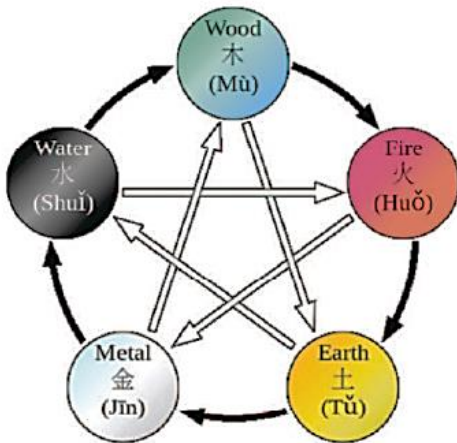


Figure 7. Five primary elements in Traditional Chinese Medicine and their connection.

Available at:

[http://www.springer.com/cda/content/document/cda\\_downloaddocument/9781461452744-c1.pdf?SGWID=0-0-45-1415302-p174674052](http://www.springer.com/cda/content/document/cda_downloaddocument/9781461452744-c1.pdf?SGWID=0-0-45-1415302-p174674052).

Accessed: March 18, 2017.

functional activity. Interaction and connection are another aspect of yin yang. There is no phenomenon, event or situation that can be described as complete yin or complete yang. Every phenomenon in the universe has yin and yang aspects, depending on the angle from which the situation is viewed. For example, day is considered yang when compared to night, but the first hours of the day (before noon) are yang compared to the hours after noon, which are yin.

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So, in China it is said that morning is yang with yang, and afternoon is yin with yang. Every phenomenon can be brought to infinity in this manner.

Inter-consumption and support are also an integral part of yin yang. Growth, development and progress in one aspect means setback in another aspect. Under normal circumstances, consumption/support occurs within certain limits. In the context of physiology, this phenomenon may be associated with homeostasis. Exceeding these limits results in organ dysfunction and disease. If yang disorder occurs, e.g., increased metabolic activity, yin resources are consumed. Conversely, aging (yin) can lead to a drastic reduction in bodily functions (yang). In pathological terms, all diseases have four causes: yang or yin excess, yang or yin deficiency.

Another characteristic is intertransformation. From a medical point of view, this can happen in two ways: harmoniously, as a natural course of development, aging and death, or inconsistently due to drastic changes in the environment or internal imbalance. Thus, Chinese physicians claimed that when yin is extremely pronounced, at some point it will turn into yang. Such a case can be seen when high fever (yang disorder) leads to shock and the onset of hypothermia and loss of consciousness, which in turn are yin symptoms.

### Theory of five elements (wuxing)

The theory of the five elements/phases establishes such a system of correspondence that all phenomena in the universe can be classified into five categories. The categories represent a tendency to move and transform in the universe and are related to natural phenomena such as wood (mu), fire (huo), earth (tu), metal (yin) and water (shui). A constant correlation between them is used to explain changes in nature (Figure 7).

Each of the categories/elements represents a category of certain functions and qualities. The wood is associated with spring, flowering, growth, awakening, morning, childhood, anger and wind. Fire, on the other hand, is associated with summer and represents a state of maximum activity, accelerated growth, noon, excessive happiness and an open flame. The earth is associated with the end of summer, i.e. the transition to autumn. It represents balance and equilibrium, early afternoon, refreshment, anxiety and moisture. The metal is associated with autumn, reduced functions, movement towards crystallization, clarity, sadness and no precipitation. As for water, it is related to winter, state of decay, accumulation, rest, night and possible development of new potential, concentration of will and fear and cold. This categorization can be applied in China to colors, sounds, smells, tastes, emotions, animals, planets, and almost everything in the universe (Table 2).

All five elements are interconnected by fixed connections.

There are two connections between them, and they are sheng and ke connections. Both connections are natural and necessary. Sheng is an incentive, and ke is a control.

Sheng is a connection where one element gives rise to another. Thus, for example, wood stimulates fire, and fire stimulates earth, earth stimulates metal and metal stimulates water, while water stimulates wood. The circle is

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|            |          |                 |             |            |         |
|------------|----------|-----------------|-------------|------------|---------|
|            | Wood     | Fire            | Earth       | Metal      | Water   |
| Direction  | East     | South           | Center      | West       | North   |
| Season     | Spring   | Summer          | Late summer | Autumn     | Winter  |
| Climate    | Windy    | Hot             | Humid       | Dry        | Cold    |
| Planet     | Jupiter  | Mars            | Saturn      | Venus      | Mercury |
| Number     | 3+5=8    | 2+5=7           | 5           | 4+5=9      | 1+5=6   |
| Meat       | Chicken  | Goat            | Veal        | Horse      | Pork    |
| Sound      | Jiao     | Zheng           | Gong        | Shang      | Yu      |
| Music note | C        | D               | E           | G          | A       |
| Color      | Green    | Red             | Yellow      | White      | Black   |
| Organ      | Liver    | Heart           | Spleen      | Lungs      | Kidney  |
| Viscera    | Bladder  | Small intestine | Abdomen     | Colon      | Bladder |
| Senses     | Eyes     | Tongue          | Mouth       | Nose       | Ear     |
| Tissue     | Tendons  | Blood Vessels   | Muscles     | Skin       | Bones   |
| Sounds     | Sneezing | Laughter        | Singing     | Crying     | Scream  |
| Emotions   | Anger    | Pleasure        | Concern     | Melancholy | Fear    |

Table 2. Relationships of five elements and their corresponding states also known as the mother-son relationship, with the stimulus phase acting as the mother for the next. There is also a circle through which the elements control each other, so wood controls the earth, earth controls water, water fires, fire metal and metal controls wood.

The five-element theory is directly related to the zang and fu viscera, and to the acupuncture channels that are classified in this manner. The theory of the five elements is also used to interpret the physiology and pathology of the human body and its connection with the natural environment.

Thus, the five-element theory is related to etiology, diagnosis, treatment, and prognosis.

The most important statement of the five-element theory is related to the zang organs: the tree represents the liver, which regulates the free flow of qi; fire represents the heart which provides heat to the whole body; the earth represents the spleen which is in charge of transporting and transforming food; metal represents the lungs that allow the relief of qi; water represents the kidneys that are in charge of storing the essence and regulating body fluids. Given that it has already been said that the elements encourage and control each other, this can be explained in this way:

- Wood stimulates fire: all the blood flows through the liver and directs it to the heart so that the heart can regulate its flow;
- Fire stimulates the earth: the heart gives the heat necessary for the proper functioning of the spleen;
- Earth stimulates the metal: the spleen transforms and transports essential nutrients and sends them to the lungs so that it can regenerate and support their activity;
- Metal stimulates water: the lungs send yin fluid to the kidneys;
- Water stimulates the tree: the essence of the kidneys renews the blood that goes further to the liver;
- Wood controls the soil: the cleansing effect of the liver prevents the spleen qi from stagnating;
- Fire controls the metal: the heartbeat prevents the lungs from being reduced to a minimum;

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- Earth controls water: transport through the spleen prevents excessive fluid flow through the kidneys;
- Metal controls the wood: cleansing through the lungs allows less load on the liver's qi;
- Water controls fire: the flow of yin through the kidneys alleviates the yin of the heart.

### Visceral Zang and Fu theory

In traditional Chinese medicine, most human organs are divided into two groups: five zang and six fu organs.

The five zang organs are the heart, liver, spleen, lungs and kidneys, which are the most important organs in the human body. The six fu organs are the gall bladder, stomach, small and large intestine, bladder, and san jiao, all of which are important for the role of transporting and processing food and water.

The physiological functions of the heart were taken to control blood flow through blood vessels, support the mind, and control the tongue. It is a completely logical explanation of the role of the heart in circulation, and it was believed that the physiological function of the heart could affect the very mind of a human. Also, the tongue is connected to the heart by the cardiac meridian, so through this connection it is considered that the heart dominates the sense of taste on the tongue, but also speech, so it was believed that heart disease must manifest on the tongue.

The lungs played a basic role in respiration, controlling the decline and dispersion of qi, supporting the skin and hair, communicating with the throat and nasal openings, and are meridian-related to the colon. The lungs are a very important organ in TCM because they exchange qi that comes from outside and inside, and thus control the complete qi in the human body. Lung dysfunction can lead to qi disorders and cough or dyspnea.

The spleen is located in the so-called. medium energizer.

Its basic physiological function is the transport and transformation of water and food, and the control of blood and the maintenance of its normal circulation and the nutrition of muscles and four extremities. The spleen is connected to the lips and their condition reflects the condition of the spleen.

The liver is located in the right hypochondriac region and its main function is to store and regulate blood, support the free flow of qi, control tendons and open the eyes.

Changes in the state of the liver are associated with emotional changes such as depression or excitement. The condition of the liver in traditional Chinese medicine was reflected through the condition of the eyes since the liver was thought to nurture eye health through blood circulation.

The main role of the kidneys was to store congenital and acquired essence and control of human reproduction, regulate water distribution, receive qi as an assistant to the lungs, which

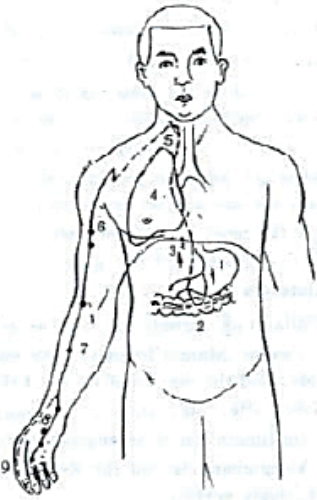


Figure 8. Pulmonary meridian of the hand (Taiying). Available at: <http://cdn.intechopen.com/pdfs-wm/21300.pdf>. Accessed: March 20, 2017.



Figure 9. Meridian of the colon Yangming Available at: <http://cdn.intechopen.com/pdfs-wm/21300.pdf>. Accessed: March 20, 2017.



Figure 10. Abdominal meridian of the foot Yangming Available at: <http://cdn.intechopen.com/pdfs-wm/21300.pdf>. Accessed: March 20, 2017.



Figure 11. The meridian of the spleen. Available at: <http://cdn.intechopen.com/pdfs-wm/21300.pdf>. Accessed: March 20, 2017.

represents their direct connection (lungs and kidneys). The condition of the kidneys was reflected in the physiological preservation of hearing, i.e. the ears, because it was considered that the kidneys, with their chi, nurture hearing and ears.

The gall bladder was considered to be directly related to the liver and the dysfunction in the physiological functions of the gall was thought to be reflected in changes in taste on the tongue i.e. an increased sense of bitterness.

Changes in emotional states associated with the liver are also associated with gall.

The stomach is considered the central organ of digestion and is directly connected to the gall bladder. Its basic physiological functions are food and water storage, appetite control and pain in the epigastric region. The optimal qi of the abdomen controls all five zang organs, so they will be filled with energy, and in the case of disturbed qi, the weakness of the same will be felt.

The small and large intestines are located in the lower part of the abdomen, and their role is the final digestion of food and the absorption of nutritional elements, i.e. the uptake of waste products from the small intestine into the large intestine. Diseases of the colon lead to disorders in the digestion of food and its transport, leading to constipation.

There is also the so-called san jiao organ whose basic physiological function is to control the qi activity of the whole organism. It is divided into three parts: the upper jiao is located just above the diaphragm and the heart and lungs are located there, the middle jiao is located between the diaphragm and the navel, and the spleen and abdomen are located there. The lower jiao is located just below the navel and is where the liver, kidneys, bladder, and intestines are located.

System of meridians and parallels The meridians (ying) and parallels (luo) represent the pathways through which qi and blood circulate. The meridians are the largest channels in the system and they extend vertically through the interior of the body, while the parallels are the branches of the meridians. Since they can be found throughout the whole body, they serve to interconnect zang-fu and other organs,

## History of all Medicine

openings of the body, skin, muscles and bones. They form a special network that communicates with all the internal organs of the body and limbs, and connect the upper part of the body with the lower. The meridian system consists of 12 basic meridians: three Yin meridians of the hand, three Yin meridians of the foot, three Yang meridians of the hand, and three Yang meridians of the foot; and of 8 additional meridians: Du, Ren, Chong, Dai, Yingqiao, Yangqiao, Yinwei and Yangwei. The eight additional meridians are not directly connected to the internal organs, but intersect with the 12 basic meridians and help them achieve normal communication.

The first meridian is the pulmonary channel of the hand (Taiyin) and it starts from the middle of the abdomen, reaches the large intestine and then returns to the diaphragm, passes through the lungs and then through the lungs and larynx to the surface of the right hand where it ends on the index finger (Figure 8).

The second meridian is the colon meridian of the colon Yangming which starts from the index finger of the right hand and extends along the lateral side of the forearm and the lateral side of the elbow. From the elbow, the front border of the upper arm reaches the highest point of the shoulder and at that point it branches into two branches.

One enters the body and passes through the lungs, diaphragm and colon, and the other passes through the outer part of the neck, cheeks and reaches the inner surfaces of the teeth in the lower jaw, ending in a circular motion around the lips and at a point corresponding to the height of the nose at the nape of the neck (Figure 9).

The abdominal meridian of the foot Yangming extends from the nose, through the diaphragm, spleen, colon, through the lateral side of the right foot to the tip of the middle toe (Figure 10).

The meridian of the spleen starts from the thick toe, extending along the inside of the foot to the outside of the ankle. From that point, the meridian extends along the inner side of the lower leg to the medial aspect of the knee and hip, and then enters the abdomen and spleen. From the spleen, the meridian extends to the chest, larynx, and root of the tongue. Another branch extends from the spleen to the heart and connects to the cardiac meridian (Figure 11).

The heart meridian of the hand Shaoyin is a meridian that has three branches and each starts from the heart.

One branch flow down to the diaphragm and small intestine.

The second branch of the meridian goes up to the larynx and ends in the eye. The third branch of the meridian passes through the chest and connects the heart to the lungs, and then goes to the armpits. From the armpit it goes down the medial side of the hand and ends at the tip of the little finger and connects with the meridian of the small intestine (Figure 12).

The small intestine meridian of the Taiyang hand begins where the previous meridian ends, from the tip of the little finger and extends to the posterior part of the shoulder and there encompasses the shoulder and continues further to the middle of the upper back and merges with the Du meridian. At this point, the meridian branches into two parts in which one part connects with the heart, diaphragm, abdomen, and small intestine, and the other part with the neck, cheeks, outer part of the eye, and enters the ear (Figure 13).

The bladder meridian Taiyang, starts from the inside of the eye and reaches the forehead to the side of the head.



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One smaller branch then passes to the brain, and the main branch extends to the nape of the head and reaches the neck and spine. One part then branches and connects to the kidney, and the other part continues to the bladder.

The main part of the meridian continues through the buttocks, the knee and ends on the lateral side of the little toe and thus connects with the renal meridian (Figure 14).

The renal meridian from the foot Shaoyin begins on the inferior side of the little toe, passes through the ankle, the medial side of the lower leg, the hip, and enters the body where the lower part of the spine begins. Here the meridian branches and connects with the kidney and gall bladder, and then returns to the surface of the body and binds to the upper abdomen and chest. The branch associated with the kidney passes to the liver, diaphragm, and enters the lungs from where it passes through the larynx and ends at the root of the tongue (Figure 15).

The most famous herbal remedies of the Traditional Chinese Medicine Rheum rhabarbarum Rhubarb (Figure 16) has been used in Chinese pharmacy for thousands of years, and was first described by the mythical legend Shen Nung, although there are some opinions that the plant was used as far back as 2700 years before. According to Dioscorides, the roots of this plant were brought to Greece from the shores of the Bosphorus, it was not used much commercially during the Islamic era, it arrived in Europe during the 14th century where it was imported from Silk Street via the ports of Aleppo and Smyrna. It was then known as Turkish rhubarb. For centuries, the plant grew along the banks of the Volga river, whence its ancient name Rha. The expensive cost of transporting the plant from Asia made rhubarb a very prized and expensive plant—it was several times more expensive than cinnamon or opium. At one time, Marco Polo researched where this plant grows and picked it in the province of Tangut. Even in his report, Ambassador Ruy Gonzales de Clavijo wrote in 1403 that the best goods arriving in Samarkand from China certainly included rhubarb. The name rhubarb itself comes from the Greek words rha and barbarum.



Figure 15. The renal meridian from the foot Shaoyin

Available at: <http://cdn.intechopen.com/pdfs-wm/21300.pdf>.

Accessed: March 20, 2017.



Figure 17. Panax ginseng.

Available at: <http://thisisnotacure.files.wordpress.com/2012/02/panax-ginseng.gif?w=714>.

Accessed: March 22, 2017.

The word rha means both plant and river Volga. Rhubarb arrived in the USA in 1820, and was brought by Western European immigrants. Rhubarb is a perennial herbaceous plant that grows up to 3 meters high. The rhizome and root are very developed. It grows in the northern parts of China and in Tibet. The drug is represented by parts of peeled and dried rhizomes of several years old wild and cultivated rhubarb plants. The taste of the rhizome is bitter and it crunches under the teeth, it has a weak and specific smell.

Rhubarb rhizome contains anthraquinone heterosides.

Heterodiantron structures and their heterosides are also present in the rhizome. It has tannins, starch, pectin, resinous substances and calcium oxalate. In terms of action, anthraquinone heterosides have a laxative effect and tannins have an astringent effect. Rhubarb rhizome pollinated was used as a laxative in acute constipation, and in smaller doses it was used in digestive disorders.

Panax ginseng Ginseng root (Figure 17), due to its stimulating effect on the body, has long been used in concentrated form as a medicinal agent or in diluted form as a tea preparation.

The Chinese have noticed that regular consumption of ginseng improves the general condition of the body, appetite and mental activity, and has a preventive effect against many diseases. During the Vietnam War, ginseng was used by many Vietcong fighters, using it to treat the wounded who died in explosions. In the late fifties of the last century, Soviet scientists proved its extremely beneficial effect on raising the fitness of athletes, and it was used in the former Soviet Union to achieve top results.

The Russian Olympic team uses Siberian ginsengbased preparations on a daily basis. Japanese researchers have found that taking Siberian ginseng significantly improves the results of cyclists—by as much as 23 percent compared to athletes who do not take ginseng. Ginseng is also called the root of life.

Ginseng is one of the oldest, most widely used and most studied plants in the world. Although there are several plants called Ginseng and they all belong to the genus Panax, American Ginseng (*Panax Quinquefolius*) is believed to cool the body, so it is used in various fevers, while Asian Ginseng (*Panax Ginseng*) has the opposite effect and is used to improve circulation. Different types of Ginseng often symbolize the energy of yin (American) and yang (Asian), because their action is opposed to each other just like these ancient concepts. American Ginseng, in addition to cooling the body, increases energy and endurance, which is necessary for people who are stressed and live a modern fast-paced lifestyle. On the other hand, by relaxing the yang, this force opposed to cold yin, through the Asian plant helps the body recover and stimulates the whole body. Asian Ginseng (*Panax Ginseng*) is a perennial shrub, about 70

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centimeters tall. From its stems grow leaves in the vertebrae. The fruits are bright red berries, with two seeds each, flattened in width. The dried root of the plant is most commonly used, although sometimes dried leaves that are less prized than the root can also be found. Ginseng was first discovered in China about 5000 years ago, in the Manchuria region. It quickly became appreciated for restoring strength and renewing energy, and its “human” form became a powerful symbol of divine harmony on earth.

In the first Chinese book on medicinal herbs “Classical Medicinal Plants” (Pen Tsao Ching) Ginseng is recommended for enlightening the mind and increasing wisdom. Ginseng grows in secluded places in the shady forests and hills of Korea, China and Russia. In ancient times, only wild Ginseng was used because it was long believed that Ginseng could not be grown because of its sensitivity and the special conditions in which it must grow, from the proper temperature to shady soil rich in minerals. Ginseng is known as an adaptogen, or agent that increases resistance to stress. It also strengthens the immune system, provides energy and vitality, rejuvenates the body by improving its functions. In addition to its excellent effect on the immune system, ginseng has a very beneficial effect on the nervous and cardiovascular system. It increases concentration, intellectual ability and memory, helps with headaches, insomnia and has an antidepressant effect. In addition, it detoxifies the blood, prevents anemia, lowers blood sugar and cholesterol levels, regulates blood pressure, improves circulation. It is an excellent antioxidant, and some research shows that it also helps in the treatment of cancer.

The best results are achieved in combination with other traditional Chinese plants. Wild American Ginseng was once widespread in all mountainous regions of the United States and Canada, and today it is an endangered species.

That is why it is now grown on farms to protect Wild Ginseng from over-harvesting. The Native Americans have traditionally used it as a stimulant and to treat headaches, fevers, indigestion and infertility. Like Asian, American Ginseng is an adaptogen, a plant that helps the body cope with various types of stress and is considered one of the most popular plants in the USA. Both American and Asian Ginseng contain ginsenosides, although the type and ratio of these substances differ in Asian and American herbs. American ginseng has a more relaxing effect than Asian Ginseng, which has a stimulating effect.

Animal laboratory studies have shown that American Ginseng is effective in boosting the immune system, as an antioxidant and has good potential in treating inflammatory diseases, diabetes, colds and flu and helping to treat cancer. Siberian Ginseng is also considered an adaptogen because plant extracts help the body adapt to stress. The regulatory action of Siberian Ginseng extract has been shown to be useful in meteorologists. Experiences from traditional medicine, as well as numerous studies conducted especially on Russian athletes, suggest a beneficial effect of Siberian Ginseng extract on the regulation of low blood pressure. Siberian Ginseng root preparations have found useful application in improving physical and mental condition (working ability), increasing the body’s general resistance and strengthening the heart, blood circulation and nerves. It is also used as an immunostimulant.

This herb can be taken long term.

Podophyllum peltatum

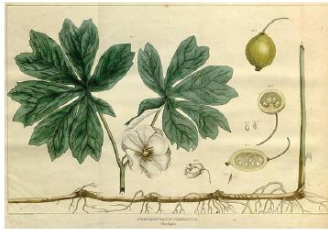


Figure 18. Podophyllum peltatum – plant which is used in Traditional Chinese medicine as laxative  
Available at: <http://www.henriettes-herb.com/files/images/old/barton-w/w-barton-t25-podophyllum-peltatum.jpg>.

Accessed: March 24, 2017.

It is a small woody perennial plant up to 30 centimeters tall. At the top of the shoots are two large, finger-divided leaves. Podophyllum peltatum (Figure 18) grows in the forests of the eastern part of the North American continent and in India in the Himalayas. The drug is a resin obtained from the ethanolic extract of the rhizome of this plant. The resin is a crumbly, amorphous mass, gray in color, with an extremely bitter taste and a specific odor.

The main pharmacologically active ingredients of the resin are podophyllotoxin and peltatins. Both inhibit the growth of experimentally induced tumors. These lignans prevent tubulin polymerization and the formation of dividing spindle microtubules, thus stopping cell division in metaphase. Rhizome and resin podophyllin have traditionally been used as a laxative and remedy against intestinal parasites. Today, this application has been abandoned due to its extreme toxicity. In the form of galenic preparations, they are rarely used for external use on the skin. Podophyllotoxin is a natural lignan that is the basis for obtaining synthetic derivatives of teniposide and etoposide. Etoposide is commonly used in combination chemotherapy for testicular and bronchial cancer, lymphoma, and acute leukemia. Teniposide is used in the treatment of lymphoma, acute leukemia, brain tumors and urogenital tumors.

#### Cinnamomum ceylanicum

Cinnamon (Figure 19) is first mentioned in the Chinese books from 2800 BC, where it is used for medical purposes for colds and digestive problems. It is also mentioned in the Bible, Moses used it in anointing oils, and the ancient Romans burnt it during burial, probably to neutralize unpleasant odors, among other things. Due to its pleasant smell, but also as a preservative, Egyptians used it in the process of mummification. Although today it is one of all known and present spices, cinnamon wasn't always available. The search for cinnamon was one of the initiators of many quests in the 15th century. Given that it was delivered from afar, because it originally originated in Ceylon, and that the Venetians, in fact, had a monopoly on maritime routes, only the elite could afford the fragrant



Figure 19. Cinnamomum ceylanicum- Ceylon cinnamon.  
Available at:  
<http://www.sacredearth.com/Ezine/winter09/ChineseCinn.gif>.  
Accessed: March 24, 2017.

and expensive spice. Due to the growing demand and use for medical and culinary purposes and high prices, traders have realized that by controlling the only place in the world where this spice grows, they have a monopoly on its placement, and thus control the world price. The first to secure a monopoly were Portuguese merchants—they reached Ceylon (bypassing the horn of Africa) in the 15th century. They tried to increase production, enslaved the local population and eliminated competition. Soon the Dutch intervened and in 1640, they suppressed the Portuguese and took control of the monopoly. Nor did the Dutch rule last forever, it was replaced by the English and by 1796 they had completely conquered the monopoly over the production and trade of cinnamon. However, it was also the end of the local cultivation of cinnamon, the plant spread to other parts, so that today cinnamon is neither a luxury nor an expensive spice. The spice, which was an exclusive product of Sri Lanka, is today grown in India, Sumatra, Java, Brazil, Vietnam, Egypt and Madagascar. In traditional Chinese medicine, cinnamon is used for colds, digestive problems, nausea. Chinese writings mention the beneficial use of cinnamon for people whose feet are always cold. The Egyptians used it in the process of embalming, but also for storing meat. The ancient Romans put cinnamon in many medicinal powders. It was used for colds but also as a room freshener—it was lit both in homes and in temples. Great use brought great demand and high price, so that Pliny the Elder in the first century noted that cinnamon is 15 times more valuable than silver.

Ayurvedic medicine treats diabetes with cinnamon, indigestion.

It is an integral part of tea cinnamon wasn't used for better digestion, and the oil is used in aromatherapy for calming.

Numerous studies indicate a positive role of cinnamon in diet. For example, Swedish researchers from Malmö University Hospital examined the effects of cinnamon on human health and gave subjects rice pudding with or without cinnamon. In subjects whose pudding was sprinkled with cinnamon, the blood sugar level was significantly lower. Researchers believe that cinnamon slows down digestion, giving the body more time to break down carbohydrates. However, skeptics note that an insufficient sample—only fourteen respondents—calls this research into question. Another study from 2003 indicates the positive role of cinnamon in people with diabetes. In people with diabetes 2, if they take 1-6 grams of cinnamon a day, the glucose level is reduced after six months, in some by as much as 29%. Also, the level of triglycerides was reduced by 23-30%. Cinnamon also has an antifungal, antibacterial effect, and has been shown to be successful in persistent *Helicobacter pylori* infections. Cinnamon is always a green, short tree. The drug consists of peeled and dried bark of young branches of the cinnamon tree. A dozen thin covers are folded and dried quickly in the sun or in dryers. Otherwise, it comes in the form of gutter pieces that contain up to a dozen thin covers. The cortex of the cinnamon tree contains essential oil in the amount of 0.5 to 2.5%, and the essential oil contains cimetaldhyde, cinnamic acid, eugenol, limonene and alphaterpineol.

The cortex also contains coumarin mucus and tannins. Cinnamon essential oil has a characteristic aroma and exhibits antibacterial activity. In combination with other drugs, it also has an antispasmodic effect. Powdered cortex is used for digestive disorders and painful spasm of smooth muscles. The oil is used as a flavoring agent for some pharmaceutical preparations, as well as for the production of aromatic water and in the perfume industry. The largest amounts of cortex and essential oil are used as a spice.

*Ephedra sinica* *Ephedra* (Figure 20) is a plant of Chinese origin and is known in China as ma huang, it has been used traditionally for over 5000 years. Indeed, there are several species of the genus *Ephedra* that

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are used for various medicinal purposes, and have often been used in the preparation of the Soma solution used in the Indo-Iranian religion. It was also used by the Indians in the preparation of Indian tea.

The ephedra is a low branched shrub. The drug makes up the dried, above-ground, herbaceous part of the plant in bloom. Herb ephedra contains flavonoids and proanthocyanidins but the most important ingredients are protoalkaloids.

The most important are ephedrine and pseudoephedrine.

Ephedrine is an indirect sympathomimetic. It works similar to adrenaline, but weaker. The anti-inflammatory action of pseudoephedrine has been experimentally confirmed. It is used in the treatment of asthma, bronchitis and febrile conditions. In the form of drops, it is used in the treatment of diseases of the nose and eyes: it narrows blood vessels and acts as a mild local anesthetic.

Wolfiporia cocos Fuling (Figure 21) has been used in Traditional Chinese

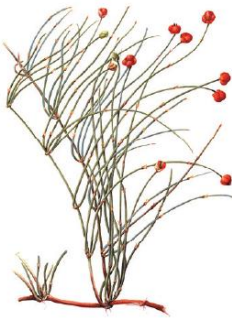


Figure 20. Ephedra sinica – herb which is used in Traditional Chinese Medicine for treating asthma and bronchitis.

Available at: <http://www.itmonline.org/image/ma1.JPG>

Accessed: March 25, 2017.

Medicine for thousands of years. Due to its multiple medicinal effects, this mushroom is considered, according to Chinese tradition, one of the eight treasures. Fuling mushroom is used in Chinese medicine to make a large number of medicines, but also delicacies and snacks for the richest families, including the royal vine.

This mushroom is characterized by several names, such as Poria cocos, Indian barrel, Chinese root, Fu Ling Pi, Fu Shen, hoelen, etc. Today, this mushroom can be found in the wild, but is also cultivated in places such as Yunnan, Anhui, Hubei, Henan, Sichuan, etc., and the best quality comes from Yunnan.

The healing effects of fuling stem from its rich chemical composition. Triterpenoids, polysaccharides, ergosterol, caprylic acid, undecanoic acid, lauric acid, dodecanoic acid, palmitic acid, caprylates and other elements can



Figure 21. Fuling mushroom – often used mushroom in TCM.  
Available at:  
<http://www.chineseherbshealing.com/poria-fu-ling/>. Accessed:  
March 27, 2017.

## History of all Medicine

be found in the flesh of this fungus. Of the triterpenoids, the most important are pachymic acid, tumuloic acid, Cmethyl ester of polypenic acid, methyl ester of tumulose acid, etc., and the most important polysaccharides are pachyman, pachymaran and gluan H11.

In Traditional Chinese Medicine, but also in modern pharmacological tests, it has been established that this fungus has the following effects:

- Diuretic effect: fuling mushroom itself has no diuretic effect, but in a combination called Wu Ling

San, it shows a pronounced diuretic effect;

- Antibacterial effect: in vitro experiments have shown that the ethanol extract of this fungus can have a bactericidal effect on leptospire;

- Digestive system: fuling can relax the intestines, reduce the strength of stomach acid and prevent ulcers in the stomach or small intestine;

- Regulation of blood sugar;

- Enhances heart contractility.

Cordyceps sinensis – Chinese caterpillar mushroom

Cordyceps (Figure 22) is a mushroom native to Tibet, be found in the flesh of this fungus. Of the triterpenoids, the most important are pachymic acid, tumuloic acid, Cmethyl ester of polypenic acid, methyl ester of tumulose acid, etc., and the most important polysaccharides are pachyman, pachymaran and gluan H11.

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Cordyceps sinensis – Chinese caterpillar mushroom

Cordyceps (Figure 22) is a mushroom native to Tibet,



Figure 22. Cordyceps – a mushroom which attacks caterpillars and it grows out of their corpse.

Available at: <http://www.pecurke-sitake.com/kordiceps-gljiva.php>

Accessed: March 27, 2017.

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China, and grows at an altitude of 5,000 meters. Its price is extremely high, and it costs up to 3000 USD per kilogram.

Precisely because of the great demand, and also because of the difficulties in finding the mushroom itself, it was given for medicinal purposes only to noble families and the King of China himself. Its natural nutritional basis is not like other fungi, but it is a type of caterpillar. The mushroom attacks these caterpillars, kills them and then sprouts out of them with its finger-like body. Scientists have been trying to grow this mushroom for a long time, since its natural reproduction does not meet world demand, but everything has remained to be tried.

In traditional Chinese medicine, this mushroom is used to strengthen the lungs and kidneys, as well as to tone yin yang. It is believed to calm emotions, remove mucus and prevent bleeding. It has a positive effect on cancer control, treatment of rheumatism, fatigue, respiratory diseases, inflammation, insomnia and irregular men-struation. Cordyceps improves the supply of tissues and organs with blood and oxygen. It has been scientifically proven that this mushroom has antimicrobial action and that it stops the growth of the bacterium *Clostridium* without breaking down bifidobacteria and lactobacilli in the intestines. Studies have also shown a significant increase in the activity of natural cells that kill cancer cells (macrophages).

Acupuncture as a method of treatment in Traditional Chinese Medicine Acupuncture is a method of treatment using needles that are inserted into specific points on the body, and which the Chinese have mapped during the long history of TCM. The goal is to stimulate energy centers and improve the flow of qi through the body. It is a word of Latin origin (*acus*—needle, *pungere*—to prick), and it was the name given to it by European missionaries who visited China at the end of the 16th century and were the first to bring the word of healing in this way. The origin of acupuncture is related to the story of a warrior wounded by an arrow. The arrow was taken out and the wound healed, and it was later noticed that the disease had healed on another part of his body. The first needles used by the Chinese were stone, then bone and bamboo, while today disposable surgical steel needles are used. In addition to classical acupuncture, electroacupuncture is increasingly used to perform surface electrostimulation through the skin. Acupuncture points are stimulated with a special probe (sticks) without stabbing.

In 1979, the World Health Organization recognized acupuncture as an equal branch of medicine because it meets standards that are in line with modern methods of treatment. It is accepted that it can be used as the only therapy, in combination with another method of treatment or as an adjuvant therapy. Its indication area is very wide, and the effect is observed in 70-80% of cases. On that occasion, a list of diseases that are successfully treated with this method was compiled. Some of them are: sinusitis, constipation, headaches, migraines, neuralgia, pain of the skeletal and muscular system, bronchitis, asthma, ulcers, infertility, menstrual problems, insomnia, various skin diseases, diabetes, hemorrhoids, etc.

Acupuncture has been shown to be very effective in relieving postoperative pain, nausea and vomiting due to chemotherapy and radiation. Acupuncture follows the development of technology and successfully follows modern achievements, so there was the emergence of electroacupuncture, fluid acupuncture, laser acupuncture and the like. The method of laser acupuncture is non-invasive, painless and short-term therapy. The exact mechanism of action of low-power laser energy has not been fully elucidated. At the cellular level, the basic processes that lead to the healing of cells, tissues, organs and the organism as a whole are accelerated or slowed down. Biological changes are a consequence not only of the immediate effect of the laser, but also of the host response consisting in a change in metabolic activities lasting up to a month. The advantages of laser acupuncture are: a sepsis, painlessness, economy and possible application on any part of the body, skin or mucous membranes.



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Acupuncture and moxibustion are specific methods by which internal diseases are treated by “external” methods. Thus a variety of diseases can be cured using methods that require absolute knowledge of the internal channels and the flow of qi through them. In order for someone to perform acupuncture, it is necessary to know the theory of “eight principles”, zang-fu theory and the flow and arrangement of meridians and parallels through the human body. After discovering the channel or internal organ that is damaged, it is necessary to find out the mechanism of the disease and determine the essence and secondary symptoms, and only then decide on acupuncture or moxibustion, and whether there should be a method of strengthening or reducing. The basic principle of acupuncture treatment is: the method of strengthening should be applied in xu (deficiency) syndrome, and the method of reduction for shi (excess) syndrome. Moxibustion is applied when vital function or yang is declining.

Acupuncture is based on the selection of three puncture points:

- Selection of distant points (e.g. if treating a facial disease, points located on the lower part of the body are selected);
- Selection of local points (in case of a wound, points close to the wound are selected) and;
- Selection of adjacent points (if local points cannot be selected, the so-called adjacent points are selected to strengthen the therapeutic effect).

## 5. DISCUSSION

History is overfull with mythology in the case of the Three Kings of Heaven who are revered as the founders of Chinese civilization. Fu Hsi, who is thought to have ruled 2000 years before Christ, is the legendary founder of the first Chinese dynasty. His most important inventions included writing, painting, music, original mythical trigrams, and the yin-yang concept. During a century of rule, Huang Ti, the last of the three legendary Heavenly Emperors, gave his people a wheel, a magnet, an observatory, a calendar, the art of measuring heart rate, and the Huang-ti Nei Ching (Yellow Emperor’s Canon of Internal Medicine) —a text that inspired and guided Chinese medical thought over 2500 years. Like many ancient texts, the Nei Ching has been corrupted over the centuries with additions, cutouts, and typographical errors.

Scholars agree that the existing text is very old, perhaps even dating back to the first century BC, but the time of its compilation is polemical. Most historians believe that the existing text was composed at the beginning of the T’ang dynasty (618-907).

The first records of traditional Chinese medicine (TCM) date back to 5000 years ago. TCM encompasses Han medicine and the theories and practices of various national minorities from China such as Miao, Dai, Mongols and Tibetans. The first records of TCM appear from the period 2698-2598 years before the new era, during the era of Huangdi or the Yellow Ruler. However, the duties and responsibilities of physicians were defined only later, in 1122 BC, during the Zhou dynasty. At the time, every large estate had its own physician, and it was characteristic that physicians were paid when the householders were healthy, not when they fell ill. Thus, the primary concern of physicians was to maintain health and prevent disease, not to treat it. TCM is the oldest continuously practiced, scientific medical system in the world. It should certainly not be classified as an expression of folk medicine, nor quackery, because TCM is a complex and precise health care system created from the efforts of great Chinese minds to understand the secrets of the functioning of the human body. In its beginnings, TCM was a practical and effective art based on observations and experience with the application of philosophical principles such as Yin and Yang or wu-xing (the theory of the five elements).

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The basic thinking was that health can be maintained if there is a balance of the human body with the inner spirit and the outer environment. For this reason, diagnosis and treatment were based on targeted finding of imbalance and its return to normal. The greatest success and development of TCM was experienced during the Ming Dynasty (1368-1644), culminating in the publication of the Compendium of Material Medica (Figure 5) by Li Shizhen. Li Shizhen has dedicated himself to gathering the most important and credible medical experiences over 30 years and has singled out a total of 1,094 herbal medicines, 443 animal medicines and 354 mineral medicines.

For each drug, an adequate name, source, form and medical history were prescribed, as well as the manner in which it was collected, prepared, stored and dosed.

Modern TCM theory has emerged from the naturalistic philosophies of ancient China with special influences of experiences that have accumulated through generations and generations. TCM may seem outdated and charlatan today, but it is a complete, integrated method of interpreting human physiology and pathological changes in the body. The most important concepts of TCM are qi, yin yang and the theory of the five elements (wuxing). Theoretical concepts of specific TCM include the doctrine of zheng ti guang nian, the concepts of viscera and compassion (zangfu xue shuo), channels and networks (jingluo), bodily substances (qi, blood, essence and body fluids qi xue jing jinye) and pathological agents (bing yin). All these theories, together with the methodologies of the four methods (si zhen) and basic discrimination (bian zheng) form the theoretical basis of TCM. Each of the therapeutic methods of TCM, such as acupuncture and moxibustion (zhenjiu), Chinese herbology (zhongyao fang), and Chinese therapeutic massage (zhongyi tuina) are based on the stated theoretical foundations.

The basic concept of qi theory is that qi is the basic substance from which the entire universe is built and that all objects in the universe are born by the transformation of qi. Ancient philosophers argued that qi could exist in two states: dispersion and condensation, and these two states of qi determine two modes of perception in man: one having a form and one without a form.

According to ancient Chinese philosophy, yin and yang represent two essentially opposite categories. At first, their understanding was simple, describing the turning of the face or back to sunlight. It was later introduced into the theory that yin and yang refer to almost all imaginable opposites, such as time, position, side of the world, state, etc. Ancient Chinese philosophers wisely observed that for every phenomenon there are two opposing aspects with each other. Thus, yang represents phenomena such as speech, active state, external, upper, warm, light, while yin is associated with opposite phenomena: silence, inactive state, internal, lower, cold, dark.

The theory of the five elements/phases establishes such a system of correspondence that all phenomena in the universe can be classified into five categories. The categories represent a tendency to move and transform in the universe and are related to natural phenomena such as wood (mu), fire (huo), earth (tu), metal (yin) and water (shui). A constant connection between them is used to explain changes in nature. In traditional Chinese medicine, most human organs are divided into two groups: five zang and six fu organs. The five zang organs are the heart, liver, spleen, lungs and kidneys, which are the most important organs in the human body. The six fu organs are bile, stomach, small and large intestine, bladder, and san jiao, all of which are important for the role of transporting and processing food and water.

The meridians (ying) and parallels (luo) represent the pathways through which qi and blood circulate. The meridians are the largest channels in the system and they extend vertically through the interior of the body, while the parallels are the branches of the meridians. Since they can be found throughout the whole body, they serve to interconnect zang-fu and other organs, openings of the body, skin, muscles and bones.

## History of all Medicine

They form a special network that communicates with all the internal organs of the body and limbs, and connects the upper part of the body with the lower. The meridian system consists of 12 basic meridians: three Yin meridians of the hand, three Yin meridians of the foot, three Yang meridians of the hand, and three Yang meridians of the foot; and of 8 additional meridians: Du, Ren, Chong, Dai, Yingqiao, Yangqiao, Yinwei and Yangwei. The eight additional meridians are not directly connected to the internal organs but intersect with the 12 basic meridians and help them to achieve normal communication.

Acupuncture is a method of treatment using needles that are inserted into specific points on the body, and which the Chinese have mapped during the long history of TCM. The goal is to stimulate energy centers and improve the flow of qi through the body. It is a word of Latin origin (acus—needle, pungere—to prick), and it was called by European missionaries who visited China at the end of the 16th century and were the first to bring word about healing in this way. The origin of acupuncture is related to the story of a warrior wounded by an arrow. The arrow was taken out and the wound healed, and it was later noticed that the disease had healed on another part of his body. The first needles used by the Chinese were stone, then bone and bamboo cane, and today disposable surgical steel needles are used.

## 6. CONCLUSION

Traditional Chinese medicine has managed to resist time and has existed for 5000 years, since when there is the first record of its practice. Although the word is traditional in the name, it follows the development of modern medicine, so the World Health Organization (WHO) has accepted it as a scientifically proven medicine. Experiences of treatment with drugs from Greek, Persian and Arabic medicine, Traditional medicine has been accepted as official Complementary medicine in daily praxis, recommended by WHO (18-24). The basis of traditional Chinese medicine consists of several theories, such as zang-fu organs, yin and yang, qi, the theory of the five elements and the concept of meridians and parallels. All theories are interconnected and form one complicated whole. Yin and yang and qi are perhaps the most important aspect of traditional Chinese medicine because everything is based on balancing the energy of qi and the balance between yin and yang. Certainly, the most complicated aspect of traditional Chinese medicine is acupuncture, which requires detailed knowledge of all five theories and knowledge of key points on the human body and their interrelationship, all for the purpose of treating certain diseases and balancing qi and balancing yin and yang.

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### 1.2.3.2 History of Acupuncture <sup>w</sup>

Acupuncture can be traced back to the primitive society of China, which is divided into two time periods The old stone age (10,000 years ago and beyond) and the new stone age (10,000-4000 years ago).

During the old stone age knives were made of stone and were used for certain medical procedures.

During the new stone age, stones were refined into fine needles and served as instruments of healing. They were named bian stone – which means use of a sharp edged stone to treat disease.

## History of all Medicine

The most significant milestone in the history of Acupuncture occurred during the period of Huang Di –The Yellow Emperor (2697-2597).

In a famous dialogue between Huang Di and his physician Qi Bo, they discuss the whole spectrum of the Chinese Medical Arts. These conversations would later become the monumental text – The Nei Jing (The Yellow Emperors Classic of Internal Medicine).

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During the Shang Dynasty (1000 BC) , hieroglyphs showed evidence of Acupuncture and Moxibustion. Bronze needles were excavated from ruins, but the bian stones remained the main form of needle.

During the Warren States Era (421-221 B.C.) metal needles replaced the bian stones. The Miraculous Pivot names nine types of Acupuncture needles. The historical records notes many physicians practicing Acupuncture during this time. Another milestone for this period was the compilation of the Nan Jing (Book of Difficult Questions). The Nan Jing discusses five element theory, hara diagnosis, eight extra meridians, and other important topics.

From 260-265 A.D., the famous physician Huang Fu Mi, organized all of the ancient literature into his classic text – Systematic Classics of Acupuncture and Moxibustion.

The text is twelve volumes and describes 349 Acupuncture points. It is organized according to the theory of: zang fu, Qi and blood, channels and collaterals, acupuncture points, and clinical application. This book is noted to be one of the most influential texts in the history of Chinese Medicine.

Acupuncture experienced great development during the Sui (581-618) and Tang (618-907) Dynasties. Upon request from the Tang Government (627-649A.D.), the famous physician Zhen Quan revised the important Acupuncture texts and charts.

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## History of all Medicine

1601 – Yang Jizhou wrote Zhenjin Dacheng (Principles of Acupuncture and Moxibustion). This great treatise on Acupuncture reinforced the principles of the Nei Jing and Nan Jing. This work was the foundation of the teachings of G. Soulie de Morant who introduced Acupuncture into Europe.

From the Qing Dynasty to the Opium Wars (1644-1840), herbal medicine became the main tool of physicians and Acupuncture was suppressed.

Following the revolution of 1911, Western Medicine was introduced and Acupuncture and Chinese Herbology were suppressed

Due to the large population and need for medical care, Acupuncture and herbs remained popular among the folk people, and the “barefoot doctor” emerged.

In 1950 Chairman Mao Zedong officially united Traditional Chinese Medicine with Western Medicine, and acupuncture became established in many hospitals

In the same year Comrade Zhu De reinforced Traditional Chinese Medicine with his book New Acupuncture

- Acupuncture gained attention in the United States when President Richard Nixon visited China in 1972.
- During one part of the visit, the delegation was shown a patient undergoing major surgery while fully awake, ostensibly receiving acupuncture rather than anesthesia.

The Ming Dynasty (1568-1644) was the enlightening period for the advancement of Acu-puncture. Many new developments included:

- Revision of the classic texts
- Refinement of Acupuncture techniques and manipulation
- Development of Moxa sticks for indirect treatment
- Development of extra points outside the main meridians
- The encyclopaedic work of 120 volumes- Principle and Practice of Medicine was written by the famous physician Wang Gendung

The greatest exposure in the West came when New York Times reporter James Reston, who accompanied Nixon during the visit, received acupuncture in China for post-operative pain after undergoing an emergency appendectomy under standard anaesthesia.

Reston believed he had pain relief from the acupuncture and wrote it in The New York Times.

In 1973 the American Internal Revenue Service allowed acupuncture to be deducted as a medical expense. This sparked an intense interest in acupuncture by the public.

Several months later, a report favourable to acupuncture was published in the Journal of the American Medical Association.

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**1.2.3.3 Feng shui** <sup>w</sup>

Feng shui (/ˈfɒŋˌʃuːi/), also known as Chinese geomancy, is an ancient Chinese traditional practice which claims to use energy forces to harmonize individuals with their surrounding environment. The term feng shui means, literally, "wind-water". From ancient times, landscapes and bodies of water were thought to direct the flow of the universal Qi – “cosmic current” or energy – through places and structures. Because Qi has the same patterns as wind and water, a specialist who understands them can affect these flows to improve wealth, happiness, long life, and family; on the other hand, the wrong flow of Qi brings bad results. More broadly, feng shui includes astronomical, astrological, architectural, cosmological, geographical, and topographical dimensions.

Feng shui analysis of a 癸山丁向 site, with an auspicious circle

Feng shui

Chinese name

Traditional Chinese 風水

Simplified Chinese 风水

Literal meaning "wind-water"

Transcriptions

Standard Mandarin

Hanyu Pinyin fēngshuǐ

Bopomofo ㄈㄥ ㄕㄨㄟˇ

Wade–Giles fêng1-shui3

Tongyong Pinyin fongshuěi

Yale Romanization fēngshwěi

IPA [fǎŋ.ʃwèi]

Wu

Romanization fon<sup>平</sup> sy<sup>上</sup>

Gan

Romanization Fung1 sui3

Hakka

Romanization fung24 sui31

Yue: Cantonese

Yale Romanization fùngséui or fūngséui

## History of all Medicine

|                      |                        |
|----------------------|------------------------|
| Jyutping             | fung1seoi2             |
| IPA                  | [fôŋ.sěy] or [fón.sěy] |
| Southern Min         |                        |
| Hokkien POJ hong-suí |                        |
| Eastern Min          |                        |
| Fuzhou BUC           | hǔng-cūi               |
| Vietnamese name      |                        |
| Vietnamese           | phong thủy             |
| Hán-Nôm 風水           |                        |
| Thai name            |                        |
| Thai                 | ฮวงจุ้ย (Huang chui)   |
| Korean name          |                        |
| Hangul               | 풍수                     |
| Hanja                | 風水                     |
| Transcriptions       |                        |
| Revised Romanization | pungsu                 |
| McCune–Reischauer    | p'ungsu                |
| Japanese name        |                        |
| Kanji                | 風水                     |
| Hiragana             | ふうすい                   |
| Transcriptions       |                        |
| Revised Hepburn      | fūsui                  |
| Kunrei-shiki         | hūsui                  |
| Filipino name        |                        |
| Tagalog              | Pungsóy, Punsóy        |
| Khmer name           |                        |
| Khmer                | ហុងស៊ុយ (hongsaouy)    |

Historically, as well as in many parts of the contemporary Chinese world, feng shui was used to orient buildings and spiritually significant structures such as tombs, as well as dwellings and other structures.

## History of all Medicine

One scholar writes that in contemporary Western societies, however, “feng shui tends to be reduced to interior design for health and wealth. It has become increasingly visible through 'feng shui consultants' and corporate architects, who charge large sums of money for their analysis, advice, and design.”

Feng shui has been identified as both non-scientific and pseudoscientific by scientists and philosophers, and has been described as a paradigmatic example of pseudoscience. It exhibits a number of classic pseudoscientific aspects, such as making claims about the functioning of the world which are not amenable to testing with the scientific method. Some users of feng shui may be trying to gain a sense of security or control. Their motivation is similar to the reasons that some people consult fortune-tellers.

### HISTORY

#### ORIGINS

As of 2013, the Yangshao and Hongshan cultures provide the earliest known evidence for the use of feng shui. Until the invention of the magnetic compass, feng shui relied on astronomy to find correlations between humans and the universe.

In 4000 BC, the doors of dwellings in Banpo were aligned with the asterism Yingshi just after the winter solstice—this sited the homes for solar gain. During the Zhou era, Yingshi was known as Ding and it was used to indicate the appropriate time to build a capital city, according to the Shijing. The late Yangshao site at Dadiwan (c. 3500–3000 BC) includes a palace-like building (F901) at its center. The building faces south and borders a large plaza. It stands on a north–south axis with another building that apparently housed communal activities. Regional communities may have used the complex.

A grave at Puyang (around 4000 BC) that contains mosaics— a Chinese star map of the Dragon and Tiger asterisms and Beidou (the Big Dipper, Ladle or Bushel)— is oriented along a north–south axis. The presence of both round and square shapes in the Puyang tomb, at Hongshan ceremonial centers and at the late Longshan settlement at Lutaigang, suggests that gaitian cosmography (heaven-round, earth-square) existed in Chinese society long before it appeared in the Zhoubi Suanjing.

Cosmography that bears a resemblance to modern feng shui devices and formulas appears on a piece of jade unearthed at Hanshan and dated around 3000 BC. Archaeologist Li Xueqin links the design to the liuren astrolabe, zhinan zhen, and luopan.

Beginning with palatial structures at Erlitou, all capital cities of China followed rules of feng shui for their design and layout. During the Zhou era, the Kaogong ji (Chinese: 考工記; "Manual of Crafts") codified these rules. The carpenter's manual Lu ban jing (魯班經; "Lu ban's manuscript") codified rules for builders. Graves and tombs also followed rules of feng shui, from Puyang to Mawangdui and beyond. From the earliest records, the structures of the graves and dwellings seem to have followed the same rules.

#### EARLY INSTRUMENTS AND TECHNIQUES

Some of the foundations of feng shui go back more than 3,500 years before the invention of the magnetic compass. It originated in Chinese astronomy. Some current techniques can be traced to Neolithic China, while others were added later (most notably the Han dynasty, the Tang, the Song, and the Ming).

The astronomical history of feng shui is evident in the development of instruments and techniques. According to the Zhouli, the original feng shui instrument may have been a gnomon.



## History of all Medicine

Chinese used circumpolar stars to determine the north–south axis of settlements. This technique explains why Shang palaces at Xiaotun lie 10° east of due north. In some of the cases, as Paul Wheatley observed, they bisected the angle between the directions of the rising and setting sun to find north. This technique provided the more precise alignments of the Shang walls at Yanshi and Zhengzhou. Rituals for using a feng shui instrument required a diviner to examine current sky phenomena to set the device and adjust their position in relation to the device.

The oldest examples of instruments used for feng shui are liuren astrolabes, also known as shi. These consist of a lacquered, two-sided board with astronomical sightlines. The earliest examples of liuren astrolabes have been unearthed from tombs that date between 278 BC and 209 BC. Along with divination for Da Liu Ren the boards were commonly used to chart the motion of Taiyi through the nine palaces. The markings on a liuren/shi and the first magnetic compasses are virtually identical.

The magnetic compass was invented for feng shui and has been in use since its invention.

Traditional feng shui instrumentation consists of the Luopan or the earlier south-pointing spoon (指南針 zhinan zhen)—though a conventional compass could suffice if one understood the differences. A feng shui ruler (a later invention) may also be employed.

A feng shui spiral at Los Angeles Chinatown's Metro station

### DEFINITION AND CLASSIFICATION

The goal of feng shui as practiced today is to situate the human-built environment on spots with good qi, an imagined form of "energy". The "perfect spot" is a location and an axis in time.

Traditional feng shui is inherently a form of ancestor worship. Popular in farming communities for centuries, it was built on the idea that the ghosts of ancestors and other independent, intangible forces, both personal and impersonal, affected the material world, and that these forces needed to be placated through rites and suitable burial places, which the feng shui practitioner would assist with for a fee. The primary underlying value was material success for the living.

According to Stuart Vyse, feng shui is "a very popular superstition." The PRC government has also labeled it as superstitious. Feng shui is classified as a pseudoscience since it exhibits a number of classic pseudoscientific aspects such as making claims about the functioning of the world which are not amenable to testing with the scientific method. It has been identified as both non-scientific and pseudoscientific by scientists and philosophers, and has been described as a paradigmatic example of pseudoscience.

Qi (ch'i)

### FOUNDATIONAL CONCEPTS

A traditional turtle-back tomb of southern Fujian, surrounded by an omega-shaped ridge protecting it from the "noxious winds" from the three sides

Qi (气, pronounced "chee") is a movable positive or negative life force which plays an essential role in feng shui. The Book of Burial says that burial takes advantage of "vital qi". The goal of feng shui is to take advantage of vital qi by appropriate siting of graves and structures.

## POLARITY

Polarity is expressed in feng shui as yin and yang theory. That is, it is of two parts: one creating an exertion and one receiving the exertion. The development of this theory and its corollary, five phase theory (five element theory), have also been linked with astronomical observations of sunspot.

The Five Elements or Forces (wu xing) – which, according to the Chinese, are metal, earth, fire, water, and wood – are first mentioned in Chinese literature in a chapter of the classic Book of History. They play a very important part in Chinese thought: ‘elements’ meaning generally not so much the actual substances as the forces essential to human life. Earth is a buffer, or an equilibrium achieved when the polarities cancel each other. While the goal of Chinese medicine is to balance yin and yang in the body, the goal of feng shui has been described as aligning a city, site, building, or object with yin-yang force fields.

### Bagua (eight trigrams)

Eight diagrams known as bagua (or pa kua) loom large in feng shui, and both predate their mentions in the Yijing (or I Ching). The Lo (River) Chart (Luoshu) was developed first, and is sometimes associated with Later Heaven arrangement of the bagua. This and the Yellow River Chart (Hetu, sometimes associated with the Earlier Heaven bagua) are linked to astronomical events of the sixth millennium BC, and with the Turtle Calendar from the time of Yao. The Turtle Calendar of Yao (found in the Yaodian section of the Shangshu or Book of Documents) dates to 2300 BC, plus or minus 250 years.

In Yaodian, the cardinal directions are determined by the marker-stars of the mega-constellations known as the Four Celestial Animals:

East: The Azure Dragon (Spring equinox)—Niao (Bird 鳥),  $\alpha$  Scorpionis

South: The Vermilion Bird (Summer solstice)—Huo (Fire 火),  $\alpha$  Hydrae

West: The White Tiger (Autumn equinox)—Mǎo (Hair 毛),  $\eta$  Tauri (the Pleiades)

North: The Black Tortoise (Winter solstice)—Xū (Emptiness, Void 虛),  $\alpha$  Aquarii,  $\beta$  Aquarii

The diagrams are also linked with the sifang (four directions) method of divination used during the Shang dynasty. The sifang is much older, however. It was used at Niuheliang, and figured large in Hongshan culture's astronomy. And it is this area of China that is linked to Yellow Emperor (Huangdi) who allegedly invented the south-pointing spoon (see compass).

Traditional feng shui is an ancient system based upon the observation of heavenly time and earthly space. Literature, as well as archaeological evidence, provide some idea of the origins and nature of feng shui techniques. Aside from books, there is also a strong oral history. In many cases, masters have passed on their techniques only to selected students or relatives.

Modern practitioners of feng shui draw from several branches in their own practices.

## FORM BRANCH

The Form Branch is the oldest branch of feng shui. Qing Wuzi in the Han dynasty describes it in the Book of the Tomb and Guo Pu of the Jin dynasty follows up with a more complete description in The Book of Burial.

## History of all Medicine

The Form branch was originally concerned with the location and orientation of tombs (Yin House feng shui), which was of great importance. The branch then progressed to the consideration of homes and other buildings (Yang House feng shui).

The "form" in Form branch refers to the shape of the environment, such as mountains, rivers, plateaus, buildings, and general surroundings. It considers the five celestial animals (phoenix, green dragon, white tiger, black turtle, and the yellow snake), the yin-yang concept and the traditional five elements (Wu Xing: wood, fire, earth, metal, and water).

The Form branch analyzes the shape of the land and flow of the wind and water to find a place with ideal qi. It also considers the time of important events such as the birth of the resident and the building of the structure.

### COMPASS BRANCH

The Compass branch is a collection of more recent feng shui techniques based on the Eight Directions, each of which is said to have unique qi. It uses the Luopan, a disc marked with formulas in concentric rings around a magnetic compass.

### TRADITIONAL FENG SHUI

The Compass Branch includes techniques such as Flying Star and Eight Mansions.

More recent forms of feng shui simplify principles that come from the traditional branches, and focus mainly on the use of the bagua.

### ASPIRATIONS METHOD

The Eight Life Aspirations style of feng shui is a simple system which coordinates each of the eight cardinal directions with a specific life aspiration or station such as family, wealth, fame, etc., which come from the Bagua government of the eight aspirations. Life Aspirations is not otherwise a geomantic system.

### Ti Li (Form Branch)

Popular Xingshi Pai (形勢派) "forms" methods

Luan Tou Pai, 巒頭派, Pinyin: luán tóu pài, (environmental analysis without using a compass)

Xing Xiang Pai, 形象派 or 形像派, Pinyin: xíng xiàng pài, (Imaging forms)

Xingfa Pai, 形法派, Pinyin: xíng fǎ pài

Liiqi Pai (Compass Branch)

Popular Liiqi Pai (理氣派) "Compass" methods

San Yuan Method, 三元派 (Pinyin: sān yuán pài)

Dragon Gate Eight Formation, 龍門八法 (Pinyin: lóng mén bā fǎ)

Xuan Kong, 玄空 (time and space methods)

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Xuan Kong Fei Xing 玄空飛星 (Flying Stars methods of time and directions)

Xuan Kong Da Gua, 玄空大卦 ("Secret Decree" or 64 gua relationships)

Xuan Kong Mi Zi, 玄空秘旨 (Mysterious Space Secret Decree)

Xuan Kong Liu Fa, 玄空六法 (Mysterious Space Six Techniques)

Western forms of feng shui

List of specific feng shui branches

Zi Bai Jue, 紫白訣 (Purple White Scroll)

San He Method, 三合派 (environmental analysis using a compass)

Accessing Dragon Methods

Ba Zhai, 八宅 (Eight Mansions)

Yang Gong Feng Shui, 楊公風水

Water Methods, 河洛水法

Local Embrace

Others

Yin House Feng Shui, 陰宅風水 (Feng Shui for the deceased)

Four Pillars of Destiny, 四柱命理 (a form of hemerology)

Zi Wei Dou Shu, 紫微斗數 (Purple Star Astrology)

I-Ching, 易經 (Book of Changes)

Qi Men Dun Jia, 奇門遁甲 (Mysterious Door Escaping Techniques)

Da Liu Ren, 大六壬 (Divination: Big Six Heavenly Yang Water Qi)

Tai Yi Shen Shu, 太乙神數 (Divination: Tai Yi Magical Calculation Method)

Date Selection, 擇日 (Selection of auspicious dates and times for important events)

Chinese Palmistry, 掌相學 (Destiny reading by palm reading)

Chinese Face Reading, 面相學 (Destiny reading by face reading)

Major & Minor Wandering Stars (Constellations)

## History of all Medicine

Five phases, 五行 (relationship of the five phases or wuxing)

BTB Black (Hat) Tantric Buddhist Sect (Westernised or Modern methods not based on Classical teachings)

Symbolic Feng Shui, (New Age Feng Shui methods that advocate substitution with symbolic (spiritual, appropriate representation of five elements) objects if natural environment or object/s is/are not available or viable)

Pierce Method of Feng Shui (Sometimes Pronounced: Von Shway) The practice of melding striking with soothing furniture arrangements to promote peace and prosperity

After Richard Nixon's visit to the People's Republic of China in 1972, feng shui became popular in the United States. Critics, however, warn that attempts to prove its power scientifically have shown that it is a pseudoscience. Others charge that it has been reinvented and commercialized by New Age entrepreneurs or are concerned that much of the traditional theory has been lost in translation, not paid proper consideration, frowned upon, or even scorned.

Feng shui, however, has nonetheless found many uses. Landscape ecologists often find traditional feng shui an interesting study. In many cases, the only remaining patches of Asian old forest are "feng shui woods", associated with cultural heritage, historical continuity, and the preservation of various flora and fauna species. Some researchers interpret the presence of these woods as indicators that the "healthy homes", sustainability and environmental components of traditional feng shui should not be easily dismissed. Environmental scientists and landscape architects have researched traditional feng shui and its methodologies. Architects study feng shui as an Asian architectural tradition. Geographers have analyzed the techniques and methods to help locate historical sites in Victoria, British Columbia, Canada, and archaeological sites in the American Southwest, concluding that Native Americans also considered astronomy and landscape features.

Believers use it for healing purposes though there is no empirical evidence that it is in any way effective, to guide their businesses, or create a peaceful atmosphere in their homes. In particular, they use feng shui in the bedroom, where a number of techniques involving colors and arrangement achieve comfort and peaceful sleep. Some users of feng shui may be trying to gain a sense of security or control, such as by choosing auspicious numbers for their phones or Contemporary uses of traditional feng shui

A modern "feng shui fountain" at Taipei 101, Taiwan favorable house locations. Their motivation is similar to the reasons that some people consult fortune-tellers.

In 2005, Hong Kong Disneyland acknowledged feng shui as an important part of Chinese culture by shifting the main gate by twelve degrees in their building plans. This was among actions suggested by the planner of architecture and design at Walt Disney Imagineering, Wing Chao.

At Singapore Polytechnic and other institutions, professionals including engineers, architects, property agents and interior designers, take courses on feng shui and divination every year, a number of whom becoming part-time or full-time feng shui consultants.

### TRADITIONAL FENG SHUI

Matteo Ricci (1552–1610), one of the founding fathers of Jesuit China missions, may have been the first European to write about feng shui practices. His account in De Christiana expedition apud Sinas tells about feng shui masters (geologi, in Latin) studying prospective construction sites or grave sites "with reference to the head and the tail and the feet of the particular dragons which are supposed to dwell beneath that

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spot". As a Catholic missionary, Ricci strongly criticized the "recondite science" of geomancy along with astrology as yet another superstitio absurdissima of the heathens: "What could be more absurd than their imagining that the safety of a family, honors, and their entire existence must depend upon such trifles as a door being opened from one side or another, as rain falling into a courtyard from the right or from the left, a window opened here or there, or one roof being higher than another?"

Victorian-era commentators on feng shui were generally ethnocentric, and as such skeptical and derogatory of what they knew of feng shui. In 1896, at a meeting of the Educational Association of China, Rev. P. W. Pitcher railed at the "rottenness of the whole scheme of Chinese architecture," and urged fellow missionaries "to erect unabashedly Western edifices of several stories and with towering spires in order to destroy nonsense about fung-shuy".

### CRITICISMS

After the founding of the People's Republic of China in 1949, feng shui was officially considered a "feudalistic superstitious practice" and a "social evil" according to the state's ideology and was discouraged and even banned outright at times. Feng shui remained popular in Hong Kong, and also in the Republic of China (Taiwan), where traditional culture was not suppressed.

During the Cultural Revolution (1966-1976) feng shui was classified as one of the so-called Four Olds that were to be wiped out. Feng shui practitioners were beaten and abused by Red Guards and their works burned. After the death of Mao Zedong and the end of the Cultural Revolution, the official attitude became more tolerant but restrictions on feng shui practice are still in place in today's China. It is illegal in the PRC today to register feng shui consultation as a business and similarly advertising feng shui practice is banned. There have been frequent crackdowns on feng shui practitioners on the grounds of "promoting feudalistic superstitions" such as one in Qingdao in early 2006 when the city's business and industrial administration office shut down an art gallery converted into a feng shui practice. Some officials who had consulted feng shui were terminated and expelled from the Communist Party.

In 21st century mainland China less than one-third of the population believe in feng shui, and the proportion of believers among young urban Chinese is said to be even lower. Chinese academics permitted to research feng shui are anthropologists or architects by profession, studying the history of feng shui or historical feng shui theories behind the design of heritage buildings. They include Cai Dafeng, Vice-President of Fudan University. Learning in order to practice feng shui is still somewhat considered taboo. Nevertheless, it is reported that feng shui has gained adherents among Communist Party officials according to a BBC Chinese news commentary in 2006, and since the beginning of Chinese economic reforms the number of feng shui practitioners is increasing.

### CONTEMPORARY FENG SHUI

#### SYCEE-SHAPED INCENSE USED IN FENG SHUI

One critic called the situation of feng shui in today's world "ludicrous and confusing," asking "Do we really believe that mirrors and flutes are going to change people's tendencies in any lasting and meaningful way?" He called for much further study or "we will all go down the tubes because of our inability to match our exaggerated claims with lasting changes." Robert T.

Carroll sums up the charges:

...feng shui has become an aspect of interior decorating in the Western world and alleged masters of feng shui now hire themselves out for hefty sums to tell people such as Donald Trump which way his doors and

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other things should hang. Feng shui has also become another New Age "energy" scam with arrays of metaphysical products...offered for sale to help you improve your health, maximize your potential, and guarantee fulfillment of some fortune cookie philosophy.

Skeptics charge that evidence for its effectiveness is based primarily upon anecdote and users are often offered conflicting advice from different practitioners, though feng shui practitioners use these differences as evidence of variations in practice or different branches of thought. A critical analyst concluded that "Feng shui has always been based upon mere guesswork".

Another objection was to the compass, a traditional tool for choosing favorable locations for property or burials. Critics point out that the compass degrees are often inaccurate because solar winds disturb the electromagnetic field of the earth. Magnetic North on the compass will be inaccurate because true magnetic north fluctuates.

The American magicians Penn and Teller dedicated an episode of their Bullshit! television show to criticize the acceptance of feng shui in the Western world as science. They devised a test in which the same dwelling was visited by five different feng shui consultants: each produced a different opinion about the dwelling, showing there is no consistency in the professional practice of feng shui.

Feng shui is criticized by Christians around the world. Some have argued that it is "entirely inconsistent with Christianity to believe that harmony and balance result from the manipulation and channeling of nonphysical forces or energies, or that such can be done by means of the proper placement of physical objects. Such techniques, in fact, belong to the world of sorcery.

Feng shui practitioners in China have found officials that are considered superstitious and corrupt easily interested, despite official disapproval. In one instance, in 2009, county officials in Gansu, on the advice of feng shui practitioners, spent \$732,000 to haul a 369-ton "spirit rock" to the county seat to ward off "bad luck". Feng shui may require social influence or money because experts, architecture or design changes, and moving from place to place is expensive.

Less influential or less wealthy people lose faith in feng shui, saying that it is a game only for the wealthy. Others, however, practice less expensive forms of feng shui, including hanging special (but cheap) mirrors, forks, or woks in doorways to deflect negative energy.

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### 1.2.3.4 Qigong <sup>w</sup>

Qigong (/ˈtʃiːˈɡɒŋ/), qi gong, chi kung, chi 'ung, or chi gung (simplified Chinese: 气功; traditional Chinese: 氣功; pinyin: qìgōng; Wade–Giles: ch'í kung; lit. 'life-energy cultivation') is a system of coordinated body-posture and movement, breathing, and meditation used for the purposes of health, spirituality, and martial-arts training. With roots in Chinese medicine, philosophy, and martial arts, qigong is traditionally viewed by the Chinese and throughout Asia as a practice to cultivate and balance qi (pronounced approximately as "chi" or "chee"), translated as "life energy".

Qigong

Qigong practitioners at World Tai Chi and Qigong Day event in Manhattan.

Chinese name

Traditional Chinese

氣功

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|                    |            |
|--------------------|------------|
| Simplified Chinese | 气功         |
| Transcriptions     |            |
| Standard Mandarin  |            |
| Hanyu Pinyin       | qìgōng     |
| Wade–Giles         | ch'í kung  |
| Tongyong Pinyin    | cìgōng     |
| Yale Romanization  | chìgūng    |
| IPA                | [tɕʰikóŋ]  |
| Wu                 |            |
| Romanization       | chi去 khon平 |
| Yue: Cantonese     |            |
| Yale Romanization  | hei gūng   |
| Jyutping           | hei3 gung1 |
| IPA                | [hēi.kóŋ]  |
| Southern Min       |            |
| Hokkien POJ        | khì-kong   |

Qigong practice typically involves moving meditation, coordinating slow-flowing movement, deep rhythmic breathing, and a calm meditative state of mind. People practice qigong throughout China and worldwide for recreation, exercise, relaxation, preventive medicine, self-healing, alternative medicine, meditation, self-cultivation, and training for martial arts.

Qigong (Pinyin), ch'i kung (Wade-Giles), and chi gung (Yale) are Romanized words for two Chinese characters: qì (气 / 氣) and gōng (功).

Qi (or chi) primarily means air, gas or breath but is often translated as a metaphysical concept of 'vital energy', referring to a supposed energy circulating through the body; though a more general definition is universal energy, including heat, light, and electromagnetic energy; and definitions often involve breath, air, gas, or the relationship between matter, energy, and spirit.

Qi is the central underlying principle in traditional Chinese medicine and martial arts. Gong (or kung) is often translated as cultivation or work, and definitions include practice, skill, mastery, merit, achievement, service, result, or accomplishment, and is often used to mean gongfu (kung fu) in the traditional sense of achievement through great effort. The two words are combined to describe systems to cultivate and balance life energy, especially for health and wellbeing.



## Etymology

The term qigong as currently used was promoted in the late 1940s through the 1950s to refer to a broad range of Chinese self-cultivation exercises, and to emphasize health and scientific approaches, while de-emphasizing spiritual practices, mysticism, and elite lineages.

With roots in ancient Chinese culture dating back more than 4,000 years, a wide variety of qigong forms have developed within different segments of Chinese society: in traditional Chinese medicine for preventive and curative functions; in Confucianism to promote longevity and improve moral character; in Daoism and Buddhism as part of meditative practice; and in Chinese martial arts to enhance self-defending abilities. Contemporary qigong blends diverse and sometimes disparate traditions, in particular the Daoist meditative practice of "internal alchemy" (Neidan 內丹術), the ancient meditative practices of "circulating qi" (Xing qi 行氣) and "standing meditation" (Zhan zhuang 站桩), and the slow gymnastic breathing exercise of "guiding and pulling" (Dao yin 導引). Traditionally, qigong was taught by master to students through training and oral transmission, with an emphasis on meditative practice by scholars and gymnastic or dynamic practice by the working masses.

Starting in the late 1940s and the 1950s, the mainland Chinese government tried to integrate disparate qigong approaches into one coherent system, with the intention of establishing a firm scientific basis for qigong practice. In 1949, Liu Guizhen established the name "Qigong" to refer to the system of life-preserving practices that he and his associates developed, based on Dao yin and other philosophical traditions. This attempt is considered by some sinologists as the History and origins



The physical exercise chart; a painting on silk depicting the practice of Qigong Taiji; unearthed in 1973 in Hunan Province, China, from the 2nd-century BC Western Han burial site of Mawangdui Han tombs site, Tomb Number 3.

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preserving practices that he and his associates developed, based on Dao yin and other philosophical traditions. This attempt is considered by some sinologists as the start of the modern or scientific interpretation of qigong. During the Great Leap Forward (1958–1963) and the Cultural Revolution (1966–1976), qigong, along with other traditional Chinese medicine, was under tight control with limited access among the general public, but was encouraged in state-run rehabilitation centers and spread to universities and hospitals.

After the Cultural Revolution, qigong, along with t'ai chi, was popularized as daily morning exercise practiced en masse throughout China.

Popularity of qigong grew rapidly during the Deng and Jiang eras after Mao Zedong's death in 1976 through the 1990s, with estimates of between 60 and 200 million practitioners throughout China. Along with popularity and state sanction came controversy and problems: claims of extraordinary abilities bordering on the supernatural, pseudoscience explanations to build credibility, a mental condition labeled qigong deviation, formation of cults, and exaggeration of claims by masters for personal benefit. In 1985, the state-run National Qigong Science and Research Organization was established to regulate the nation's qigong denominations. In 1999, in response to widespread revival of old traditions of spirituality, morality, and mysticism, and perceived challenges to State control, the Chinese government took measures to enforce control of public qigong practice, including shutting down qigong clinics and hospitals, and banning groups such as Zhong Gong and Falun Gong.: 161–174

Since the 1999 crackdown, qigong research and practice have only been officially supported in the context of health and traditional Chinese medicine. The Chinese Health Qigong Association, established in 2000, strictly regulates public qigong practice, with limitation of public gatherings, requirement of state approved training and certification of instructors, and restriction of practice to stateapproved forms.

Through the forces of migration of the Chinese diaspora, tourism in China, and globalization, the practice of qigong spread from the Chinese community to the world. Today, millions of people around the world practice qigong and believe in the benefits of qigong to varying degrees. Similar to its historical origin, those interested in qigong come from diverse backgrounds and practice it for different reasons, including for recreation, exercise, relaxation, preventive medicine, selfhealing, alternative medicine, self-cultivation, meditation, spirituality, and martial arts training.

## PRACTICES

### OVERVIEW

Qigong comprises a diverse set of practices that coordinate body (調身), breath (調息), and mind (調心) based on Chinese philosophy. Practices include moving and still meditation, massage, chanting, sound meditation, and non-contact treatments, performed in a broad array of body postures. Qigong is commonly classified into two foundational categories: 1) dynamic or active qigong (dong gong), with slow flowing movement; and 2) meditative or passive qigong (jing gong), with still positions and inner movement of the breath.: 21770–21772 From a therapeutic perspective, qigong can be classified into two systems:

- 1) internal qigong, which focuses on self-care and self-cultivation, and;
- 2) external qigong, which involves treatment by a therapist who directs or transmits qi.: 21777–21781

As moving meditation, qigong practice typically coordinates slow stylized movement, deep diaphragmatic breathing, and calm mental focus, with visualization of guiding qi through the body. While implementation

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details vary, generally qigong forms can be characterized as a mix of four types of practice: dynamic, static, meditative, and activities requiring external aids.

Dynamic practice involves fluid movement, usually carefully choreographed, coordinated with breath and awareness. Examples include the slow stylized movements of T'ai chi ch'uan, Baguazhang, and Xing Yi Quan. Other examples include graceful movement that mimics the motion of animals in Five Animals (Wu Qin Xi qigong), White Crane, and Wild Goose (Dayan) Qigong. As a form of gentle exercise, qigong is composed of movements that are typically repeated, strengthening and stretching the body, increasing fluid movement (blood, synovial, and lymph), enhancing balance and proprioception, and improving the awareness of how the body moves through space.

Static practice involves holding postures for sustained periods of time. In some cases, this bears resemblance to the practice of Yoga and its continuation in the Buddhist tradition. For example, Yiquan, a Chinese martial art derived from xingyiquan, emphasizes static stance training. In another example, the healing form Eight Pieces of Brocade (Baduanjin qigong) is based on a series of static postures.

Meditative practice utilizes breath awareness, visualization, mantra, chanting, sound, and focus on philosophical concepts such as qi circulation, aesthetics, or moral values. In traditional Chinese medicine and Daoist practice, the meditative focus is commonly on cultivating qi in dantian energy centers and balancing qi flow in meridian and other pathways. In various Buddhist traditions, the aim is to still the mind, either through outward focus, for example on a place, or through inward focus on the breath, a mantra, a koan, emptiness, or the idea of the eternal. In the Confucius scholar tradition, meditation is focused on humanity and virtue, with the aim of self-enlightenment.

### USE OF EXTERNAL AGENTS

Many systems of qigong practice include the use of external agents such as ingestion of herbs, massage, physical manipulation, or interaction with other living organisms. For example, specialized food and drinks are used in some medical and Daoist forms, whereas massage and body manipulation are sometimes used in martial arts forms. In some medical systems a qigong master uses non-contact treatment, purportedly guiding qi through his or her own body into the body of another person.

### FORMS

There are numerous qigong forms. 75 ancient forms that can be found in ancient literature and also 56 common or contemporary forms have been described in a qigong compendium.: 203–433 The list is by no means exhaustive. Many contemporary forms were developed by people who had recovered from their illness after qigong practice.

Most of the qigong forms come under the following categories:

1. Medical qigong
2. Martial qigong
3. Spiritual qigong
4. Intellectual qigong
5. Life nourishing qigong

Development of "health qigong"

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In 1995, there was Qigong Talent Bank, an organization of Science Research of Chinese Qigong, functioning as network system of the senior Chinese qigong talents in China. In order to promote qigong exercises in a standardised and effective way with a scientific approach, The Chinese Health Qigong Association (CHQA) appointed panels of Qigong experts, Chinese medicine doctors and sport science professors from different hospitals, universities and qigong lineage across China to research and develop new sets of qigong exercises. In 2003 the CHQA officially promoted a new system called "health qigong", which consisted of four newly developed health qigong forms:

Health Qigong Muscle-Tendon Change Classic (Health Qigong Yi Jīn Jīng 易筋經).

Health Qigong Five Animals Frolics (Health qigong Wu Qin Xi 五禽戲).

Health Qigong Six Healing Sounds (Health Qigong Liu Zi Jue 六字訣).

Health Qigong Eight Pieces of Brocade (Health Qigong Ba Duan Jin 八段錦).

In 2010, the Chinese Health Qigong Association officially introduced five additional health qigong forms:

Health Qigong Tai Chi Yang Sheng Zhang (太極養生杖): a tai chi form from the stick tradition.

Health Qigong Shi Er Duan Jin (十二段錦): seated exercises to strengthen the neck, shoulders, waist, and legs.

Health Qigong Daoyin Yang Sheng Gong Shi Er Fa (導引養生功十二法): 12 routines from Daoyin tradition of guiding and pulling qi.

Health Qigong Mawangdui Daoyin (馬王堆導引術): guiding qi along the meridians with synchronous movement and awareness.

Health Qigong Da Wu (大舞): choreographed exercises to lubricate joints and guide qi.

Other commonly practised qigong styles and forms include:

Soaring Crane Qigong

Wisdom Healing Qigong

Pan Gu Mystical Qigong

Wild Goose (Dayan) Qigong

Dragon and Tiger Qigong

Primordial Qigong (Wujigong)

Chilel Qigong

Phoenix Qigong

Yuan Qigong

Zhong Yuan Qigong

## TECHNIQUES

Whether viewed from the perspective of exercise, health, philosophy, or martial arts training, several main principles emerge concerning the practice of qigong:

Intentional movement: careful, flowing balanced style Rhythmic breathing: slow, deep, coordinated with fluid movement

Awareness: calm, focused meditative state

Visualization: of qi flow, philosophical tenets, aesthetics

Chanting/Sound: use of sound as a focal point

Additional principles:

Softness: soft gaze, expressionless face

Solid Stance: firm footing, erect spine

Relaxation: relaxed muscles, slightly bent joints

Balance and Counterbalance: motion over the center of gravity

Advanced goals:

Equanimity: more fluid, more relaxed

Tranquility: empty mind, high awareness

Stillness: smaller and smaller movements, eventually to complete stillness

The most advanced practice is generally considered to be with little or no motion.

## TRADITIONAL AND CLASSICAL THEORY

Qigong practitioners in Brazil

Over time, five distinct traditions or schools of qigong developed in China, each with its own theories and characteristics: Chinese Medical Qigong, Daoist Qigong, Buddhist Qigong, Confucian Qigong, and Martial Qigong.: 30–80 All of these qigong traditions include practices intended to cultivate and balance qi.

## TRADITIONAL CHINESE MEDICINE

The theories of ancient Chinese qigong include the Yin-Yang and Five Phases Theory, Essence-Qi-Spirit Theory, Zang-Xiang Theory, and Meridians and Qi-Blood Theory, which have been synthesized as part of Traditional Chinese Medicine (TCM):. 45–57 TCM focuses on tracing and correcting underlying disharmony, in terms of deficiency and excess, using the complementary and opposing forces of yin and yang (陰陽), to create a balanced flow of qi. Qi is believed to be cultivated and stored in three main dantian energy centers and to travel through the body along twelve main meridians (Jīng Luò 經絡), with numerous smaller branches and tributaries. The main meridians correspond to twelve main organs (Zàng fǔ 臟腑). Qi is balanced in terms of yin and yang in the context of the traditional system of Five Phases (Wu xing 五行). A person is believed to become ill or die when qi becomes diminished or unbalanced.

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Health is believed to be returned by rebuilding qi, eliminating qi blockages, and correcting qi imbalances. These TCM concepts do not translate readily to modern science and medicine.

### Daoism

In Daoism, various practices now known as Daoist qigong are claimed to provide a way to achieve longevity and spiritual enlightenment, as well as a closer connection with the natural world.

### Buddhism

In Buddhism meditative practices now known as Buddhist qigong are part of a spiritual path that leads to spiritual enlightenment or Buddhahood.

### Confucianism

In Confucianism practices now known as Confucian qigong provide a means to become a Junzi (君子) through awareness of morality.

In contemporary China, the emphasis of qigong practice has shifted away from traditional philosophy, spiritual attainment, and folklore, and increasingly to health benefits, traditional medicine and martial arts applications, and a scientific perspective. Qigong is now practiced by millions worldwide, primarily for its health benefits, though many practitioners have also adopted traditional philosophical, medical, or martial arts perspectives, and even use the long history of qigong as evidence of its effectiveness.

## CONTEMPORARY CHINESE MEDICAL QIGONG

Qigong has been recognized as a "standard medical technique" in China since 1989, and is sometimes included in the medical curriculum of major universities in China.: 34 The 2013 English translation of the official Chinese Medical Qigong textbook used in China: iv, 385 defines CMQ as "the skill of body-mind exercise that integrates body, breath, and mind adjustments into one" and emphasizes that qigong is based on "adjustment" (tiao 調, also translated as "regulation", "tuning", or "alignment") of body, breath, and mind.: 16–18 As such, qigong is viewed by practitioners as being more than common physical exercise, because qigong combines postural, breathing, and mental training in one to produce a particular psychophysiological state of being.: 15 While CMQ is still based on traditional and classical theory, modern practitioners also emphasize the importance of a strong scientific basis.: 81–89

According to the 2013 CMQ textbook, physiological effects of qigong are numerous, and include improvement of respiratory and cardiovascular function, and possibly neurophysiological function.: 89–102

## CONVENTIONAL MEDICINE

Especially since the 1990s, conventional or mainstream Western medicine often strives to heed the model of evidence-based medicine, EBM, which demotes medical theory, clinical experience, and physiological data to prioritize the results of controlled, and especially randomized, clinical trials of the treatment itself. Although some clinical trials support qigong's effectiveness in treating conditions diagnosed in Western medicine, the quality of these studies is mostly low and, overall, their results are mixed.

Integrative, complementary, and alternative medicine

## CONTEMPORARY QIGONG

Integrative medicine (IM) refers to "the blending of conventional and complementary medicines and therapies with the aim of using the most appropriate of either or both modalities to care for the patient as a whole";: 455–456 whereas complementary is using a non-mainstream approach together with conventional medicine, while alternative is using a non-mainstream approach in place of conventional medicine. Qigong is used by integrative medicine practitioners to complement conventional medical treatment, based on complementary and alternative medicine interpretations of the effectiveness and safety of qigong.: 22278–22306

## SCIENTIFIC BASIS

Scientists interested in qigong have sought to describe or verify the effects of qigong, to explore mechanisms of effects, to form scientific theory with respect to qigong, and to identify appropriate research methodology for further study.: 81–89 In terms of traditional theory, the existence of qi has not been independently verified in an experimental setting. In any case, some researches have reported effects on pathophysiological parameters of biomedical interest.

## RECREATION AND POPULAR USE

People practice qigong for many different reasons, including for recreation, exercise and relaxation, preventive medicine and self-healing, meditation and self-cultivation, and training for martial arts. Practitioners range from athletes to people with disabilities. Because it is low impact and can be done lying, sitting, or standing, qigong is accessible for people with disabilities, seniors, and people recovering from injuries.

## THERAPEUTIC USE

Therapeutic use of qigong is directed by TCM, CAM, integrative medicine, and other health practitioners. In China, where it is considered a "standard medical technique";: 34 qigong is commonly prescribed to treat a wide variety of conditions, and clinical applications include hypertension, coronary artery disease, peptic ulcers, chronic liver diseases, diabetes mellitus, obesity, menopause syndrome, chronic fatigue syndrome, insomnia, tumors and cancer, lower

Practitioners, uses and cautions back and leg pain, cervical spondylosis, and myopia.: 261–391 Outside China qigong is used in integrative medicine to complement or supplement accepted medical treatments, including for relaxation, fitness, rehabilitation, and treatment of specific conditions. However, there is no high-quality evidence that qigong is actually effective for these conditions. Based on systematic reviews of clinical research, there is insufficient evidence for the effectiveness of using qigong as a therapy for any medical condition.

## SAFETY AND COST

Qigong is generally viewed as safe. No adverse effects have been observed in clinical trials, such that qigong is considered safe for use across diverse populations. Cost for self-care is minimal, and cost efficiencies are high for group delivered care. Typically, the cautions associated with qigong are the same as those associated with any physical activity, including risk of muscle strains or sprains, advisability of stretching to prevent injury, general safety for use alongside conventional medical treatments, and consulting with a physician when combining with conventional treatment.

### OVERVIEW

Although there is ongoing clinical research examining the potential health effects of qigong, there is little financial or medical incentive to support high-quality research, and still only a limited number of studies meet accepted medical and scientific standards of randomized controlled trials (RCTs). Clinical research concerning qigong has been conducted for a wide range of medical conditions, including bone density, cardiopulmonary effects, physical function, falls and related risk factors, quality of life, immune function, inflammation, hypertension, pain, and cancer treatment.

### SYSTEMATIC REVIEWS

A 2009 systematic review on the effect of qigong exercises on reducing pain concluded that "the existing trial evidence is not convincing enough to suggest that internal qigong is an effective modality for pain management."

### CLINICAL RESEARCH

A 2010 systematic review of the effect of qigong exercises on cancer treatment concluded "the effectiveness of qigong in cancer care is not yet supported by the evidence from rigorous clinical trials." A separate systematic review that looked at the effects of qigong exercises on various physiological or psychological outcomes found that the available studies were poorly designed, with a high risk of bias in the results. Therefore, the authors concluded, "Due to limited number of RCTs in the field and methodological problems and high risk of bias in the included studies, it is still too early to reach a conclusion about the efficacy and the effectiveness of qigong exercise as a form of health practice adopted by the cancer patients during their curative, palliative, and rehabilitative phases of the cancer journey."

A 2011 overview of systematic reviews of controlled clinical trials, Lee et al. concluded that "the effectiveness of qigong is based mostly on poor quality research" and "therefore, it would be unwise to draw firm conclusions at this stage." Although a 2010 comprehensive literature review found 77 peer-reviewed RCTs, Lee et al.'s overview of systematic reviews as to particular health conditions found problems like sample size, lack of proper control groups, with lack of blinding associated with high risk of bias.

A 2015 systematic review of the effect of qigong exercises on cardiovascular diseases and hypertension found no conclusive evidence for effect. Also in 2015, a systemic review into the effects on hypertension suggested that it may be effective, but that the evidence was not conclusive because of the poor quality of the trials it included, and advised more rigorous research in the future. Another 2015 systematic review of qigong on biomarkers of cardiovascular disease concluded that some trials showed favorable effects, but concludes, "Most of the trials included in this review are likely to be at high risk of bias, so we have very low confidence in the validity of the results."

### MENTAL HEALTH

Many claims have been made that qigong can benefit or ameliorate mental health conditions, including improved mood, decreased stress reaction, and decreased anxiety and depression.

Most medical studies have only examined psychological factors as secondary goals, although various studies have shown decreases in cortisol levels, a chemical hormone produced by the body in response to stress.



## China

Basic and clinical research in China during the 1980s was mostly descriptive, and few results were reported in peer-reviewed English-language journals.: 22060–22063 Qigong became known outside China in the 1990s, and clinical randomized controlled trials investigating the effectiveness of qigong on health and mental conditions began to be published worldwide, along with systematic reviews.: 21792–21798

### CHALLENGES

Most existing clinical trials have small sample sizes and many have inadequate controls. Of particular concern is the impracticality of double blinding using appropriate sham treatments, and the difficulty of placebo control, such that benefits often cannot be distinguished from the placebo effect.: 22278–22306 Also of concern is the choice of which qigong form to use and how to standardize the treatment or amount with respect to the skill of the practitioner leading or administering treatment, the tradition of individualization of treatments, and the treatment length, intensity, and frequency.: 6869–6920, 22361–22370

Qigong is practiced for meditation and self-cultivation as part of various philosophical and spiritual traditions. As meditation, qigong is a means to still the mind and enter a state of consciousness that brings serenity, clarity, and bliss. Many practitioners find qigong, with its gentle focused movement, to be more accessible than seated meditation.

Qigong for self-cultivation can be classified in terms of traditional Chinese philosophy: Daoist, Buddhist, and Confucian. The practice of qigong is an important component in both internal and external style Chinese martial arts. Focus on qi is considered to be a source of power as well as the foundation of the internal style of martial arts (Neijia). T'ai Chi Ch'uan, Xing Yi Quan, and Baguazhang are representative of the types of Chinese martial arts that rely on the concept of qi as the foundation. Extraordinary feats of martial arts prowess, such as the ability to withstand heavy strikes (Iron Shirt, 鐵衫) and the ability to break hard objects (Iron Palm, 鐵掌) are abilities attributed to qigong training.

### MEDITATION AND SELF-CULTIVATION APPLICATIONS

#### Martial arts applications

##### T'ai Chi Ch'uan and qigong

T'ai Chi Ch'uan (Taijiquan) is a widely practiced Chinese internal martial style based on the theory of taiji, closely associated with qigong, and typically involving more complex choreographed movement coordinated with breath, done slowly for health and training, or quickly for selfdefense.

Many scholars consider t'ai chi ch'uan to be a type of qigong, traced back to an origin in the seventeenth century. In modern practice, qigong typically focuses more on health and meditation rather than martial applications, and plays an important role in training for t'ai chi ch'uan, in particular used to build strength, develop breath control, and increase vitality ("life energy").

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#### 1.2.3.5 Reflexology <sup>w</sup>

Reflexology, also known as zone therapy, is an alternative medical practice involving the application of pressure to specific points on the feet, ears, and/or hands. This is done using thumb, finger, and hand massage techniques without the use of oil or lotion. It is based on a pseudoscientific system of zones and

## History of all Medicine

reflex areas that purportedly reflect an image of the body on the feet and hands, with the premise that such work on the feet and hands causes a physical change to the supposedly related areas of the body.

### History

Practices resembling reflexology may have existed in previous historical periods. Similar practices have been documented in the histories of India, China and Egypt. Reflexology was introduced to the United States in 1913 by William H. Fitzgerald, M.D. (1872–1942), an ear, nose, and throat specialist, and Edwin F. Bowers. Fitzgerald claimed that applying pressure had an anesthetic effect on other areas of the body. It was modified in the 1930s and 1940s by Eunice D. Ingham (1889–1974), a nurse and physiotherapist. Ingham claimed that the feet and hands were especially sensitive, and mapped the entire body into "reflexes" on the feet, renaming "zone therapy" reflexology. Many of the modern reflexologists use Ingham's methods, or similar techniques of reflexologist Laura Norman.

In 2015 the Australian Government's Department of Health published the results of a review of alternative therapies that sought to determine if any were suitable for being covered by health insurance; reflexology was one of 17 therapies evaluated for which no clear evidence of effectiveness was found. Accordingly, in 2017, the Australian government named reflexology as a practice that would not qualify for insurance subsidy, saying this step would "ensure taxpayer funds are expended appropriately and not directed to therapies lacking evidence".

### 1.2.3.6 Shiatsu <sup>w</sup>

Shiatsu (/ʃiˈæts-, -ˈɑːtsuː/ shee-AT-, -ɹAHT-soo; 指圧) is a form of Japanese bodywork based on pseudoscientific concepts in traditional Chinese medicine such as qi meridians. Having been popularized in the twentieth century by Tokujiro Namikoshi (1905–2000), shiatsu derives from the older Japanese massage modality called anma.

### Shiatsu

"Shiatsu" in new-style (shinjitai) kanji

Japanese name

Shinjitai

指圧

Transcriptions

Romanization

Shiatsu

There is no scientific evidence that shiatsu will prevent or cure any disease. Although it is considered a generally safe treatment—if sometimes painful—there have been reports of adverse health effects arising from its use, a few of them serious.

### Description

In the Japanese language, shiatsu means "finger pressure". Shiatsu techniques include massages with fingers, thumbs, feet and palms; acupressure, assisted stretching; and joint manipulation and mobilization. To examine a patient, a shiatsu practitioner uses palpation and, sometimes, pulse diagnosis.

The Japanese Ministry of Health defines shiatsu as "a form of manipulation by thumbs, fingers and palms without the use of instruments, mechanical or otherwise, to apply pressure to the human skin to correct

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internal malfunctions, promote and maintain health, and treat specific diseases. The techniques used in shiatsu include stretching, holding, and most commonly, leaning body weight into various points along key channels."

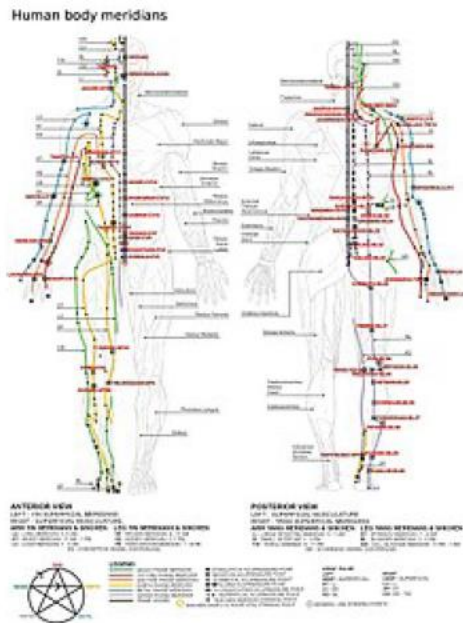
The practice of shiatsu is based on the traditional Chinese concept of qi, which is sometimes described as an "energy flow". Qi is supposedly channeled through certain pathways in the human body, known as meridians, causing a variety of effects. Despite the fact that many practitioners use these ideas in explaining shiatsu, neither qi nor meridians exist as observable phenomena.

### Efficacy

There is no evidence that shiatsu is of any benefit in treating cancer or any other disease, though some evidence suggests it might help people feel more relaxed. In 2015, the Australian Government's Department of Health published the results of a review of alternative therapies that sought to determine if any were suitable for being covered by health insurance; shiatsu was one of 17 therapies evaluated for which no clear evidence of effectiveness was found.

Accordingly, in 2017, the Australian government named shiatsu as a practice that would not qualify for insurance subsidy, to ensure the best use of insurance funds.

### History



Shiatsu practitioners believe that an energy called ki flows through a network of meridians in the body.

Shiatsu's claims of having a positive impact on a recipient's sense of vitality and well-being have to some extent been supported by studies where recipients reported improved relaxation, sleep, and lessened symptom severity. However, the state of the evidence on its efficacy for treating any malady is poor, and one recent systematic review did not find shiatsu to be effective for any particular health condition. It is generally considered safe, though some studies have reported negative effects after a treatment with shiatsu, and examples of serious health complications exist including one case of thrombosis, one embolism, and a documented injury from a "shiatsutype massaging machine".

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Shiatsu evolved from anma, a Japanese style of massage developed in 1320 by Akashi Kan Ichi. Anma was popularised in the seventeenth century by acupuncturist Sugiyama Waichi, and around the same time the first books on the subject, including Fujibayashi Ryohaku's Anma Tebiki ("Manual of Anma"), appeared.



Introduction page, Anma Tebiki

The Fujibayashi school carried anma into the modern age. Prior to the emergence of shiatsu in Japan, masseurs were often nomadic, earning their keep in mobile massage capacities, and paying commissions to their referrers.

Since Sugiyama's time, massage in Japan had been strongly associated with the blind.

Sugiyama, blind himself, established a number of medical schools for the blind which taught this practice. During the Tokugawa period, edicts were passed which made the practice of anma solely the preserve of the blind – sighted people were prohibited from practicing the art. As a result, the "blind anma" has become a popular trope in Japanese culture. This has continued into the modern era, with a large proportion of the Japanese blind community continuing to work in the profession.

Abdominal palpation as a Japanese diagnostic technique was developed by Shinsai Ota in the 17th century.

During the Occupation of Japan by the Allies after World War II, traditional medicine practices were banned (along with other aspects of traditional Japanese culture) by General MacArthur.

The ban prevented a large proportion of Japan's blind community from earning a living. Many Japanese entreated for this ban to be rescinded. Additionally, writer and advocate for blind rights Helen Keller, on being made aware of the prohibition, interceded with the United States government; at her urging, the ban was rescinded.

Tokujiro Namikoshi (1905–2000) founded his shiatsu college in the 1940s and his legacy was the state recognition of shiatsu as an independent method of treatment in Japan. He is often credited with inventing modern shiatsu. However, the term shiatsu was already in use in 1919, when a book called Shiatsu Ho ("finger pressure method") was published by Tamai Tempaku.

Also prior to Namikoshi's system, in 1925 the Shiatsu Therapists Association was founded, with the purpose of distancing shiatsu from anma massage.

Namikoshi's school taught shiatsu within a framework of western medical science. A student and teacher of Namikoshi's school, Shizuto Masunaga, brought shiatsu back to traditional eastern medicine and philosophic framework. Masunaga grew up in a family of shiatsu practitioners, with his mother having studied with Tamai Tempaku. He founded Zen Shiatsu and the Iokai Shiatsu Center school. Another student of Namikoshi, Hiroshi Nozaki founded the Hiron Shiatsu, a holistic technique of shiatsu that uses intuitive techniques and a spiritual approach to healing which identifies ways how to take responsibility

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for a healthy and happy life in the practitioner's own hands. It is practiced mainly in Switzerland, France and Italy, where its founder opened several schools.

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### 1.2.4 Traditional Tibetan medicine <sup>w</sup>

Traditional Tibetan medicine (Tibetan: བོད་རྒྱ་གསལ་བ་རིག་པ་, Wylie: bod kyi gso ba rig pa), also known as Sowa-Rigpa medicine, is a centuries-old traditional medical system that employs a complex approach to diagnosis, incorporating techniques such as pulse analysis and urinalysis, and utilizes behavior and dietary modification, medicines composed of natural materials (e.g., herbs and minerals) and physical therapies (e.g. Tibetan acupuncture, moxabustion, etc.) to treat illness.

The Tibetan medical system is based upon Indian Buddhist literature (for example Abhidharma and Vajrayana tantras) and Ayurveda. It continues to be practiced in Tibet, India, Nepal, Bhutan, Ladakh, Siberia, China and Mongolia, as well as more recently in parts of Europe and North America. It embraces the traditional Buddhist belief that all illness ultimately results from the three poisons: delusion, greed and aversion. Tibetan medicine follows the Buddha's Four Noble Truths which apply medical diagnostic logic to suffering.

#### History

As Indian culture flooded Tibet in the eleventh and twelfth centuries, a number of Indian medical texts were also transmitted. For example, the Ayurvedic Astāngahrdayasamhitā (Heart of Medicine Compendium attributed to Vagbhata) was translated into Tibetan by རིན་ཆེན་བཟང་པོ། (Rinchen Zangpo) (957–1055). Tibet also absorbed the early Indian Abhidharma literature, for example the fifth-century Abhidharmakosabhasyam by Vasubandhu, which expounds upon medical topics, such as fetal development. A wide range of Indian Vajrayana tantras, containing practices based on medical anatomy, were subsequently absorbed into Tibet.

Some scholars believe that rgyud bzhi (the Four Tantras) was told by the Buddha, while some believe it is the primary work of གཡུ་ཐོག་ཡོན་ཏན་མགོན་པོ། (Yuthok Yontan Gonpo, 708 AD). The former opinion is often refuted by saying "If it was told by the Lord Buddha, rgyud bzhi should have a Sanskrit version". However, there is no such version and also no Indian practitioners who have received unbroken lineage of rgyud bzhi. Thus, the later thought should be scholarly considered authentic and practical. The provenance is uncertain.

It was the aboriginal Tibetan people's accumulative knowledge of their local plants and their various usages for benefiting people's health that were collected by ལྷོན་པོ་གཤེན་རབ་མེ་བོ་ཆེ། the Tonpa Shenrab Miwoche and passed down to one of his sons. Later Yuthok Yontan Gonpo perfected it and there was no author for the books, because at the time it was politically incorrect to mention anything related to Bon nor faith in it.

གཡུ་ཐོག་ཡོན་ཏན་མགོན་པོ། (Yuthok Yontan Gonpo) adapted and synthesized the Four Tantras in the 12th Century. The Four Tantras are scholarly debated as having Indian origins or, as Remedy Master Buddha Bhaijagyuru's word or, as authentically Tibetan. It was not formally taught in schools at first but, intertwined with Tibetan Buddhism. Around the turn of the 14th century, the Drangti family of physicians established a curriculum for the Four Tantras (and the supplementary literature from the Yutok school) at ས་སྐྱ་དགོན། (Sakya Monastery). The ང་ལའི་ལྷ་ མ་སྐྱ་ཕེད་ལྷ་བ། (5th Dalai Lama) supported ལྷེ་སྲིད་སངས་རྒྱལ་རྒྱ་མཚོ། (Desi Sangye Gyatso) to found the pioneering Chagpori College of Medicine in 1696. Chagpori taught Gyamtso's Blue Beryl as well as the Four Tantras in a model that spread throughout Tibet along with the oral tradition.

## History of all Medicine

The Four Tantras (Gyuzhi, ལྷན་བཞི།) is a native Tibetan text incorporating Indian, Chinese and Greco-Arab medical systems. The Four Tantras is believed to have been created in the twelfth century and still today is considered the basis of Tibetan medical practise. The Four Tantras is the common name for the text of the Secret Tantra Instruction on the Eight Branches, the Immortality Elixir essence. It considers a single medical doctrine from four perspectives. Sage Vidyajnana expounded their manifestation. The basis of the Four Tantras is to keep the three bodily humors in balance; (wind rlung, bile mkhris pa, phlegm bad kan.)

### Four Tantras

Root Tantra – A general outline of the principles of Tibetan medicine, it discusses the humors in the body and their imbalances and their link to illness. The Four Tantra uses visual observation to diagnose predominantly the analysis of the pulse, tongue and analysis of the urine (in modern terms known as urinalysis)

Exegetical Tantra – This section discusses in greater detail the theory behind the Four Tantras and gives general theory on subjects such as anatomy, physiology, psychopathology, embryology and treatment.

Instructional Tantra – The longest of the Tantras is mainly a practical application of treatment, it explains in detail illnesses and which humoral imbalance which causes the illness. This section also describes their specific treatments.

Subsequent Tantra – Diagnosis and therapies, including the preparation of Tibetan medicine and cleansing of the body internally and externally with the use of techniques such as moxibustion, massage and minor surgeries.

Some believe the Four Tantra to be the authentic teachings of the Buddha 'Master of remedies' which was translated from Sanskrit, others believe it to be solely Tibetan in creation by Yuthog the Elder or Yuthog the Younger. Noting these two theories there remain others sceptical as to its original author.

Believers in the Buddhist origin of the Four Tantras and how it came to be in Tibet believe it was first taught in India by the Buddha when he manifested as the 'Master of Remedies'. The Four Tantra was then in the eighth century translated and offered to Padmasambhava by Vairocana and concealed in Samye monastery. In the second half of the eleventh century it was rediscovered and in the following century it was in the hands of Yuthog the Younger who completed the Four Tantras and included elements of Tibetan medicine, which would explain why there is Indian elements to the Four Tantras.

Although there is clear written instruction in the Four Tantra, the oral transmission of medical knowledge still remained a strong element in Tibetan Medicine, for example oral instruction may have been needed to know how to perform a moxibustion technique.

Like other systems of traditional Asian medicine, and in contrast to biomedicine, Tibetan medicine first puts forth a specific definition of health in its theoretical texts. To have good health, Tibetan medical theory states that it is necessary to maintain balance in the body's three Three principles of function principles of function [often translated as humors]: rLung (pron. Loong), mKhris-pa (pron. Treepa) [often translated as bile], and Bad-kan (pron. Pay-gen) [often translated as phlegm].

- rLung is the source of the body's ability to circulate physical substances (e.g. blood), energy (e.g. nervous system impulses), and the non-physical (e.g. thoughts). In embryological development, the mind's expression of materialism is manifested as the system of rLung. There are five distinct subcategories of

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rLung each with specific locations and functions: Srog-'Dzin rLüng, Gyen-rGyu rLung, Khyab-Byed rLüng, Me-mNyam rLung, Thur-Sel rLüng.

- mKhris-pa is characterized by the quantitative and qualitative characteristics of heat, and is the source of many functions such as thermoregulation, metabolism, liver function and discriminating intellect. In embryological development, the mind's expression of aggression is manifested as the system of mKhris-pa. There are five distinct subcategories of mKhris-pa each with specific locations and functions: 'Ju-Byed mKhris-pa, sGrub-Byed mKhris-pa, mDangs-sGyur mKhris-pa, mThong-Byed mKhris-pa, mDog-Sel mKhris-pa.

- Bad-kan is characterized by the quantitative and qualitative characteristics of cold, and is the source of many functions such as aspects of digestion, the maintenance of our physical structure, joint health and mental stability. In embryological development, the mind's expression of ignorance is manifested as the system of Bad-kan. There are five distinct subcategories of Bad-kan each with specific locations and functions: rTen-Byed Bad-kan, Myag-byed Bad-kan, Myong-Byed Bad-kan, Tsim-Byed Bad-kan, 'Byor-Byed Bad-kan.

### Usage



Center for Oriental Medicine. Ulan-Ude, Buryatia, Russia

A key objective of the government of Tibet is to promote traditional Tibetan medicine among the other ethnic groups in China. Once an esoteric monastic secret, the Tibet University of Traditional Tibetan Medicine and the Qinghai University Medical School now offer courses in the practice. In addition, Tibetologists from Tibet have traveled to European countries such as Spain to lecture on the topic.

The Tibetan government-in-exile has also kept up the practise of Tibetan Medicine in India since 1961 when it re-established the Men-Tsee-Khang (the Tibetan Medical and Astrological Institute). It now has 48 branch clinics in India and Nepal.

The Government of India has approved the establishment of the National Institute for Sowa-Rigpa (NISR) in Leh to provide opportunities for research and development of Sowa-Rigpa.

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### 1.2.5 Traditional Korean medicine <sup>w</sup>

Traditional Korean medicine (known in North Korea as Koryo medicine) refers to the forms of traditional medicine practiced in Korea.



A Korean acupuncturist inserting a needle into the leg of a male patient. Wellcome Collection

Korean medicine traditions originated in ancient and prehistoric times and can be traced back as far as 3000 B.C. when stone and bone needles were found in North Hamgyong Province, in present-day North Korea. Korean medicine originated from China. In Gojoseon, where the founding myth of Korea is recorded, there is a story of a tiger and a bear who wanted to reincarnate in human form and who ate wormwood and garlic. In *Jewang Ungi* (제왕운기), which was written around the time of *Samguk Yusa*, wormwood and garlic are described as 'edible medicine', showing that, even in times when incantatory medicine was the mainstream, medicinal herbs were given as curatives in Korea. Medicinal herbs at this time were used as remedial treatment such as easing the pain or tending injury, along with knowing what foods were good for health.

In the period of the Three Kingdoms, traditional Korean medicine was mainly influenced by other traditional medicines such as ancient Chinese medicine. In the Goryeo dynasty, a more intense investigation of domestic herbs took place: The result was the publication of numerous books on domestic herbs. Medical theories at this time were based on the medicine of Song dynasty, but prescriptions were based on the medicine of the Unified Silla period such as the medical text *First Aid Prescriptions Using Native Ingredients* or *Hyangyak Gugeupbang* (향약구급방), which was published in 1236. Other medical journals were published during this period like *Introductory*

*Guide to Medicine for the General Public* or *Jejungiphyobang* (제중입효방).

Medicine flourished in the period of the Joseon. For example, the first training system of nurses was instituted under King Taejong (1400–1418), while under the reign of King Sejong the Great (1418–1450) measures were adopted to promote the development of a variety of Korean medicinal ingredients. These efforts were systematized and published in the *Hyangyak Jipseongbang* (향약집성방, 1433), which was completed and included 703 Korean native medicines, providing an impetus to break away from dependence on Chinese medicine. The medical encyclopaedia named *Classified Collection of Medical Prescriptions* (醫方類聚, 의방유취), which included many classics from traditional Chinese medicine, written by Kim Ye-mong (金禮蒙, 김예몽) and other Korean official doctors from 1443 to 1445, was regarded as one of the greatest medical texts of the 15th century. It included more than 50,000 prescriptions and incorporated 153 different Korean and Chinese texts, including the *Concise*



## History of all Medicine

Prescriptions of Royal Doctors (御醫撮要方, 어의촬요방) which was written by Choi Chong-jun (崔宗峻, 최중준) in 1226. Classified Collection of Medical Prescriptions has very important research value, because it keeps the contents of many ancient Korean and Chinese medical books that had been lost for a long time.

After this, many books on medical specialties were published. There are three physicians from the Joseon Dynasty (1392–1910) who are generally credited with further development of traditional Korean medicine—Heo Jun, Saam, and Lee Je-ma. After the Japanese invasion in 1592, Dongueui Bogam (동의보감) was written by Heo Jun, the first of the major physicians. This work further integrated the Korean and Chinese medicine of its time and was influential to Chinese, Japanese and Vietnamese medicine.

The next major influence to traditional Korean medicine is related to Sasang typology (사상의학).

Lee Je-ma and his book, The Principal of Life Preservation in Oriental Medicine (東醫壽世保元, 동의수세보원) systematically theorized with the influence of Korean Confucianism and his clinical experiences in Korea. Lee Je-ma said that even if patients suffer the same illness, patients need to use different herbal applications to treat the same illness due to the pathophysiologies of individuals. He stresses that the health of human body had a close relationship with the state of mind. He believed that the human mind and body were not separate and they closely reflected each other, and the aspect of mind needed to be considered when examining the causes of disease. Thus, not only food and natural environment but also emotional changes in humans can be another major reason for illness. He believed that medical diagnosis and treatment should be based on person's typology rather than on symptoms alone and each person should be given different prescriptions depending on the constitution of the individual. Sasang typology (사상의학) focuses on the individual patients based on different reactions to disease and herbs. Treat illness by the treatment of the root cause through proper diagnosis. Key to this diagnosis is to first determine the internal organs or pathophysiology of each patient.

Dongui Bogam, National Museum of Korea

The next recognized individual is Saam, a priest-physician who is believed to have lived during the 16th century. Although there is much unknown about Saam, including his real name and date of birth, it is recorded that he studied under the famous monk Samyang. He developed a system of acupuncture that employs the five element theory.

In the late Joseon dynasty, positivism was widespread. Clinical evidence was used more commonly as the basis for studying disease and developing cures. Scholars who had turned away from politics devoted themselves to treating diseases and, in consequence, new schools of traditional medicine were established. Simple books on medicine for the common people were published.

Lee Je-ma classified human beings into four main types, based on the emotion that dominated their personality and developed treatments for each type:

Tae-Yang (태양, 太陽) or "greater yang"

So-Yang (소양, 小陽) or "lesser yang"

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Tae-Eum (태음, 太陰) or "greater yin"

So-Eum (소음, 小陰) or "lesser yin"

A study focused on the examination of traditional Korean medicine during the Covid pandemic has concluded that "traditional Korean medicine homecare services could function as a viable alternative for continued medical care disrupted during the coronavirus disease 19 pandemic."

### Methods

#### Herbal medicine



hanyak (traditional medicine)

Herbalism is the study and practice of using plant material for the purpose of food, medicine, or health. They may be flowers, plants, shrubs, trees, moss, lichen, fern, algae, seaweed or fungus.

The plant may be used in its entirety or with only specific parts. In each culture or medical system there are different types of herbal practitioners: professional and lay herbalists, plant gatherers, and medicine makers.

Herbal medicines may be presented in many forms including fresh, dried, whole, or chopped.

Herbs may be prepared as infusions when an herb is soaked in a liquid or decocted—simmered in water over low heat for a certain period. Some examples of infusion are chamomile or peppermint, using flowers, leaves and powdered herbs. Decocting examples may be rose hips, cinnamon bark, and licorice root consisting of fruits, seeds, barks, and roots. Fresh and dried herbs can be tinctured where herbs are kept in alcohol or contained in a vinegar extract. They can be preserved as syrups such as glycerites in vegetable glycerin or put in honey known as miels. Powdered and freeze dried herbs can be found in bulk, tablets, troches similar to a lozenge, pastes, and capsules.

Non-oral herbal uses consist of creams, baths, oils, ointments, gels, distilled waters, washes, poultices, compresses, snuffs, steams, inhaled smoke and aromatics volatile oils.

Many herbalists consider the patient's direct involvement to be critical. These methods are delivered differently depending on the herbal traditions of each area. Nature is not necessarily safe; special attention should be used when grading quality, deciding a dosage, realizing possible effects, and any interactions with herbal medications.

An example of herbal medicine is the use of medicinal mushrooms as a food and as a tea. A notable mushroom used in traditional Korean medicine is *Phellinus linteus* known as Song-gen.

## Acupuncture



Doctor's office in folk village in premodern Korea.

Acupuncture is used to withdraw blood or stimulate certain points on humans and animals by inserting them on specific pressure points of the body. Traditional acupuncture involves the belief that a "life force" (qi) circulates within the body in lines called meridians. Scientific investigation has not found any histological or physiological evidence for traditional Chinese concepts such as qi, meridians, and acupuncture points, and many modern practitioners no longer support the existence of life force energy (qi) flowing through meridians, which was a major part of early belief systems. Pressure points can be stimulated through a mixture of methods ranging from the insertion and withdrawal of very small needles to the use of heat, known as moxibustion. Pressure points can also be stimulated by laser, massage, and electrical means.: 234

## Moxibustion

Moxibustion is a technique in which heat is applied to the body with a stick or a cone of burning mugwort. The tool is placed over the affected area without burning the skin. The cone or stick can also be placed over a pressure point to stimulate and strengthen the blood.

A Cochrane Review found limited evidence for the use of moxibustion in correcting breech presentation of babies, and called for more experimental trials. Moxibustion has also been studied for the treatment of pain, cancer, stroke, ulcerative colitis, constipation, and hypertension. Systematic reviews have found that these studies are of low quality and positive findings could be due to publication bias.

## Education

### Graduate School of Korean Medicine

The South Korean government established a national school of traditional Korean medicine to establish its national treasure on a solid basis after the closing of the first modern educational facility (Dong-Je medical school) one hundred years ago by the Japanese invasion.

In 2008, the School of Korean Medicine was established inside Pusan National University with the 50 undergraduate students on the Yangsan medical campus. The new affiliated Korean Medical Hospital and Research Center for Clinical Studies are under construction.

Compared with common private traditional medicine undergraduate schools (6 years), this is a special graduate school (4+4).

### General Hospital of Koryo Medicine

Koryo medicine is a form of traditional medicine used in North Korea and promoted by the North Korean government, providing half of the reported healthcare in the country. It is largely practised in the General Hospital of Koryo Medicine, Pyongyang. Examples of Koryo medicine sold commercially are Kumdang-2 and Royal Blood-Fresh, sold by the Pugang Pharmaceutic Company, both of which are popular with Chinese tourists to North Korea.

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### 1.2.6 Indian Medicine <sup>m</sup>

Indian medicine began with the belief that illness was caused by the Gods or by demons and was a punishment for bad behaviour. Over time however other beliefs arose such as that which considered good health required a balance being kept between the elements of air, bile and mucous.

India developed surgery to a higher standard, than any of the other ancient civilizations. This was because the prohibition on human dissection which existed in Europe, China and the Arab world did not exist in India. This enabled the Indian physicians to obtain a good knowledge of human bones, muscles, blood vessels and joints. A wide variety of surgical operations was carried out, including cosmetic surgery on people who had been mutilated as part of a legal punishment. An adulterous wife could have her nose cut off as a punishment and Indian surgeons learnt how to repair the damage and replace the nose.

India is a land of many diseases and Indian doctors were familiar with 1,120 different diseases. They guessed the connection between malaria and mosquitoes, noticed that the plague was foreshadowed by the death of large numbers of rats and that flies could infect food causing intestinal disease. They were also aware that cleanliness could help in the prevention of disease.

#### 1.2.6.1 Indian Systems of Medicine: A Brief Profile <sup>o</sup>

##### Abstract

Medicinal plants based traditional systems of medicines are playing important role in providing health care to large section of population, especially in developing countries. Interest in them and utilization of herbal products produced based on them is increasing in developed countries also. To obtain optimum benefit and to understand the way these systems function, it is necessary to have minimum basic level information on their different aspects. Indian Systems of Medicine are among the well known global traditional systems of medicine. In this review, an attempt has been made to provide general information pertaining to different aspects of these systems. This is being done to enable the readers to appreciate the importance of the conceptual basis of these system in evolving the material medica. The aspects covered include information about historical background, conceptual basis, different disciplines studied in the systems, Research and Development aspects, Drug manufacturing aspects and impact of globalization on Ayurveda. In addition, basic information on Siddha and Unani systems has also been provided.

Key words: Indian System of Medicine, Ayurveda, Unani, Siddha, Indigenous systems of medicine, Traditional systems of medicine

##### Introduction

It is a well-known fact that Traditional Systems of medicines always played important role in meeting the global health care needs. They are continuing to do so at present and shall play major role in future also. The system of medicines which are considered to be Indian in origin or the systems of medicine, which have come to India from outside and got assimilated in to Indian culture are known as Indian Systems of Medicine (Prasad, 2002). India has the unique distinction of having six recognized systems of medicine in this category. They are- Ayurveda, Siddha, Unani and Yoga, Naturopathy and Homoeopathy. Though Homoeopathy came to India in 18th Century, it completely assimilated in to the Indian culture and got enriched like any other traditional system hence it is considered as part of Indian Systems of Medicine (Prasad, 2002). Apart from these systems- there are large number of healers in the folklore stream who have not been organized under any category. In the present review, attempt would be made to provide

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brief profile of three systems to familiarize the readers about them so as to facilitate acquisition of further information.

### Ayurveda

Most of the traditional systems of India including Ayurveda have their roots in folk medicine. However, what distinguishes Ayurveda from other systems is that it has a well-defined conceptual framework that is consistent throughout the ages. In conceptual base, it was perhaps highly evolved and far ahead of its time. It was among the first medical systems to advocate an integrated approach towards matters of health and disease. Another important distinguishing feature of Ayurveda is that unlike other medical systems, which developed their conceptual framework based on the results obtained with the use of drugs and therapy, it first provided philosophical framework that determined the therapeutic practice with good effects. Its philosophical base is partly derived from 'Samkhya' and 'Nyaya vaisheshika' streams of Indian philosophy. This enabled it to evolve into rational system of medicine quite early in its evolution and to get detached from religious influence. It laid great emphasis on the value of evidence of senses and human reasoning (Ramachandra Rao, 1987).

### Historical background

Ayurveda literally means the Science of life. It is presumed that the fundamental and applied principles of Ayurveda got organized and enunciated around 1500 BC. Atharvaveda, the last of the four great bodies of knowledge- known as Vedas, which forms the backbone of Indian civilization, contains 114 hymns related to formulations for the treatment of different diseases. From the knowledge gathered and nurtured over centuries two major schools and eight specializations got evolved. One was the school of physicians called as 'Dhanvantri Sampradaya' (Sampradaya means tradition) and the second school of surgeons referred in literature as 'Atreya Sampradaya'. These schools had their respective representative compilations- Charaka Samhita for the school of Medicine and Sushruta Samhita for the school of Surgery. The former contains several chapters dealing with different aspects of medicine and related subjects. Around six hundred drugs of plant, animal and mineral origin have been mentioned in this treatise.

Sushruta Samhita primarily deals with different aspects of fundamental principles and theory of surgery. More than 100 kinds of surgical instruments including scalpels, scissors, forceps, specula etc. are described along with their use in this document. Dissection and operative procedures are explained making use of vegetables and dead animals. It contains description of about 650 drugs and discusses different aspects related to other surgery related topics such as anatomy, embryology, toxicology and therapeutics (<http://www.indianmedicine.nac.in>). Vagabhata's 'Astanga-Hridaya' is considered as another major treatise of Ayurveda. The above three documents are popularly known as 'Brihat trayees' (the big or major three). In addition to these three scholarly and authoritative treatises a vast body of literature exist in the form of compilations covering a period of more than 1500 years (<http://www.indianmedicine.nac.in>).

Till the medieval period it was perhaps the only system available in the Indian sub-continent at that time to cater to the healthcare requirement of the people. It enjoyed the unquestioned patronage and support of the people and their rulers. This can be considered as the golden period of Ayurveda because most of the work related to basic concepts, enunciation of different principles, evolvement of different formulations occurred during this period. The patronage for the Ayurvedic system of medicine considerably decreased during the medieval period, which was marked by unsettled political conditions in the country and series of invasion by foreigners. The neglect became worse during British rule during which importance was given to Allopathy through official patronage. In the early part of 20th century interest in Ayurveda rekindled as part of national freedom movement. People's representatives even in

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British India and princely states started asking for suitable measures to develop Ayurveda on scientific lines (<http://www.indianmedicine.nac.in>).

After India gained Independence from the British rule in 1947, the movement for revival of Traditional Systems of Medicine gained momentum. The systems got official recognition and became part of the National Health care network to provide health care to the country's citizen. Government of India initiated a series of measures to improve the position of Ayurveda as one of the major health care systems vital for catering to the primary health care needs of the country. A number of hospitals and colleges for Ayurveda were established. The other major initiatives were establishment of a research Institute to take care of the R & D needs (Central Institute of Research in Indigenous System of Medicine (CIRISM)- in 1955); a Post Graduate Training Centre of Ayurveda in 1956- to impart Post graduate education; establishment of a University- named Gujarat Ayurved University at Jamnagar in the Gujarat State in 1967; creation of Central Council of Indian Medicine (CCIM) in 1972 for regulating Education and Registration in Ayurveda, Siddha and Unani systems of medicine. A research council named Central Council for Research in Indian Medicine, Homoeopathy and Yoga (CCRIMH) was established in 1971. Subsequently, this council was bifurcated to create three separate councils -Central Council for Research in Ayurveda & Siddha (CCRAS), Central Council for Research in Unani Medicine (CCRUM), Central Council for Research in Homoeopathy (CCRH) and Central Council for Research in Naturopathy and Yoga (CCRN) . National Institute of Ayurveda (NIA) was established at Jaipur in Rajasthan state. Recently another University has been established known as Rajasthan Ayurved University- Jodhpur (Rajasthan state). A draft national policy for the development of Indian System of Medicine has been prepared which is available on the web site of Department of Ayurveda - (<http://www.indianmedicine.nac.in>).

### THE CONCEPT OF HEALTH IN AYURVEDA

In India, Ayurveda is considered not just as an ethnomedicine but also as a complete medical system that takes in to consideration physical, psychological, philosophical, ethical and spiritual well being of mankind. It lays great importance on living in harmony with the Universe and harmony of nature and science. This universal and holistic approach makes it a unique and distinct medical system. This system emphasizes the importance of maintenance of proper life style for keeping positive health. This concept was in practice since two millennia and the practitioners of modern medicine have now taken into consideration importance of this aspect. Not surprisingly the WHO's concept of health propounded in the modern era is in close approximation with the concept of health defined in Ayurveda (Kurup, 2004).

### THE PHILOSOPHICAL BACKGROUND

The basic foundation is the fundamental doctrine according to which whatever present in the Universe (macrocosm) should be present in the body (the microcosm). It has been conceptualized that the universe is composed of five basic elements named Prithvi (Earth), Jala (Water), Teja (Fire), Vayu (Air) and Akash (Space/Ether). The human body is derived from them in which these basic elements join together to form what are known as 'Tridoshas' (humors) named as Vata, Pitta and Kapha. These humors govern and control the basic psycho-biological functions in the body. In addition to these three humors, there exist seven basic tissues (sapta dhatus)- Rasa, Rakta, Mamsa, Meda, Asthi, Majja and Shukra- and three waste products of the body (mala) such as faeces, urine and sweat. Healthy condition of the body represents the state of optimum equilibrium among the three doshas. Whenever this equilibrium is disturbed due to any reason- disease condition results. The growth and development of the body components depend on nutrition provided in the form of food. The food is conceptualized to be composed of the basic five elements mentioned above. Hence it is considered to be the basic source material to replenish or nourish the different components of the body after the action of bio-fire (Agni).

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The tissues of the body are considered as the structural entities and the humours are considered as physiological entities, derived from different combinations and permutations of the five basic elements (<http://www.indianmedicine.nac.in>).

### THE CONCEPT OF PATHOGENESIS

People are categorized in to different categories based on their psychosomatic constitution. Constitution specific daily (Dinacharya) and seasonal routines (Ritucharya) are prescribed to maintain positive health. Body may become afflicted with disease if these routines are not adhered to. This will lead to the loss of equilibrium among the three humors. The loss of equilibrium of the three humors can also occur as a consequence of dietary indiscrimination, undesirable habits, seasonal abnormalities, improper exercise or erratic application of sense organs and incompatible actions of the body and mind.

Disease condition may ensue due to other reasons also. For example, any external factor like microorganism, changes in the climatic conditions may cause the accumulation of dosha leading to disturbance in the doshic equilibrium and vitiation of doshas. It is conceptualized that normally doshas are circulated through macro and micro-channels known as srotas. The srotas are the important medium through which the body tissues get their nutrition and also the metabolic end products are transported out of the tissue. If any blockade occurs (srotorodha) due to accumulation of doshas, the bi-directional flow of nutrients and end products (malas) gets affected. The doshas accumulated in the region react with the dushyas (reactants- in this case tissues) resulting in a condition known as dosha dushya sammurchana- this affects body metabolism. Ama, which is a semi-processed intermediary product of metabolism, gets accumulated. At this stage the prodromal symptoms of the disease gets manifested. Thus disturbances in the bio-channels are considered to be the main reason for the expression of diseased state of an organ or system.

### DIAGNOSIS

The diagnosis is always done by considering the patient as a whole object to be examined. The physician takes a careful note of the patient's internal physiological characteristics and mental disposition. He also studies other factors like- the affected bodily tissues, humors, the site at which the disease is located, patient's resistance and vitality, his daily routine, dietary habits, the gravity of clinical conditions, condition of digestion and details of personal, social, economic and environmental situation of the patient. The general examination is known as ten-fold examination- through which a physician examines the following parameters in the patient- 1. Psychosomatic constitution, 2. Disease susceptibility, 3. Quality of tissues, 4. Body build, 5. Anthropometry, 6. Adaptability, 7. Mental health, 8. Digestive power, 9. Exercise endurance and 10. Age. In addition to this, examination of pulse, urine, stool, tongue, voice and speech, skin, eyes and overall appearance is also carried out (Kurup, 2002).

### TREATMENT ASPECTS

The treatment lies in restoring the balance of disturbed humors (doshas) through regulating diet, correcting life-routine and behavior, administration of drugs and resorting to preventive non-drug therapies known as 'Panchkarma' (Five process) and 'Rasayana' (rejuvenation) therapy. Before initiating treatment many factors like the status of tissue and end products, environment, vitality, time, digestion and metabolic power, body constitution, age, psyche, body compatibility, type of food consumed are taken in to consideration.

## TYPES OF TREATMENT

The treatments are of different types- a- Shodhana therapy (purification treatment), b-Shamana therapy (palliative treatment), Pathya Vyavastha (prescription of appropriate diet and activity), Nidan Parivarjan (avoidance of causes and situations leading to disease or disease aggravation), Satvajaya (psychotherapy) and Rasayan (adaptogens- including immunomodulators, anti-stress and rejuvenation drugs) therapy. Dipan (digestion) and Pachan (assimilation) enhancing drugs are considered good for pacifying the vitiated doshas (humors).

This therapy is supposed to dissolve the vitiated and accumulated doshas by improving the agni (digestive power) and restoring the deranged metabolic process. In severe conditions the above therapy has to be supplemented with purificatory processes like Panchakarma. In this therapy initially the accumulated vitiated dosha is liquefied by resorting to external and internal oleation of the patient; followed by sudation (swedhana) and elimination of vitiated dosha through emesis (Vamana) or purgation (Virechana), Basti (enema- evacuating type) and Nasya (nasal insufflation).

Shodhana therapy provides purificatory effect through which therapeutic benefits can be derived. This type of treatment is considered useful in neurological and musculo-skeletal disorders, certain vascular or neuro-vascular states, respiratory diseases, and metabolic and degenerative disorders. Shamana therapy involves restoring normalcy in the vitiated doshas (humors). This is achieved without causing imbalance in other doshas. In this use of appetizers, digestives, exercise and exposure to sun and fresh air are employed. In the Pathya Vyavastha type of treatment certain indications and contraindications are suggested with respect to diet, activity, habits and emotional status. In Nidan Parivarjan type of treatment the emphasis is on avoiding known causes of the disease by the patient. In Satvajaya type of treatment the emphasis is on restraining the mind from the desires for unwholesome objects and Rasayana therapy deals with the promotion of strength and vitality (<http://www.indianmedicine.nac.in>).

## DIETICS IN AYURVEDA

Ayurveda lays great emphasis on the diet regulation. According to Ayurvedic concepts food has great influence over physical, temperamental and mental development of an individual. The food is the basic material for the production of the body and life supporting vital matter known as Rasa. The rasa is converted to body components and supports all types of life activities.

## DIFFERENT DISCIPLINES OF AYURVEDA

Ayurveda is known as Astanga Ayurveda- means that which is made up of eight parts. The eight major divisions of Ayurveda are as follow as:

1. Kayachikitsa (Internal Medicine)
2. Kaumar Bhritya (Pediatrics)
3. Bhootavidya (Psychiatry)
4. Shalakya (Otorhinolaryngology and Ophthalmology)
5. Shalya (Surgery)
6. Agada Tantra (toxicology)
7. Rasayana (Geriatrics)
8. Vajikarana (Aphrodisiacs and Eugenics)

Present status of Ayurveda and other Indigenous Systems of Medicine in India  
Regulation of the practice of ISM & H

Eighteen major states have independent Directorate to look after ISM related issues. In six states the ISM is administrated under the Health Directorate of the State, in around six smaller states and Union Territories Officer in-charges look after the issues concerned with ISM. At present there are more than 6.11 lakh practioners of ISM & H. The number of Hospitals and dispensaries in this sector is more than 26,000 where free treatment facility is available. In addition large number of practioners in the un-



organized folklore sector provide remedies to considerable portion of the population (<http://www.indianmedicine.nac.in>)

## EDUCATION

At present there are more than 200 colleges, which offer a four and half year course leading to Bachelor Degree in Ayurvedic Medicine and Surgery, followed by one year internship. Similarly 2 colleges offer graduate degree in Siddha System of Medicine and 34 colleges offer degree in Unani System of Medicine and 130 colleges offer courses leading to degree in Homoeopathy. The turnover of candidates from these colleges exceeds 9,000 per year. More than 30 Institutes offer postgraduate courses for Ayurveda and specialization is available in 16 disciplines. In addition there is National Academy of Ayurveda, which imparts PG education under the scheme of 'Guru Shishya parampara'. This scheme has been created with a view to provide education on traditional lines like what used to be in ancient times. In ancient times students used to visit the abode of the teacher to serve him while learning the art of healing from him. At present around 750 Post graduate scholars are turned out every year (the duration of course is 3 years). The degree offered is M.D. (Ayu) and M.S. (Ayu). Recently Pharmacy colleges have been opened which offer D.Pharm (Ayu), B.Pharm (Ayu) and M.Pharm (Ayu) (for further details visit-<http://www.ayurveduniversity.com>). Training programmes mainly, in-house are conducted, through out the country to train para-ayurvedic staff. These trained technicians help in carrying out therapeutic process like panchakarma and ksharasutra (an effective surgical procedure for removing hemorrhoids). Similarly pharmacists are trained to shoulder responsibilities of running an ayurvedic pharmacy.

## RESEARCH AND DEVELOPMENT

The research activities are being carried out by Central Council for Research in Ayurveda & Siddha (CCRAS) and similar councils for Unani, Homoeopathy and Naturopathy & Yoga. The CCRAS is the premier agency involved in research and development (<http://www.ccras.com>). It has 89 field units, which have been re-organized in to 30 institutes and units. The types of activities undertaken are clinical research- involving planned clinical trial of single and compound ayurvedic preparations and drug research which includes medico-botanical surveys, cultivation of medicinal plants, pharmacognostical studies, phytochemical studies, drug standardization, pharmacological and toxicological studies. A vast body of data is available in various published literature and data bases (Sharma et al 2000, 2001, 2002; Billore et al 2004; Satyavati et al, 1976, 1987, Satyavati, 2005; Mishra, 2004; De et al 1993; Chatterjee and Pakrashi (1995-1997); Gupta and Tandon (2004) ; Wealth of India series ( 1959-69; 1985 and 2000) ; Dahanukar et al 2000; Rastogi and Dhawan (1982); Ayurvedic Pharmacopoeia Part- I in three volumes (Anonymous-1989, 1999 and 2000) ; Sivarajan and Balachandran (1999); Raghunathan and Mitra (1982) and five volumes (1-5) by Rastogi and Mehrotra (1990, 1991, 1993 ,1995 and 1998). Literary research, which involves publication of rare and classical manuscripts of ISM & H., is also carried out (<http://www.ccras.com>).

Besides research councils research activities are carried out in Post Graduate centers and Institutes of national importance like- Central Drug Research Institute (CDRI), Central Institute of Medicinal and Aromatic Plants (CIMAP), National Botanical Research Institutes (NBRI) etc and R & D centers attached to Ayurvedic drug manufacturing firms (Kurup- 2004). However the main tendency is to consider medicinal plants used in Ayurveda as source material for bio-prospecting of drugs. There are very few studies, which take in to consideration the ayurvedic concept behind a given formulation. Ayurveda has a very well developed drug formulation discipline known as 'Bhaishajya Kalpana', which provides great deal of information about methods of drug preparation, use of adjuvants, collection and processing drugs in a particular manner. Research efforts on this aspect and on basic principles of Ayurveda are yet to be undertaken in concerted manner.

## DRUG MANUFACTURING IN AYURVEDIC SECTOR

Ayurvedic drugs are marketed in various forms. They are available in both classical forms (tablets, powder, decoction, medicated oil, medicated ghee, fermented products) and modern drug presentation forms like capsules, lotions, syrups, ointments, liniments, creams, granules etc. There are more than 8500 manufacturers of Ayurvedic drugs in the country and the gross turnover of drugs used in all the ISM & H systems is approximately around 1 billion US dollars. Drug manufacturing in this sector is regulated by Drugs and Cosmetic act (1940) and rules (1945) (Jain, 2001). Subsequently many chapters have been added to these acts over the years. Three types of agencies are involved in the administration of the Acts and Rules enacted by the parliament. There is Drug Technical Advisory Board and Drug Consultative Committee to advise the Govt., The Drug Controller General of India who with the help of the supporting staff is in charge of licensing and enforcing different laws related to drug manufacturing and dispensing. At the state level Food and Drug Administration Commissioners shoulder this responsibility. Recently Good Manufacturing Process for ISM has been defined which have to be followed by all the agencies involved in the manufacturing of drugs in this sector (<http://www.indianmedicine.nac.in>).

## GLOBALIZATION OF AYURVEDA

Globalization of Ayurvedic practice has gained momentum in the past two decades. Ayurvedic drugs are used as food supplements in USA, European Union and Japan. Many physicians practice Ayurveda in many parts of the world. Facilities are available in countries like USA, Argentina, Australia, Brazil, New Zealand, South Africa, Czech Republic, Greece, Italy, Hungary, Netherlands, Russia, UK, Israel, Japan, Nepal, Sri Lanka (Kurup, 2004) for imparting short and long-term training in Ayurveda.

The concepts of proper life styles, dietary habits, daily and seasonal routines followed in Ayurveda can be adopted with suitable modification to different countries in different parts of the globe after giving due consideration to the cultural milieu existing in those countries and also to the constitutional profile of their population. Attempts can also be made to utilize the medicinal plant resources of these countries for meeting the health care needs of their people after categorization of the plants according to Ayurvedic concepts. Drugs used in ISM can be used as adjuvant to the main drugs used in Allopathy. Non-drug therapeutic approaches such as 'Panchakarma', 'Ksarasutra' etc can certainly be integrated into other health systems broadening the choices available to physicians and patients.

A recent review (Dahanukar et al., 2000) points out that more than 13,000 plants have been investigated during the past 5 years. Number of medicinal plants have been shown to possess important pharmacological activities in pre-clinical testing however the generated leads have not been adequately followed up with double blind, placebo controlled clinical trails. *Curcuma longa* Linn, *Boswellia serrata* Roxb. ex Coleb., *Picrorhiza kurroa* Royle ex Benth, *Terminalia chebula* Retz., *Emblica officinalis* Gaertn., *Bacopa monnieri* (Linn.) Pennel, *Boerhavia diffusa* Linn, *Phyllanthus niruri* Linn, *Celastrus paniculatus*, *Ocimum sanctum* Linn, *Gymnema sylvestre* R.Br., *Momordica charantia* Linn, *Commiphora wighti* (Arn.) Bhandari, *Withania somnifera* (Linn.) Dunal, *Pterocarpus marsupium* Roxb., *Tinospora cordifolia* (Willd.) Miers. Ex Hook.f. & Thomson, *Trichopus zeylanicum*, *Terminalia arjuna* (Roxb.) Wight & Arn etc have great potential to develop in to drugs of global importance. Table-1 provides list of some of the important medicinal plants with good potential to develop at global level. This list is not exhaustive and is based mainly on the author's own preference. Many of the drugs in the list are not available in sufficient quantity in India but may be available in other countries especially Nigeria where *Commiphora* species are abundant- they can be the source of supply to Indian ISM based industry. One of the main lacunae is the lack of co-ordinated multi-disciplinary studies to prove their clinical efficacy beyond doubt. This aspect should be the main focus of future research endeavors.

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### 1.2.6.2 Siddha system of medicine <sup>w</sup>

Siddha system of medicine is practiced in some parts of South India especially in the state of Tamilnadu. It has close affinity to Ayurveda yet it maintains a distinctive identity of its own. This system has come to be closely identified with Tamil civilization. The term 'Siddha' has come from 'Siddhi'- which means achievement. Siddhars were the men who achieved supreme knowledge in the field of medicine, yoga or tapa (meditation) (Narayanaswamy, 1975).

It is a well-known fact that before the advent of the Aryans in India a well-developed civilization flourished in South India especially on the banks of rivers Cauvery, Vaigai, Tamiraparani etc. The system of medicine in vogue in this civilization seems to be the precursor of the present day Siddha system of medicine. During the passage of time it interacted with the other streams of medicines complementing and enriching them and in turn getting enriched. The materia medica of Siddha system of medicine depends to large extent on drugs of metal and mineral origin in contrast to Ayurveda of earlier period, which was mainly dependent upon drugs of vegetable origin.

According to the tradition eighteen Siddhars were supposed to have contributed to the development of Siddha medicine, yoga and philosophy. However, literature generated by them is not available in entirety. In accordance with the well-known self-effacing nature of ancient Indian Acharyas (preceptors) authorship of many literary work of great merit remains to be determined. There was also a tradition of ascribing the authorship of one's work to his teacher, patron even to a great scholar of the time. This has made it extremely difficult to clearly identify the real author of many classics.

#### PHILOSOPHICAL FOUNDATION

According to the Siddha concepts matter and energy are the two dominant entities, which have great influence in shaping the nature of the Universe. They are called Siva and Sakthi in Siddha system. Matter cannot exist without energy and vice-versa. Thus both are inseparable. The universe is made up of five proto-elements. The concept of five proto-elements and three doshas in this system of medicine is quite similar to Ayurvedic concept pertaining to them. However, there are certain differences in the interpretation (Narayanaswamy, 1975). The concepts behind diagnostic measures also show great similarities differing in certain aspects only. Diagnosis in Siddha system is carried out by the well-known 'ashtasthana pareeksha' (examination of eight sites) that encompasses examination of nadi (pulse), kan (eyes), swara (voice), sparisham (touch), varna (colour), na (tongue), mala (faeces) and neer (urine). These examination procedures are provided in greater detail in classical Siddha literature in comparison to classical literature of Ayurveda (Narayanaswamy, 1975).

#### PRINCIPLES OF TREATMENT

Similar to Ayurveda, Siddha system also follows ashtanga concept with regards to treatment procedures. However the main emphasis is on the three branches - Bala vahatam (pediatrics), Nanjunool (toxicology) and Nayana vidhi (ophthalmology). The other branches have not developed to the extent seen in Ayurveda. The surgical procedures, which have been explained in great detail in Ayurvedic classics, do not find mention in Siddha classics. The therapeutics in both the systems can be broadly categorized into samana and sodhana therapies. The latter consists of well-known procedures categorized under panchakarma therapy. This therapy is not that well developed in Siddha system, only the vamana therapy has received attention of the Siddha physicians (Narayanaswamy, 1975).

### MATERIA MEDICA

The concept pertaining to drug composition, the concept of rasapanchaka (concept explaining drug properties) is almost similar in both the systems of medicine. One of the major characteristic features of Siddha materia medica is utilization of mineral and metal-based preparations to greater extent in comparison to the drugs of vegetable origin.

The mineral and metal-based drugs in Siddha System are categorized under the following categories:

1. Uppu (Lavanam)- drugs that are dissolved in water and get decrepitated when put into the fire giving rise to vapor.
2. Pashanam: drugs that are water insoluble but give off vapors when put in to fire
3. Uparasam: Similar to pashanam chemically but have different actions.
4. Ratnas and uparatnas, which include drugs based on precious and semi-precious stones
5. Loham - metals and metal alloys that do not dissolve in water but melt when put in to fire and solidify on cooling.
6. Rasam: drugs that are soft, sublime when put in to fire changing into small crystals or amorphous powders.
7. Gandhakam: sulphur is insoluble in water and burns off when put into fire. From the above basic drugs compound preparations are derived. From the animal kingdom thirty-five products have been included in the materia medica. It is much similar to preparations used in Ayurveda. Numbers of plant-based preparations are also used in Siddha system of medicine they are quite similar in profile to those mentioned in Ayurveda.

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### 1.2.6.3 Unani system of medicine <sup>w</sup>

#### Historical background

Unani medicine has its origin in Greece. It is believed to have been established by the great physician and philosopher- Hippocrates (460-377 BC). Galen (130-201 AD) contributed for its further development. Aristotle (384-322 BC) laid down foundation of Anatomy & physiology. Dioscorides – the renowned physician of the 1st Century AD has made significant contribution to the development of pharmacology, especially of drugs of plant origin. The next phase of development took place in Egypt and Persia (the present day Iran). The Egyptians had well evolved pharmacy; they were adept in the preparation of different dosage forms like oils, powder, ointment and alcohol etc. (<http://www.indianmedicine.nac.in>).

The Arabian scholars and physicians under the patronage of Islamic rulers of many Arabian countries have played great role in the development of this system. Many disciplines like chemistry, pharmaceutical procedures like distillation, sublimation, calcinations and fermentation were developed and refined by them. There are many well-known names- only some names have been mentioned in this article. Jabir bin Hayyan (717-813 AD) a Royal physician of his time has worked on the chemical aspects; Ibne Raban Tabari (810-895 AD) is the author of the book- Firdous ul Hikmat and introduced concept of official formulary. Abu Bakar Zarakariya Razi (865-925 AD) has authored a book known as "Alhawi fit tibb". He has worked in the field of immunology. Of course the name of Bu Ali Sina (Avicenna 980-1037 AD) is always referred in all matters related to Unani. He was a renowned global level scholar and philosopher. He had great role in the development of Unani medicine in the present form. His book Alqanoon or (The canon of medicine) was an internationally acclaimed book on medicine, which was taught in European countries till the 17th

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century. Many physician of Arab descent in Spain have also contributed to the development of the system. Some of the important names are-Abul Qasim Zohravi (Abulcasus 946 – 1036 AD) he is the author of the famous book on surgery "Al Tasreef"-(<http://www.indianmedicine.nac.in>).

The Arabs were instrumental in introducing Unani medicine in India around 1350 AD. The first known Hakim (Physician) was Zia Mohd Masood Rasheed Zangi. Some of the renowned physicians who were instrumental in development of the system are- Akbar Mohd Akbar Arzani (around 1721 AD)- the author of the books- Qarabadin Qadri and Tibbe Akbar; Hakim M. Shareef Khan (1725-1807)- a renowned physician well-known for his book Ilaj ul Amraz. Hakim Ajmal Khan (1864-1927) a great name among the 20th Century Unani physicians in India. He was a multifaceted personality besides being a physician he was a scientist, politician and a freedom fighter. He was instrumental in the establishment of Unani and Ayurvedic College at Karol Bagh, Delhi. He was a keen researcher and has supervised many studies on *Rauwolfia serpentina*- the source plant for many well-known alkaloids like reserpine, Ajamaloon etc. Another great contributor is Hakim kabeeruddin (1894-1976), he has translated 88 Unani books of Arabic and Persian languages into Urdu. The first institution of Unani medicine was established in 1872 as Oriental College at Lahore in the undivided India. Thereafter many institutions came into existence.

After Independence Unani received boost in the form of Government support through various agencies involved in the development of ISM. At present there are more than 30 colleges offering degree course in Unani medicine and the approximate number of physician turn out is around 20,000. There are around 177 hospitals. A National Institute of Unani Medicine has been established at Bangalore in Karnataka state in 1983 in collaboration with the Govt. of Karnataka- for catering to both academic and R & D requirements. Central Council for Research in Unani Medicine (CCRUM), is the premier agency involved in R & D activities (<http://www.indianmedicine.nac.in>).

Table 1: Some well-known Indian medicinal plants and their uses

| <b>Botanical name</b>   | <b>Parts used</b> | <b>Therapeutic uses</b>  |
|---|-------------------|--|
| <i>Acorus calamus</i> Linn ( Araceae)   | Rhizome           | Nervine tonic, anti-spasmodic (Satyavati et al ., 1976; Bose et al., 1960)   |
| <i>Aegle marmelos</i> (L.) Corr. (Rutaceae)                                     | Fruit             | Hypoglycemic; chemopreventive (Vyas et al., 1979; Dixit et al., 2006)        |
| <i>Allium sativum</i> Linn (Alliaceae)  | Bulbs             | Anti-inflammatory; anti-hyperlipidemic, fibrinolytic (Dixit et al., 2006)    |
| <i>Aloe barbadensis</i> Mill., and <i>Aloe vera</i> Tourn. Ex Linn. (Alliaceae) | Gel               | Skin diseases- mild sunburn, frostbite, scalds; wound healing (Baliga, 2006) |
| <i>Andrographis paniculata</i> (Burm.f.) Wallich ex Nees (Acanthaceae)          | Whole plant       | Cold; flu – hepatoprotection (Koul and Kapil-1994; Sharma et al., 2002a)     |
| <i>Asparagus racemosus</i> Willd (Alliaceae)                                    | Roots             | Adaptogen, galactagogue (Dahanukar et al., 1997;Gupta and Mishra, 2006)      |

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|  |                                      |   |
|--|--------------------------------------|---|
| <i>Bacopa monnieri</i> (L) Pennel<br>(Scrophulariaceae)                      | Whole plant                          | Anti-oxidant; memory enhancing (Singh and Dhawan, 1997)   |
| <i>Berberis aristata</i> DC<br>(Berberidaceae)                               | Bark, fruit, root, stem, wood        | Anti-protozoal, hypoglycemic, anti-trachoma (Dutta and Iyer, 1968; Sharma et al., 2000a)                      |
| <i>Boerhavia diffusa</i> L.<br>(Nyctaginaceae)                               | Roots                                | Diuretic; anti-inflammatory and anti-arthritic (Sharma et al., 2000b; Harvey, 1966)                           |
| <i>Boswellia serrata</i> Roxb.<br>(Burseraceae)                              | Oleo resin                           | Anti-rheumatic; anti-colitis and anti-inflammatory, anti-cancer. (Sharma et al., 2000c)                       |
| <i>Butea monosperma</i> (Lam.) Taub<br>(Fabaceae)                            | Bark, leaves, flowers, seeds and gum | Adaptogen; abortifacient, anti-oestrogenic, anti-gout, anti-ovulatory (Sharma et al., 2000d)                  |
| <i>Calotropis gigantea</i> (Linn) R. Br.<br>(Asclepiadaceae)                 | Flowers, whole plant, root, leaf     | Anti-inflammatory, spasmolytic, asthma (Sharma et al., 2000e)   |
| <i>Callicarpa macrophylla</i> Vahl.<br>(Verbenaceae)                         | Leaves, roots                        | Uterine disorders (Sood, 1995)  |
| <i>Cassia fistula</i> Linn<br>(Leguminosae)                                  | Resin                                | Laxative, anti-pyretic, worm infestation (Joshi, 1998)  |
| <i>Celastrus paniculatus</i> Willd<br>(Celastraceae)                         | Whole plant                          | Brain tonic; memory enhancer; in the treatment of depression (Tanuja Doshi, 1991; Joglekar and Balwani, 1967) |
| <i>Centella asiatica</i> (Linn) Urban<br>(Umbelliferae)                      | Whole plant                          | Tranquilizer; memory enhancer; wound healing- (Sharma et al., 2000 f; Suguna et al., 1996)                    |
| <i>Chlorophytum boriavillianum</i> Santapau & RR<br>Fernandus<br>(Alliaceae) | Roots                                | Aphrodisiac (Farooqi et al., 2001)  |
| <i>Cissus quadrangularis</i> L<br>(Vitaceae)                                 | Whole plant, root, stem and leaf     | Bone fracture; inflammation (Deka et al., 1994) (Udupa & Prasad, 1964b)                                       |
| <i>Clerodendrum serratum</i> (Linn) Moon<br>(Verbenaceae)                    | Root, leaf, Stem                     | Malaria; anti-asthmatic, anti-allergic (Gupta and Gupta, 1967) (Sivarajan and Balachandran 1999a)             |

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|   |       |   |
|---|-------|---|
| <i>Commiphora mukul</i> ( Hooker Stedor) Engl.<br>(Burseraceae) | Resin | Hypolipidemic;<br>obesity, rheumatoid<br>arthritis (Satyavati,<br>1991) |
|---|-------|---|

### Basic principles

According to the basic principles of Unani the body is made up of four basic elements i.e. Earth, Air, Water, Fire which have different Temperaments i.e. Cold, Hot, Wet, Dry. They give raise, through mixing and interaction, to new entities. The body is made up of simple and complex organs. They obtain their nourishment from four humors namely- blood, phlegm, black bile and yellow bile. These humors also have their specific temperament. In the healthy state of the body there is equilibrium among the humors and the body functions in normal manner as per its own temperament and environment. Disease occurs whenever the balance of humors is disturbed.

In this system also prime importance is given for the preservation of health. It is conceptualized that six essentials are required for maintenance of healthy state. They are i. Air, ii. Food and drink, iii. Bodily movements and response, iv. Psychic movement and repose, V. Sleep and wakefulness and vi. Evacuation and retention. Specific requirement for each of these six essentials have been discussed- (Syed Khaleefathullah, 2002).

The human body is considered to be made up of seven components, which have direct bearing on the health status of a person. They are 1. Elements (Arkan) 2. Temperament (Mijaz). 3. Humors (Aklat) 4. Organs (Aaza) 5. Faculties (Quwa) 6. Spirits (Arwah). These components are taken in to consideration by the physician for diagnosis and also for deciding the line of treatment (Syed Khaleefathullah, 2002).

### Diagnosis

Examination of the pulse occupies a very important place in the disease diagnosis in Unani. In addition examination of the urine and stool is also undertaken. The pulse is examined to record different features like- size, strength, speed, consistency, fullness, rate, temperature, constancy, regularity and rhythm. Different attributes of urine are examined like odor, quantity, mature urine and urine at different age groups. Stool is examined for color, consistency, froth and time required for passage etc.

### Treatment

Disease conditions are treated by employing four types of therapies- a- Regimental therapy, b- Dietotherapy, c-Pharmacotherapy and d- Surgery. Regimental therapy mainly consists of drug less therapy like exercise, massage, turkish bath, douches etc. Dietotherapy is based on recommendation of patient specific dietary regimen. Pharmacotherapy involves administration of drugs to correct the cause of the disease. The drugs employed are mainly derived from plants some are obtained from animals and some are of mineral origin. Both single and compound preparations are used for the treatment.

A large number of studies have been carried out on number of medicinal plants used in ISM of medicine. Central Drug Research Institute undertook a series of studies (Anonymous - 1991) under drug screening programme. Number of compilation have been published providing information about pharmacological activity profile of medicinal plants, publications are also available on the chemical profile of number of medicinal plants, Ayurvedic pharmacopoeia has been published – three volumes have come out so far, CCRAS has published a series of books under its Data base preparation project. There is an international publication on scientific validation of Ayurvedic therapies. Besides these books large number of review

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articles have been published in national and international Journals providing names of drugs used in particular type of disease conditions or screened for particular type of pharmacological activities.

If the situation prevailing in this sector is analyzed taking into consideration different aspects- it becomes clear that there is a perceptible trend towards increased usage of drugs used in Indian Traditional Systems especially those which are based on herbal products not only in India but in different parts of the world. However, one of the basic problems that still remained to be solved is related to proving efficacy of the products used in these systems on the basis of controlled clinical trial and complementary pharmacological studies. It is difficult to ensure consistency in the results and components in the products. This is traced mainly to lack of standardization of the inputs used and the process adopted for preparation of the formulations. Government of India has taken these aspects in to consideration and has initiated many projects for standardization of single and compound formulations along with standardization of operating procedures for important formulations. Though standardization is very difficult it is not an un-attainable goal. Once this is done it would help in promoting wider use of these drugs especially in chronic degenerative disorders. Further non-drug therapies and preventive and life management techniques are also receiving increased attention. Thus this sector seems to be poised for remarkable growth in the coming years (Kurup, 2004).

The above presentation can be considered only as brief introduction to the above systems. Lot of literature and information is available in the published literature citation of which would make this write up voluminous hence not attempted. However, the websites referred above provide sufficient information for a beginner. Full complement of information can be obtained by contacting appropriate bodies. No attempt has been made to provide information about Yoga and Naturopathy systems because they are mainly non-drug therapies. Similarly, Homoeopathy system has not been discussed since it is well known out side Indian sub-continent.

History of Ayurveda... a heritage of healing

The Origins –

The word 'veda' means knowledge. The evolution of the Indian art of healing and living a healthy life comes from the four Vedas namely: Rig veda, Sama veda, Yajur veda and Atharva veda. Ayurveda attained a state of reverence and is classified as one of the Upa-Vedas - a subsection - attached to the Atharva Veda. The Atharva Veda contains not only the magic spells and the occult sciences but also the Ayurveda that deals with the diseases, injuries, fertility, sanity and health.

Ayurveda incorporates all forms of lifestyle in therapy. Thus yoga, aroma, meditation, gems, amulets, herbs, diet, astrology, color and surgery etc. are used in a comprehensive manner in treating patients. Treating important and sensitive spots on the body called Marmas is described in Ayurveda. Massages, exercises and yoga are recommended.

History

The knowledge we have now is by three surviving texts of Charaka, Sushruta and Vaghbata.

Charaka (1st century A.D.) wrote Charaka Samhita (samhita- meaning collection of verses written in Sanskrit). Sushruta (4th century A.D.) wrote his Samhita i.e Sushruta Samhita.

Vaghbata (5th century A.D.) compiled the third set of major texts called Ashtanga Hridaya and Ashtanga Sangraha. Charaka's School of Physicians and Sushruta's School of Surgeons became the basis of Ayurveda and helped organize and systematically classify into branches of medicine and surgery.



## History of all Medicine

Sixteen major supplements (Nighantus) were written in the ensuing years – Dhanvantari Bahavaprakasha, Raja and Shaligrama to name a few – that helped refine the practice of Ayurveda. New drugs were added and ineffective ones were discarded. Expansion of application, identification of new illnesses and finding substitute treatments seemed to have been an evolving process. Close to 2000 plants that were used in healing diseases and abating symptoms were identified in these supplements.

Dridhabala in the 4th century revised the Charaka Samhita. The texts of Sushruta Samhita were revised and supplemented by Nagarjuna in the 6th century.

There developed eight branches/divisions of Ayurveda:

1. Kaya-chikitsa (Internal Medicine)
2. Shalakya Tantra (surgery and treatment of head and neck, Ophthalmology and ear, nose, throat)
3. Shalya Tantra (Surgery)
4. Agada Tantra (Toxicology)
5. Bhuta Vidya (Psychiatry)
6. Kaumara bhritya (Pediatrics)
7. Rasayana (science of rejuvenation or anti-ageing)
8. Vajikarana (the science of fertility and aphrodisiac)

Many modern medications were derived from plants alluded to in Ayurveda texts. The oft-cited example is that of *Rauwolfia serpentina* that was used to treat headache, anxiety and snakebite. Its derivative is used in treating blood pressure today.

Two areas of contribution of Indian physicians were in treating snakebite and prevention of small pox. Detailed account of steps to be followed after a poisonous snake bite including application of tourniquet and lancing the site by connecting the two fang marks and sucking the poison out is described. A decoction of the medicinal plant *Rauwolfia serpentina* is next applied to the wound.

A form of vaccination for small pox was commonly practiced in India long before the West discovered the method. A small dose of pus from the pustule of small pox lesion was inoculated to develop resistance.

Charaka Samhita Charaka was said to have been in the court of the Kushana king, Kanishka during the 1st century A. D. Some authors date him as far back as the 6th century B.C. during Buddha period. The sacred trust between physician and patient was held in high esteem by Charaka and patient confidentiality, similar to the Hippocratic Oath, was deemed the proper conduct for a practicing physician. Charaka also told us that the word Ayurveda was derived from Ayus, meaning life and Veda meaning knowledge. Nevertheless, according to Charaka the word Ayus denotes more than just life. Ayus denotes a combination of the body, sense organs, mind and soul. The principles of treatment in Charaka's teachings took a holistic approach that treated not just the symptoms of the disease but the body, mind and soul as single entity.

Compiled by Charaka in the form of discussions and symposiums held by many scholars, Charaka Samhita is the most ancient and authoritative text that has survived. Written in Sanskrit in verse form, it has 8400 metrical verses. The Samhita deals mainly with the diagnosis and treatment of disease process through internal and external application of medicine. Called Kaya-chikitsa (internal medicine), it aims at treating

## History of all Medicine

both the body and the spirit and to strike a balance between the two. Following diagnosis, a series of methods to purify both the body and spirit with purgation and detoxification, bloodletting and emesis as well as enema (known as Pancha-karma) are utilized. The emphasis seems to be to tackle diseases in the early phase or in a preventative manner before the first symptoms appear.

Ayurvedic diagnosis and treatment is traditionally divided into eight branches (sthanas) based on the approach of a physician towards a disease process. Charaka described them thus:

1. Sutra-sthana - general principles
2. Nidana-sthana - pathology
3. Vimana-sthan- diagnostics
4. Sharira-sthana - physiology and anatomy
5. Indriya-sthana - prognosis
6. Chikitsa-sthana - therapeutics
7. Kalpa-sthana - pharmaceuticals
8. Siddhi-sthana - successful treatment.

Detailed accounts of various methods of diagnosis, study of various stages of symptoms and the comprehensive management and treatment of debilitating diseases like diabetes mellitus, tuberculosis, asthma and arthritic conditions are to be found in the Charaka Samhita. There is even a detailed account of fetal development in the mother's womb, which can rival descriptions of modern medical textbooks.

Charaka also wrote details about building a hospital. A good hospital should be located in a breezy spot free of smoke and objectionable smells and noises. Even the equipment needed including the brooms and brushes are detailed. The personnel should be clean and well behaved. Details about the rooms, cooking area and the privies are given. Conversation, recitations and entertainment of the patient were encouraged and said to aid in healing the ailing patient.

Sushruta Samhita Sushruta was a surgeon in the Gupta courts in the 4th century A.D. Though Indian classics is full of accounts of healing through transplantation of head and limbs as well as eye balls, Sushruta Samhita is the first authentic text to describe methodology of plastic surgery, cosmetic and prosthetic surgery, Cesarean section and setting of compound fractures.

Sushruta had in his possession an armamentarium of 125 surgical instruments made of stone, metal and wood. Forceps, scalpels, trocars, catheters, syringes, saws, needles and scissors were all available to the surgeon. Rhinoplasty (plastic surgery of the nose) was first presented to the world medical community by Sushruta in his Samhita, where a detailed method of transposition of a forehead flap to reconstruct a severed nose is given. Severed noses were common form of punishment. Torn ear lobes also were common due to heavy jewelry worn on ear lobes. Sushruta described a method of repair of the torn ear lobes. Fitting of prosthetics for severed limbs were also commonly performed feats. Sushruta wrote, "Only the union of medicine and surgery constitutes the complete doctor. The doctor who lacks knowledge of one of these branches is like a bird with only one wing." While Charaka concentrated on the kaya-chikitsa (internal medicine). Sushruta's work mainly expounded on the Shalya Tantra (surgery).

The Samhita contains mostly poetry verses but also has some details in prose. 72 different ophthalmic diseases and their treatment are mentioned in great detail. Pterygium, glaucoma and treatment of

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conjunctivitis were well known to Sushruta. Removal of cataract by a method called couching, wherein the opaque lens is pushed to a side to improve vision was practiced routinely. Techniques of suturing and many varieties of bandaging, puncturing and probing, drainage and extraction are detailed in the manuscript.

Ashtanga Hridaya Vaghbata in the 5th century compiled two sets of texts called Ashtanga Sangraha and Ashtanga Hridaya. It details the Kaya-chikitsa of Charaka Samhita and the various surgical procedures of Sushruta Samhita. The emphasis seems to be more on the physiological rather than the spiritual aspects of the disease processes. Ashtanga Sangraha is written in prose whereas the Ashtanga Hridaya is in poetry for recitation of the Verses.

The Ancient ayurvedic Physician Originally only Brahmins (a certain caste) were practicing physicians. Later people from other castes became well versed in the art of healing and a term Vaidya came to be applied to the practitioners. Merely by their art and knowledge, the physicians gained high social status regardless of their caste of birth. The court physician was of political importance and sat on the right side of the throne, an important symbolic place. Though the physician, patient, the nurse and the medicine were all important in curing a disease, the physician was thought to be the most important.

The codes of conduct for physicians and medical students were laid down by the texts. The poor and downtrodden were to be treated free of charge. Others were charged according to their ability to pay.

The physician was expected to behave in an exemplary manner, conforming to the highest ideals of professional and personal life. His dress, manner and speech were expected to be beyond reproach. Medical education was arduous, consisting of many years of sacrifice learning the art of healing. Visiting the sick, collecting herbs and preparation of drugs, memorizing the Vedic texts of Ayurveda, performing procedures on dead animals, melons, and leather bottles and bladders were part of the training. These exercises helped refine both theoretical and practical training of the student. When finally, the student is deemed ready to practice on his own, he was certified by the ruler.

Recent History before Ayurveda began its recent renewal in the West, it went through a period of decline in India when Western medical education became dominant during the era of British rule.

Ayurveda became a second-class option used primarily by traditional spiritual practitioners and the poor. After India gained its independence in 1947, Ayurveda gained ground and new schools began to be established. Today more than five hundred Ayurvedic companies and hospitals have opened in the last ten years, and several hundred schools have been established. Although Ayurveda remains a secondary system of health care in India, the trend toward complementary care is emerging, and Western and Ayurvedic physicians often work side by side.

Interest in Ayurveda in the West began in the mid 1970's as Ayurvedic teachers from India began visiting the United States and Europe. By sharing their knowledge, they have inspired a vast movement toward body-mind-spirit medicine. Today Ayurvedic colleges are opening throughout Europe, Australia, and the United States.

## OUR COSMIC BEGINNING

### TRIGUNA

Three primordial forces, or principles (GUNAS) namely Sattva, Rajas & Tamas, interweaving to create the five elements - space, air, fire, water and earth – birth the entire creation.

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The principle of stillness, *tamas*, replenishes the universe and its beings and is the main principle of support within the physical universe. The principle of self-organizing activity, *rajas*, gives motility and coordination to the universe and human life. The Principle of harmonic and cosmic intelligence, *sattva*, maintains universal and individual stasis and awareness. These three cosmic principles, called *gunas*, operating through the five elements they have created, directly interface with human existence.

On the physical plane, *tamas* works closely with the physical functions of the body, summarized as bodily humors called *doshas*, tissues and wastes. *Tamas* is said to exercise the greatest influence on the body's water aspect, or *Kapha dosha* (humour)\* human and gives the body its ability to cogitate and to endure long periods of gestation. *Rajas* influences the psychic plane of existence and works closely with the psychological functions of the body. On the physical level, *rajas* is said to exercise the most influence on the body's air aspect, *Vata Dosha* (humour)\*. It gives us our power to transform what is being perceived externally into thoughts, concepts, visions, and dreams.

Referred to as the universe's cosmic intelligence, the third principle *sattva*, permeates each and every minute cell of our being. It functions through our existential states of awareness, although it also influences the physical organism to some extent. Within the physical body, *sattva* is said to exercise the most influence on its fire aspect, *Pitta dosha* (humour)\*. Closely linked to the universal subtle fire, *tejas*, the *sattva* principle maintains the cosmic memory of the entire creation- the collective memory of every human- each individual's memory accumulated from the beginning of time through each rebirth until the present time i.e.– our personal wisdom.

\*all the above mentioned *doshas* will be explained in detail in the coming chapter (tridosh)The *Panchamahabhutas*

As mentioned earlier the three primordial forces (*sattva*, *rajas* & *tamas*) interweave to create the five elements (*panchmahabhutas*) which birth the entire creation.

According to Ayurveda everything in life is composed of the *Panchamahabhutas* – *Akash* (Space), *Vayu* (Air), *Jal* (Water), *Agni* (Fire) and *Prithvi* (Earth). Omnipresent, they are mixed in an infinite variety of relative proportions such that each form of matter is distinctly unique. Constantly changing and interacting with each other, they create a situation of dynamic flux that keeps the world going.

This is a small example: Within a simple, single living cell for example the earth element predominates by giving structure to the cell. The water element is present in the cytoplasm or the liquid within the cell membrane. The fire element regulates the metabolic processes regulating the cell. While the air element predominates the gases therein. The space occupied by the cell denoting the last of the elements.

In the case of a complex, multi-cellular organism as a human being for instance, *akash* (space) corresponds to spaces within the body (mouth, nostrils, abdomen etc.); *vayu* (air) denotes the movement (essentially muscular); *agni* (fire) controls the functioning of enzymes (intelligence, digestive system, metabolism); *jal* (water) is in all body fluids (as plasma, saliva, digestive juices); and *prithvi* (earth) manifests itself in the solid structure of the body (bones, teeth, flesh, hair et al).

The *Panchmahabhutas* therefore serve as the foundation of all diagnosis treatment modalities in Ayurveda and has served as a most valuable theory for physicians to detect and treat illness of the body and mind successfully. For example, if a person has more of the fire element in the body he may suffer from more acid secretion (gastric/ digestive), which if causing harm in the form of hyperacidity etc., can be controlled by giving him food which contains more of *jala* (water) *mahabhuta* in it like sugarcane juice etc.

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#### 1.2.6.4 Yoga Therapy: An Overview <sup>5</sup>

“Yoga Chikitsa is virtually as old as Yoga itself, indeed, the ‘return of mind that feels separated from the Universe in which it exists’ represents the first Yoga therapy. Yoga Chikitsa could be termed as “man’s first attempt at unitive understanding of mind-emotions-physical distress and is the oldest wholistic concept and therapy in the world.” - Yogamaharishi Dr. Swami Gitananda Giri, ICYER at Ananda Ashram, Pondicherry.

Yoga may be said to be as ancient as the universe itself, since it is said to have been originated by Hiranyagarba, the causal germ plasm itself. This timeless art and science of humanity sprouted from the fertile soil of Sanathana Dharma, the traditional pan-Indian culture that continues to flourish into modern times.

Today, Yoga has become popular as a therapy, and most people come to it seeking to alleviate their physical, mental and emotional imbalances. We must understand, however, that the use of Yoga as a therapy is a much more recent happening in the wonderful long history of Yoga—which has historically served to promote spiritual evolution. Yoga helps unify all aspects of our very being: the physical body, in which we live our daily life; the energy body, without which we will not have the capacity to do what we do; the mind body, which enables us to do our tasks with mindfulness; the higher intellect, which gives us clarity; and, finally, the universal body, which gives us limitless bliss.

All aspects of our life--physical, energetic, mental, intellectual and universal--are unified through the practice of Yoga, which may also be described as the science of right-use-ness, that is, of using our body, emotions, and mind responsibly and in the most appropriate manner. One of the best definitions of Yoga given by Swami Gitananda Giri is that it is a ‘way of life’. It is not something you do for 5 minutes a day or 20 minutes a day. It is indeed a  $24 \times 7 \times 365$ . lifestyle.

Illness, disease and disorders are so common in this world, and people everywhere are desperately seeking relief from their suffering. Yoga helps us to think better and to live better; indeed, it helps us improve ourselves in everything we do. Hence it holds out the promise of health, well-being and harmony. According to the Bhagavad Gita, an ancient text which can be said to be a Yoga Shastra (seminal textual source of Yoga), Lord Krishna the Master of Yoga (Yogeshwar) defines Yoga as “*dukkhasamyogaviyogam yoga samjnitham*” meaning thereby that Yoga is the disassociation from the union with suffering. Pain, suffering, disease - Yoga offers a way out of all of these.

One of the foremost concepts of Yoga therapy is that the mind, which is called *adhi*, influences the body, thus creating *vyadhi*, the disease. (Fig 1)

This is known as the *adhi vyadhi* or *adhija vyadhi*, where the mind brings about the production of disease in the physical body. In modern language, this is called psychosomatic illness. Virtually every health problem that we face today either has its origin in psychosomatics or is worsened by the psychosomatic aspect of the disease. The mind and the body seem to be continuously fighting each other.

What the mind wants, the body won’t do, and what the body wants, the mind won’t do. This creates a dichotomy, a disharmony, in other words, a disease.

Yoga helps restore balance and equilibrium by virtue of the internal process of unifying mind, body and emotions. The psychosomatic stress disorders that are so prevalent in today’s world can be prevented, controlled and possibly even cured via the sincere and dedicated application of Yoga as a therapy.

## History of all Medicine

Psychosomatic disorders go through four major phases. The first is the psychic phase, in which the stress is located essentially in the mind. There is jitteriness, a sense of unnatural tension, a sense of not being 'at ease'.

If the stress continues, the psychic stage then evolves into the psychosomatic stage. At this point, the mind and body are troubling each other and fluctuations, such as a dramatic rise in blood pressure, blood sugar or heart rate, begin to manifest intermittently. If this is allowed to continue, one reaches the somatic stage, where the disease settles down in the body and manifests permanently. At this stage, it has become a condition that requires treatment and therapy. In the fourth, organic stage, the disease settles permanently into the target organs. This represents the end stage of the disease.

Yoga as a therapy works very well at both the psychic and psychosomatic stages. Once the disease enters the somatic stage, Yoga therapy as an adjunct to other therapies may improve the condition. In the organic stage, Yoga therapy's role is more of a palliative, pain relieving and rehabilitative nature. Of course the major role of Yoga is as a preventive therapy, preventing that which is to come. Maharishi Patanjali tells us in his Yoga Darshan, "heyamdukkhamanagatham"-prevent those miseries that are yet to come".

If the practice of Yoga is taken up during childhood, we can prevent so many conditions from occurring later on in life. This is primary prevention. Once the condition occurs, once the disease has set in, we have secondary prevention, which is more in the nature of controlling the condition to whatever extent we can. Tertiary prevention is done once the condition has occurred, as we try to prevent the complications, those that affect the quality, and even the quantity, of a patient's life.

When we use Yoga as a therapy, we need to consider both the nature of the person—his or her age, gender and physical condition—and the nature and stage of the disorder. A step-by-step approach must include a detailed look at all aspects of diet, necessary lifestyle modifications, attitude reconditioning through Yogic counseling, as well as the appropriate practices. All of these are integral components of holistic, or rather, wholesome Yoga therapy. When such an approach is adopted, tremendous changes will manifest in the lives of the patients and their families. The quality of life improves drastically and, in many cases, so does the quantity.

As human beings, we fulfill ourselves best when we help others. Yoga is the best way for us to consciously evolve out of our lower, sub-human nature, into our elevated human and humane nature. Ultimately, this life giving, life enhancing and life sustaining science of humanity allows us to achieve in full measure the Divinity that resides within each of us.

I would like to conclude this overview of Yoga therapy with a word of caution. Yoga therapy is not a magic therapy! It is not a 'one pill for all ills'. There should be no false claims or unsubstantiated tall claims made in this field. Yoga therapy is also a science and must therefore be approached in a scientific, step-bystep manner. It should be administered primarily as a 'one on one' therapy that allows the therapist to modify the practices to meet the needs of the individual. It is not a "one size fits all" or "one therapy fits all" approach!

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### 1.2.6.5 Siddha medicine <sup>w</sup>

Siddha medicine is a traditional medicine originating in Southern India. It is one of the oldest systems of medicine in India.

In rural India, siddhars have learned methods traditionally through master-disciple relationships to become local "healers". Siddhars are among an estimated 400,000 traditional healers practicing medicine in India, comprising some 57% of rural medical care. Siddha practitioners believe that five basic elements – earth, water, fire, air, sky – are in food, "humours" of the human body, and herbal, animal or inorganic chemical compounds, such as sulfur and mercury, used as therapies for treating diseases.

The Ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy of the Government of India regulates training in Siddha medicine and other traditional practices grouped collectively as AYUSH. Practitioners are called siddhars (vaithiyars in Tamil), and may have formal training with advanced degrees, such as BSMS (Bachelor in Siddha Medicine and Surgery), MD (Medical Doctor, Siddha) or Doctor of Philosophy (PhD). The Central Council of Indian Medicine, a statutory body established in 1971 under AYUSH, monitors education in areas of rural Indian medicine, including Siddha medicine. The Indian Medical Association regards Siddha medicine degrees as "fake" and Siddha therapies as quackery, posing a danger to national health due to absence of training in science-based medicine. Identifying fake medical practitioners without qualifications, the Supreme Court of India stated in 2018 that "unqualified, untrained quacks are posing a great risk to the entire society and playing with the lives of people without having the requisite training and education in the science from approved institutions".

#### HISTORY

Siddha is an ancient Indian traditional treatment system which evolved in South India, and is dated to the times of 3rd millennium BCE Indus Valley Civilization or earlier. According to ancient literature of Siddha, it is said that the system of this medicine originated from Hindu God Shiva who taught it to his consort Parvati. Parvati then passed it on to Nandi and Nandi taught about it to nine Devtas.

Though the origin of this system is considered to be divine, Siddhar Agasthyar is considered as the founding father of this medical system. There are 18 prominent siddhars who are the main contributors to this system of medicine. The original texts and treatise for siddha are written in Tamil language.

#### CONCEPT OF DISEASE AND CAUSE

When the normal equilibrium of the three humors – Vaadham, Pittham and Kapam – is disturbed, disease is caused. The factors assumed to affect this equilibrium are environment, climatic conditions, diet, physical activities, and stress. Under normal conditions, the ratio between Vaadham, Pittham, and Kapam are 4:2:1, respectively.

According to the Siddha medicine system, diet and lifestyle play a major role in health and in curing diseases. This concept of the Siddha medicine is termed as pathiyam and apathiyam, which is essentially a rule based system with a list of "do's and don'ts".

#### HERBALISM

The herbal agents used by the siddhars could be classified into three groups: thavaram (herbal product), thadhu (inorganic substances) and jangamam (animal products). The thadhu agents are further classified as: uppu (water-soluble inorganic substances that give out vapour when put into fire), pashanam (agents not dissolved in water but emit vapour when fired), uparasam (similar to pashanam but differ in action),

## History of all Medicine

loham (not dissolved in water but melt when fired), rasam (substances which are soft), and ghandhagam (substances which are insoluble in water, like sulphur).

### SIDDHA TODAY

The Tamil Nadu state runs a 5.5-year course in Siddha medicine (BSMS: Bachelor in Siddha Medicine and Surgery). The Indian Government also gives its focus on Siddha, by starting up medical colleges and research centers like National Institute of Siddha. and Central Council for Research in Siddha. Commercially, Siddha medicine is practiced by siddhars referred in Tamil as vaithiyars.

Practicing Siddha medicine and similar forms of rural alternative medicine in India was banned in the Travancore-Cochin Medical Practitioners' Act of 1953, then reinforced in 2018 by the Supreme Court of India which stated that "A number of unqualified, untrained quacks are posing a great risk to the entire society and playing with the lives of people." The Act requires that qualified medical practitioners be trained at a recognized institution, and be registered and displayed on a list of valid physician practitioners, as published annually in The Gazette of India. The Gazette list does not recognize practitioners of Siddha medicine because they are not trained, qualified or registered as valid physicians.

Since 2014, the Supreme Court of India and Indian Medical Association have described Siddha medicine as quackery, and there is no governmental recognition of siddhars as legitimate physicians. The Indian Medical Association regards the Indian institutions that train people in Siddha medicine, the supposed degrees granted, and the graduates of those programs as "fake". Since 1953, the Indian national government has not recognized Siddha medicine or any alternative system of medicine as valid, and there is no proposal to integrate Siddha medicine into conventional medicine practiced in India.

There may be as many as one million quack "doctors", including siddhars, practicing medicine in the rural regions of India, a condition not actively opposed by the Indian government out of concern for serving some health needs for the large rural population. The Indian Medical Association emphatically opposed this position in 2014. In 2018, licensed Indian physicians staged demonstrations and accused the government of sanctioning quackery by proposing to allow rural quacks to practice some aspects of clinical medicine without having complete medical training.

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**1.2.7 Thai massage <sup>w</sup>**

Thai massage or Thai yoga massage is a traditional therapy combining acupressure, Indian Ayurvedic principles, and assisted yoga postures. The idea of Sen-lines alias energy-lines was first used as "Thai yoga massage". These are similar to nadis as per the philosophy of yoga by Gorakhnath.

Nuad Thai, traditional Thai massage

UNESCO Intangible Cultural Heritage



Thai massage

Country

Thailand

Region

Asia and the Pacific

Inscription history

Inscription

2019 (14th session)

List

Representative

In the Thai language it is usually called nuat phaen thai (Thai: นวดแผนไทย, pronounced [nū̀t pʰǎ:n tʰāj]; lit. 'Thai-style massage') or nuat phaen boran (นวดแผนโบราณ, [nū̀t pʰǎ:n bō:rā:n]; lit. 'ancient-style massage'), though its formal name is nuat thai (นวดไทย, [nū̀t tʰāj]; lit. 'Thai massage') according to the Traditional Thai Medical Professions Act, BE 2556 (2013).

The Thai Ministry of Public Health's Department for Development of Thai Traditional and Alternative Medicine regulates Thai traditional massage venues and practitioners. As of 2016 the department says 913 traditional clinics have registered nationwide in Thailand. As of 2018, of the 8,000 to 10,000 spa and massage shops in Thailand; only 4,228 are certified by the Health Ministry's Department of Health Service Support (HSS).

UNESCO added traditional Thai massage to its Cultural Heritage of Humanity list in December 2019.

Practice

The practice of Thai yoga massage is said to be thousands of years old, but it is still part of Thailand's medical system due to its perceived healing properties at both emotional and physical level. There are differences in certain practices associated with the massage when performed in the Western and Thai contexts. Western cultural sensibilities might be different in terms of accepting shamanic healing practices such as increasing the intensity of the massage or the giver jumping around the massage table like the Hindu god Hanuman. Traditional Thai massage uses no oils or lotions. The recipient remains clothed during

## History of all Medicine

a treatment. There is constant body contact between the giver and receiver, but rather than rubbing on muscles, the body is compressed, pulled, stretched and rocked. The concept of metta (loving kindness), based on Buddhist teachings, is an integral part of this practice. Well known practitioners also emphasize meditation and devotion on part of the practitioner as integral to the effectiveness of this practice.

The recipient wears loose, comfortable clothing and lies on a mat or firm mattress on the floor.

In Thailand, a dozen or so subjects may receive massage simultaneously in one large room. The true ancient style of the massage requires that the massage be performed solo with just the giver and receiver. The receiver will be positioned in a variety of yoga-like positions during the course of the massage, that is also combined with deep static and rhythmic pressures.

The massage generally follows designated lines ("sen") in the body. The legs and feet of the giver can be used to position the body or limbs of the recipient. In other positions, hands fix the body, while the feet do the massaging. A full Thai massage session may last two hours and includes rhythmic pressing and stretching of the entire body. This may include pulling fingers, toes, ears, cracking knuckles, walking on the recipient's back, by palm-press, thumb-press, fingers-press and forearm-press in many different positions including HDS. There is a standard procedure and rhythm to the massage, which the giver will adjust to fit the receiver.

### History



Drawings of acupressure points on sen lines at Wat Pho Temple, Phra Nakhon district, Bangkok

The founder of Thai massage and medicine is said to have been Chiwaka Komaraphat (ชิวากโก มารภักจส์ Jīvaka Komarabhācca), who is said in the Pāli Buddhist canon to have been the Buddha's physician over 2,500 years ago. He is recorded in ancient documents as having extraordinary medical skills, his knowledge of herbal medicine, and for having treated important people of his day, including the Buddha himself.

In fact, the history of Thai massage is more complex than this legend of a single founder would suggest. Thai massage, like Thai traditional medicine (TTM) more generally, is a combination of influences from Indian and Southeast Asian traditions of medicine, and the art as it is practiced today is likely to be the product of a 19th-century synthesis of various healing traditions from all over the kingdom. Even today, there is considerable variation from region to region across Thailand, and no single routine or theoretical framework that is universally accepted among healers.

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### 1.2.8 Japan <sup>w</sup>

#### Kampo

Kanpō medicine (漢方医学, Kanpō igaku), often known simply as Kanpō (漢方, Chinese [medicine]), is the study of traditional Chinese medicine in Japan following its introduction, beginning in the 7th century.

History of all Medicine

then adapted and modified to suit Japanese culture and traditions. Traditional Japanese medicine (TJM) uses most of the Chinese therapies including acupuncture, moxibustion, traditional Chinese herbology and traditional food therapy.

Kampo

Japanese name

Kanji

漢方医学

Transcriptions

Romanization

Kanpō igaku

Chinese name

Traditional Chinese

日本漢方醫學

Simplified Chinese

日本汉方医学

Literal meaning

"Han [Chinese] medicine in Japan"

Transcriptions

Standard Mandarin

Hanyu Pinyin

Rìběn Hànfāng yīxué

Yue: Cantonese

Yale Romanization

Yaht-bún Hon-fōng yī-hohk



Shennong (Japanese: Shinnō) tasting herbs to ascertain their qualities (19th-century Japanese scroll)



Manase Dōsan (1507–94) who laid the foundations for a more independent Japanese medicine

### Origins

According to Chinese mythology, the origins of traditional Chinese medicine are traced back to the three legendary sovereigns Fuxi, Shennong and Yellow Emperor. Shennong is believed to have tasted hundreds of herbs to ascertain their medicinal value and effects on the human body and help relieve people of their sufferings. The oldest written record focusing solely on the medicinal use of plants was the Shennong Ben Cao Jing which was compiled around the end of the first century B.C. and is said to have classified 365 species of herbs or medicinal plants. Chinese medical practices were introduced to Japan during the 6th century A.D. In 608, Empress Suiko dispatched E-Nichi, Fuku-In and other young physicians to China. It is said that they studied medicine there for 15 years. Until 838, Japan sent 19 missions to Tang China. While the Manase Dōsan (1507–94) who laid the foundations for a more independent Japanese medicine History officials studied Chinese government structures, physicians and many of the Japanese monks absorbed Chinese medical knowledge.

### Early Japanese adaptation

In 702 A.D., the Taihō Code was promulgated as an adaptation of the governmental system of China's Tang Dynasty. One section called for the establishment of a university (daigaku) including a medical school with an elaborate training program, but due to incessant civil war this program never became effective. Empress Kōmyō (701–760) established the Hidenin and Seyakuin in the Kōfuku-Temple (Kōfuku-ji) in Nara, being two Buddhist institutions that provided free healthcare and medicine for the needy. For centuries to come Japanese Buddhist monks were essential in conveying Chinese medical know-how to Japan and in providing health care for both the elite and the general population.

In 753 A.D., the Chinese priest Jianzhen (in Japanese Ganjin), who was well-versed in medicine, arrived in Japan after five failed attempts in 12 years to cross the East China Sea. As he was blind, he used his sense of smell to identify herbs. He brought medical texts and a large collection of materia medica to the imperial palace in Nara, which he dedicated to the Emperor Shōmu in 756, 49 days after the emperor's death. They are kept in a log-cabin-style treasure house of the Tōdai-Temple (Tōdai-ji) known as Shōsōin.

In 787 A.D., the "Newly Revised Materia Medica" (Xinxu Bencao, 659 A.D.), which had been sponsored by the Tang Imperial Court, became an obligatory text in the study of medicine at the Japanese Health Ministry, but many of the 844 medicinal substances described in this book were not available in Japan at the time. Around 918 A.D., a Japanese medical dictionary entitled "Japanese names of (Chinese) Materia Medica" (Honzō-wamyō) was compiled, quoting from 60 Chinese medical works.

## History of all Medicine

During the Heian Period, Tanba Yasuyori (912–995) compiled the first Japanese medical book, *Ishinpō* ("Prescriptions from the Heart of Medicine"), drawing from numerous Chinese texts, some of which have perished later. During the period from 1200 to 1600, medicine in Japan became more practical. Most of the physicians were Buddhist monks who continued to use the formulas, theories and practices that had been introduced by the early envoys from Tang China.

### EARLY REVISION

During the 15th and 16th centuries, Japanese physicians began to achieve a more independent view on Chinese medicine. After 12 years of studies in China Tashiro Sanki (1465–1537) became the leading figure of a movement called "Followers of Later Developments in Medicine" (Gosei-ha). This school propagated the teachings of Li Dongyuan and Zhu Tanxi that gradually superseded the older doctrines from the Song dynasty. Manase Dōsan, one of his disciples, adapted Tashiro's teachings to Japanese conditions. Based on his own observation and experience, he compiled a book on internal medicine in eight volumes (*Keiteki-shū*) and established an influential private medical school (*Keiteki-in*) in Kyōto. His son Gensaku wrote a book of case studies (*Igaku tenshō-ki*) and developed a considerable number of new herb formulas.

From the second half of the 17th century, a new movement, the "Followers of Classic Methods" (*Kohō-ha*), evolved, which emphasized the teachings and formulas of the Chinese classic "Treatise on Cold Damage Disorders" (*Shanghan Lun*, in Japanese *Shōkan-ron*). While the etiological concepts of this school were as speculative as those of the Gosei-ha, the therapeutic approaches were based on empirical observations and practical experience. This return to "classic methods" was initiated by Nagoya Gen'i (1628–1696), and advocated by influential proponents such as Gotō Gonzan (1659–1733), Yamawaki Tōyō (1705–1762), and Yoshimasu Tōdō (1702–1773). Yoshimasu is considered to be the most influential figure. He accepted any effective technique, regardless of its particular philosophical background. Yoshimasu's abdominal diagnostics are commonly credited with differentiating early modern Traditional Japanese medicine (TJM) from Traditional Chinese medicine (TCM).

During the later part of the Edo period, many Japanese practitioners began to utilize elements of both schools. Some, such as Ogino Gengai (1737–1806), Ishizaka Sōtetsu (1770–1841), or Honma Sōken (1804–1872), even tried to incorporate Western concepts and therapies, which had made their way into the country through physicians at the Dutch trading-post Dejima (Nagasaki). Although Western medicine gained some ground in the field of surgery, there was not much competition between "Eastern" and "Western" schools until the 19th century, because even adherents of "Dutch-Studies" (*Rangaku*) were very eclectic in their actual practice.

Traditional medicine never lost its popularity throughout the Edo period, but it entered a period of rapid decline shortly after the Meiji Restoration. In 1871, the new government decided to modernize medical education based on the German medical system. Starting in 1875, new medical examinations focused on natural sciences and Western medical disciplines. In October 1883, a law retracted the licenses of any existing traditional practitioner. Despite losing legal standing, a small number of traditional physicians continued to practice privately. Some of them, such as Yamada Gyōkō (1808–1881), Asada Sōhaku (1813–1894), and Mori Risshi (1807–1885), organized an "Association to Preserve [Traditional] Knowledge" (*Onchi-sha*) and started to set up small hospitals. However, by 1887, the organization was disbanded due to internal policy dissent and the death of leading figures. The "Imperial Medical Association" (*Teikoku Ikai*), founded in 1894, was short-lived too. In 1895, the 8th National Assembly of the Diet vetoed a request to continue the practice of *Kampō*. When Azai Kokkan (1848–1903), one of the main activists, died, the *Kampō* movement was almost stamped out.

ERA OF WESTERN INFLUENCE

Any further attempt to save traditional practices had to take into account Western concepts and therapies. Therefore, it was graduates from medical faculties, trained in Western medicine, who began to set out to revive traditional practices. In 1910, Wada Keijūrō (1872–1916) published "The Iron Hammer of the Medical World" (Ikai no tetsui). Yumoto Kyūshin (1876–1942), a graduate from Kanazawa Medical School, was so impressed by this book that he became a student of Dr. Wada. His "Japanese-Chinese Medicine" (Kōkan igaku), published in 1927, was the first book on Kampō medicine in which Western medical findings were used to interpret classical Chinese texts. In 1927, Nakayama Tadanao (1895–1957) presented his "New Research on Kampō-Medicine" (Kampō-igaku no shin kenkyū). Another "convert" was Ōtsuka Keisetsu (1900–1980), who became one of the most famous Kampō practitioners of the 20th century.

This gradual revival was supported by the modernization of the dosage form of herbal medicine.

During the 1920s, the Nagakura Pharmaceutical Company in Osaka began developing dried decoctions in a granular form. At about the same time, Tsumura Juntendō, a company founded by Tsumura Jūsha (1871–1941) in 1893, established a research institute to promote the development of standardized Kampō medicine. Gradually, these "Japanese-Chinese remedies" (wakan-yaku) became a standard method of Kampō medicine administration.

In 1937, new researchers such as Yakazu Dōmei (1905–2002) started to promote Kampō at the so-called "Takushoku University Kampo Seminar". More than 700 people attended these seminars that continued after the war. In 1938, following a proposal of Yakazu, the "Asia Medicine Association" was established. In 1941, Takeyama Shinichirō published his "Theories on the Restoration of Kampō Medicine" (Kampō-ijutsu fukkō no riron, 1941). In that same year, Yakazu, Ōtsuka, Kimura Nagahisa, and Shimizu Fujitarō (1886–1976) completed a book entitled "The Actual Practice of Kampō Medicine" (Kampō shinryō no jissai). By including Western medical disease names he greatly expanded the usage of Kampō formulas. A new version of this influential manual was printed in 1954. This book was also translated into Chinese. A completely revised version was published in 1969 under the title "Medical Dictionary of Kampō Practice" (Kampō Shinryō Iten).



In 1950, Ōtsuka Keisetsu, Yakazu Dōmei, Hosono Shirō (1899–1989), Okuda Kenzō (1884–1961), and other leaders of the pre- and postwar Kampō revival movement established the "Japan Society for Oriental Medicine" (Nippon Tōyō Igakkai) with 89 members (2014: more than 9000 members). In 1960, raw materials for crude drugs listed in the Japanese Pharmacopoeia

(Nippon Yakkyoku-hō) received official drug prices under the National Health Insurance (NHI, Kokumin kenkō hoken).

Today in Japan, Kampō is integrated into the Japanese national health care system. In 1967, the Ministry of Health, Labour and Welfare approved four Kampō medicines for reimbursement under the National Health Insurance (NHI) program. In 1976, 82 kampo medicines were approved by the Ministry of Health, Labour and Welfare. This number has increased to 148 Kampo formulation extracts, 241 crude drugs, and 5 crude drug preparations.

## History of all Medicine

Rather than modifying formulae as in Traditional Chinese medicine, the Japanese Kampō tradition uses fixed combinations of herbs in standardized proportions according to the classical literature of Chinese medicine. Kampō medicines are produced by various manufacturers.

However, each medicine is composed of exactly the same ingredients under the Ministry's standardization methodology. The medicines are therefore prepared under strict manufacturing conditions that rival pharmaceutical companies. In October 2000, a nationwide study reported that 72% of registered physicians prescribe Kampō medicines. New Kampō medicines are being evaluated using modern techniques to evaluate their mechanism of action.

The 14th edition of the Japanese Pharmacopoeia (JP, Nihon yakkyokuhō) lists 165 herbal ingredients that are used in Kampō medicines. Lots of the Kampō products are routinely tested for heavy metals, purity, and microbial content to eliminate any contamination. Kampō medicines are tested for the levels of key chemical constituents as markers for quality control on every formula. This is carried out from the blending of the raw herbs to the end product according to the Ministry's pharmaceutical standards.

### Approved Kampō medicines

#### Herbs

Medicinal mushrooms like Reishi and Shiitake are herbal products with a long history of use. In Japan, the *Agaricus blazei* mushroom is a highly popular herb, which is used by close to 500,000 people. In Japan, *Agaricus blazei* is also the most popular herb used by cancer patients.

The second most used herb is an isolate from the Shiitake mushroom, known as Active Hexose Correlated Compound.

In the United States, Kampō is practiced mostly by acupuncturists, Chinese medicine practitioners, naturopath physicians, and other alternative medicine professionals. Kampō herbal formulae are studied under clinical trials, such as the clinical study of Honso Sho-saiko-to (H09) for treatment of hepatitis C at the New York Memorial Sloan-Kettering Cancer Center, and liver cirrhosis caused by hepatitis C at the UCSD Liver Center. Both clinical trials are sponsored by Honso USA, Inc., a branch of Honso Pharmaceutical Co., Ltd., Nagoya, Japan.

One of the first sources showing the term "Kampō" in its modern sense (James Curtis Hepburn: A Japanese and English Dictionary; with an English and Japanese Index. London: Trübner & Co., 1867, p. 177.)

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#### 1.2.8.1 Reiki <sup>w</sup>

Reiki (靈氣, /'reiki/) is a Japanese form of energy healing, a type of alternative medicine. Reiki practitioners use a technique called palm healing or hands-on healing through which a "universal energy" is said to be transferred through the palms of the practitioner to the patient in order to encourage emotional or physical healing.

Reiki

Chinese name

Traditional Chinese

靈氣

## History of all Medicine

|                      |             |
|----------------------|-------------|
| Simplified Chinese   | 灵气          |
| Transcriptions       |             |
| Standard Mandarin    |             |
| Hanyu Pinyin         | língqì      |
| Wade–Giles           | ling2-ch'i4 |
| Yue: Cantonese       |             |
| Jyutping             | ling4-hei3  |
| Vietnamese name      |             |
| Vietnamese alphabet  | linh khí    |
| Korean name          |             |
| Hangul               | 영기          |
| Hanja                | 靈氣          |
| Transcriptions       |             |
| Revised Romanization | yeonggi     |
| McCune–Reischauer    | yǒngki      |
| Japanese name        |             |
| Hiragana             | れいき         |
| Kyūjitai             | 靈氣          |
| Shinjitai            | 靈気          |

Reiki is a pseudoscience, and is used as an illustrative example of pseudoscience in scholarly texts and academic journal articles. It is based on qi ("chi"), which practitioners say is a universal life force, although there is no empirical evidence that such a life force exists.

Clinical research does not show reiki to be effective as a treatment for any medical condition, including cancer, diabetic neuropathy, anxiety or depression; therefore, it should not replace conventional medical treatment. There is no proof of the effectiveness of reiki therapy compared to placebo. Studies reporting positive effects have had methodological flaws.



## Etymology



Mikao Usui (1865–1926)

According to the Oxford English Dictionary, the English alternative medicine word reiki comes from Japanese reiki (靈氣) "mysterious atmosphere, miraculous sign", combining rei "soul, spirit" and ki "vital energy"—the Sino-Japanese reading of Chinese língqì (靈氣) "numinous atmosphere".

According to the inscription on his memorial stone, Mikao Usui taught his system of reiki to more than 2,000 people during his lifetime. While teaching reiki in Fukuyama, Usui suffered a stroke and died on 9 March 1926. The first reiki clinic in the United States was started by Chujiro Hayashi's student Hawayo Takata in 1970.

## Basis

Reiki's teachings and adherents claim that qi is physiological and can be manipulated to treat a disease or condition. The existence of qi has not been established by medical research. Therefore, reiki is a pseudoscientific theory based on metaphysical concepts.

The existence of the proposed mechanism for reiki—qi or "life force" energy—has not been scientifically established. Most research on reiki is poorly designed and prone to bias. There is no reliable empirical evidence that reiki is helpful for treating any medical condition,



Chujiro Hayashi (1880–1940)

## Origins

Research and critical evaluation although some physicians have said it might help promote general well-being. In 2011, William T. Jarvis of The National Council Against Health Fraud stated that there "is no evidence that clinical reiki's effects are due to anything other than suggestion" or the placebo effect.

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The April 22, 2014, Skeptoid podcast episode titled "Your Body's Alleged Energy Fields" relates a reiki practitioner's report of what was happening as she passed her hands over a subject's body:

What we'll be looking for here, within John's auric field, is any areas of intense heat, unusual coldness, a repelling energy, a dense energy, a magnetizing energy, tingling sensations, or actually the body attracting the hands into that area where it needs the reiki energy, and balancing of John's qi.

Evaluating these claims scientific skeptic author Brian Dunning reported: ... his aura, his qi, his reiki energy. None of these have any counterpart in the physical world. Although she attempted to describe their properties as heat or magnetism, those properties are already taken by —well, heat and magnetism. There are no properties attributable to the mysterious field she describes, thus it cannot be authoritatively said to exist."

### Scholarly evaluation

Reiki is used as an illustrative example of pseudoscience in scholarly texts and academic journal articles.

In criticizing the State University of New York for offering a continuing education course on reiki, one source stated, "reiki postulates the existence of a universal energy unknown to science and thus far undetectable surrounding the human body, which practitioners can learn to manipulate using their hands," and others said, "In spite of its [reiki] diffusion, the baseline mechanism of action has not been demonstrated ..." and, "Neither the forces involved nor the alleged therapeutic benefits have been demonstrated by scientific testing."

Several authors have pointed to the vitalistic energy which reiki is claimed to treat, with one saying, "Ironically, the only thing that distinguishes reiki from therapeutic touch is that it [reiki] involves actual touch," and others stating that the International Center for Reiki Training "mimic[s] the institutional aspects of science" seeking legitimacy but holds no more promise than an alchemy society.

A guideline published by the American Academy of Neurology, the American Association of

Neuromuscular & Electrodiagnostic Medicine, and the American Academy of Physical Medicine and Rehabilitation states, "Reiki therapy should probably not be considered for the treatment of PDN [painful diabetic neuropathy]." Canadian sociologist Susan J. Palmer has listed reiki as among the pseudoscientific healing methods used by cults in France to attract members.

### Evidence quality

A 2008 systematic review of nine randomized clinical trials found several shortcomings in the literature on reiki. Depending on the tools used to measure depression and anxiety, the results varied and were not reliable or valid. Furthermore, the scientific community has been unable to replicate the findings of studies that support reiki. The review also found issues in reporting methodology in some of the literature, in that often there were parts omitted completely or not clearly described. Frequently in these studies, sample sizes were not calculated and adequate allocation and double-blind procedures were not followed. The review also reported that such studies exaggerated the effectiveness of treatment and there was no control for differences in experience of reiki practitioners or even the same practitioner at times produced different outcomes. None of the studies in the review provided a rationale for the treatment duration and no study reported adverse effects.

## Safety

Safety concerns for reiki sessions are very low and are akin to those of many complementary and alternative medicine practices. Some physicians and health care providers, however, believe that patients may unadvisedly substitute proven treatments for life-threatening conditions with unproven alternative modalities including reiki, thus endangering their health.

## Catholic Church concerns

In March 2009, the Committee on Doctrine of the United States Conference of Catholic Bishops issued the document *Guidelines for Evaluating Reiki as an Alternative Therapy*, in which they declared that the practice of reiki was based on superstition, being neither truly faith healing nor science-based medicine. They stated that reiki was incompatible with Christian spirituality since it involved belief in a human power over healing rather than prayer to God, and that, viewed as a natural means of healing, it lacked scientific credibility. The 2009 guideline concluded that "since reiki therapy is not compatible with either Christian teaching or scientific evidence, it would be inappropriate for Catholic institutions, such as Catholic health care facilities and retreat centers, or persons representing the Church, such as Catholic chaplains, to promote or to provide support for reiki therapy." Since this announcement, some Catholic lay people have continued to practice reiki, but it has been removed from many Catholic hospitals and other institutions.

In a December 2014 article from the USCCB's Committee on Divine Worship on exorcism and its use in the Church, reiki is listed as a practice "that may have [negatively] impacted the current state of the afflicted person".

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## 1.2.9 Rolwing<sup>w</sup>

Rolfing (/ˈrɔːlfɪŋ, ˈrɒl-/) is a form of alternative medicine originally developed by Ida Rolf (1896–1979) as Structural Integration. Rolwing is marketed with unproven claims of various health benefits. It is based on Rolf's ideas about how the human body's "energy field" can benefit when aligned with the Earth's gravitational field.

Rolwing is typically delivered as a series of ten hands-on physical manipulation sessions sometimes called "the recipe". Practitioners combine superficial and deep manual therapy with movement prompts. The process is sometimes painful. The safety of Rolwing has not been confirmed.

The principles of Rolwing contradict established medical knowledge, and there is no good evidence Rolwing is effective for the treatment of any health condition. It is recognized as a pseudoscience and has been characterized as quackery.

Science writer Edzard Ernst offers this definition: "Rolwing is a system of bodywork invented by Ida Pauline Rolf (1896–1979) employing deep manipulation of the body's soft tissue allegedly to realign and balance the body's myofascial structures."

Rolwing is based on the unproven belief that such alignment results in improved movement, breathing, pain reduction, stress reduction, and even emotional changes.

## Conceptual basis

Rolf described the body as organized around an axis perpendicular to the earth, pulled downward by gravity, and she believed the function of the body was optimal when it was aligned with that pull. In her view, gravity tends to shorten fascia, leading to disorder of the body's arrangement around its axis and creating imbalance, inefficiency in movement, and pain.

## History of all Medicine

Rolfers aim to lengthen the fascia in order to restore the body's arrangement around its axis and facilitate improved movement. Rolf also discussed this in terms of "energy" and said:

Rolfers make a life study of relating bodies and their fields to the earth and its gravity field, and we so organize the body that the gravity field can reinforce the body's energy field. This is our primary concept.

The manipulation is sometimes referred to as a type of bodywork, or as a type of massage. Some osteopaths were influenced by Rolf, and some of her students became teachers of massage, including one of the founders of myofascial release.

Rolf claimed to have found an association between emotions and the soft tissue, writing "although rolfing is not primarily a psychotherapeutic approach to the problems of humans", it does constitute an "approach to the personality through the myofascial collagen components of the physical body". She claimed Rolfing could balance the mental and emotional aspects of subjects, and that "the amazing psychological changes that appeared in Rolfed individuals were completely unexpected". Rolfers suggest their manipulations can cause the release of painful repressed memories. Rolfers also hold that by manipulating the body they can bring about changes in personality; for example, teaching somebody to walk with confidence will make them a more confident person. The connection between physical structure and psychology has not been proven by scientific studies.

### History

Ida Rolf began working on clients in New York City in the 1940s with the premise that the human structure could be organized "in relation to gravity". She developed structural integration with one of her sons and by the 1950s she was teaching her work across the United States. In the mid-1960s she began teaching at Esalen Institute, where she gathered a loyal following of students and practitioners.[35] Esalen was the epicenter of the Human Potential Movement, allowing Rolf to exchange ideas with many of their leaders, including Fritz Perls. Rolf Effectiveness and reception incorporated a number of ideas from other areas including osteopathic manipulation, cranial osteopathy, hatha yoga, and the general semantics of Alfred Korzybski. In 1971 she founded the Rolf Institute of Structural Integration. The school has been based in Boulder, Colorado, since 1972, and as of 2010 included five institutes worldwide.

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### 1.2.10 Greco-Roman Medicine <sup>w</sup>

Greek medicine derived its earliest beliefs and practices from Egypt and West Asia. Greek medicine later spread around the Mediterranean during Roman times and was to form the basis of the medical knowledge of Medieval Europe. Our knowledge of Greek medicine mainly comes from the Hippocratic writings and from Galen writing in the second century CE.

The earliest Greek medicine was based on religion. Asclepius, the son of Apollo, was able to cure disease and patients sleeping at his shrines would see the God in their dreams and receive advice on appropriate treatments. Around the sixth century BCE Greek medicine began to change with a greater emphasis on rational explanations of disease involving natural rather than supernatural causes. The Hippocratic writings, probably written by a number of authors, suggested liquids were the vital element in all living things. The human body contained four fluids or humors, phlegm, yellow bile, black bile and blood. Disease was caused by an imbalance of these fluids in the body. Such an imbalance could be caused by the weather or by extreme behaviour such as over eating or excessive drinking. The medical practice of bleeding, which was to persist for several thousand years, originated from the belief there was an excess of blood which could be cured by releasing some blood from the body. Correct diet, bathing, exercise, sleep and sex would prevent illness. According to Hippocrates sex should be more frequent in winter and older men should have sex more frequently than younger men. He considered epilepsy was caused by an excess of phlegm. Hippocrates however tells us little about infectious diseases and anatomy as the dissection of bodies was taboo as it was considered to be a violation of the sanctity of the human body.

The classical era taboo on human dissection led to some quite erroneous views of the human body. Aristotle considered the heart was where the soul was located and was the center of thought, sense perception and controlled bodily movements. He considered the brain cooled the heart and the blood. There was however a brief period in Alexandria where due to the ancient Egyptian practice of embalming and the more recent Platonic view that the soul and not the body, was sacred, human dissection was allowed. Herophilus and Erasistratus carried out dissections that led them to discover the nerves leading to the brain. They discovered there were two different types of nerves, one, dealing with sense perception and the other with body movement. When studying the brain, they discovered the cerebrum and the cerebellum and suggested the heavily folded human brain indicated humans' higher intelligence compared to animals. They considered the lungs took in air that was then transferred to the arteries, the veins held blood and the heart worked like a bellows. After making significant discoveries that could only be made by human dissection, the taboo against dissection rose again delaying further progress until the 16th century. Until then, knowledge of the interior of the human body could only be guessed at from its external behaviour or by comparison with animal anatomy.

Two further theories created by the ancient Greeks were the methodic theory and the pneumatic theory. The methodic theory considered disease to be caused by a disturbance of atoms in the body and treatment involved manipulating the body by massage, bathing or exercise. The pneumatic theory considered breath to be a crucial factor in human health.

The high point of Greco-Roman medical knowledge came with Galen in the second century CE. Galen's two main areas of study were anatomy and physiology. As human dissection was illegal his anatomical studies were based on dissections of animals, particularly the Barbary ape. He did however have the assistance of his study of gladiator's wounds, a human skeleton he had seen in Alexandria and of human bodies exhumed by natural events, such as floods. Galen's work on the bone structure and muscular system were a significant advance on anything else in antiquity. His belief in Aristotle's idea that everything had a purpose led him to assume every bone, muscle and organ had a particular function and

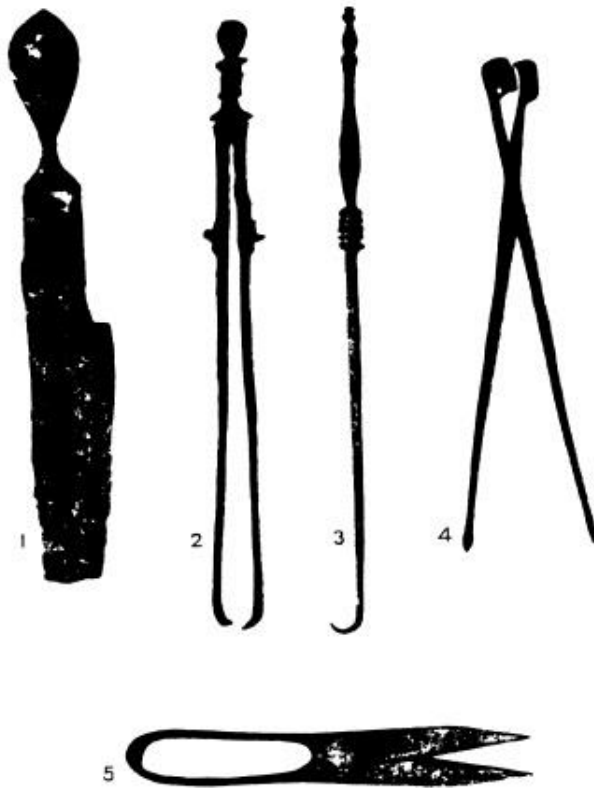
## History of all Medicine

he set out to describe each bone, muscle and organ and their particular function. He described the human skeleton and muscular system with some accuracy. He put an end to Aristotle's idea that the mind was located in the heart, locating it in the brain. Galen discovered seven pairs of cranial nerves, the sympathetic nervous system and he distinguished between the sensory and motor nerves. However, he also found things that did not exist. The rete mirabile (wonderful network) is located under the brain of many hoofed animals but is not found in humans. Yet Galen's claim that it exists in humans was accepted for some thirteen centuries.

Galen's physiology, his concept of how the human body worked, began with a vital spirit, pneuma taken into the body by breathing. The pneuma entered the lungs where it met some blood before passing into the left ventricle of the heart. The blood then flowed into the arteries and spread through the body feeding the flesh. When food entered the body it converted into blood in the liver, some of the blood then entered the veins and spread through the body and was feed into the flesh. Other blood flowed from the liver into the right ventricle of the heart from where some of the blood entered the lungs to absorb the pneuma. Some of the blood in the right ventricle however passed directly into the left ventricle and from there flowed into the arteries. One problem for Galen, was that he was unable to discover how blood moved from the right ventricle to the left ventricle, which were divided by a solid muscular wall. He eventually concluded there must be tiny holes in the wall, so small they could not be seen by the human eye. Galen's system correctly realized the heart caused blood to flow through the body and that the arteries contained blood. Previously Erasistratus suggested the arteries only contained air, as the arteries of a dead body do not contain blood. Galen did not realize that the blood circulated and his suggestion of minute holes in the wall between the right and left ventricles of the heart was wrong.

## History of all Medicine

### PLATE XIII EARLY ROMAN SURGICAL INSTRUMENTS FOUND AT POMPEII



1. Scalpel with leaf-shaped double-edged blade. 2. Spring tenaculum forceps. Sharp hook or tenaculum. 3. Sharp hook or tenaculum. 4. Scissor-action forceps with serrated blades. 5. Forceps with spring handles. (All are  $\frac{2}{3}$  natural size and are bronze, except the scalpel blade, which is steel.)

b

Galen's pathology, his concept of illness, brought together Hippocrates theory of the four humors and Aristotle's idea of the four elements, air, fire, earth and water. Blood was considered to be warm and moist, yellow bile warm and dry, black bile cold and dry and phlegm cold and moist. Blood is associated with the heart, yellow bile with the liver, black bile with the spleen and phlegm with the brain. The following table shows how Galen brought the two ideas together.

| <b>Humor</b> | <b>Element</b> | <b>Organ</b> | <b>Qualities</b> |
|--------------|----------------|--------------|------------------|
| Phlegm       | Water          | Brain        | Cold & Wet       |
| Blood        | Air            | Heart        | Hot & Wet        |
| Yellow bile  | Fire           | Liver        | Hot & Dry        |
| Black bile   | Earth          | Spleen       | Dry & Cold       |

The table indicates the symptoms of the disease, the cause of the disease and the cure for the disease. If the patient has the symptom of being hot and perspiring, this is the quality of being hot and wet; this suggests there is an imbalance in the blood, so that bleeding is the cure. If they have a hot and dry fever, this suggests the yellow bile is out of balance, so that vomiting up the yellow bile is the cure. The humors

## History of all Medicine

could also affect a person's personality. An excess of phlegm would make one phlegmatic, of blood, one would be sanguine, of yellow bile, one would be choleric and of black bile, one would be melancholic.

An imbalance in the humors in particular organs could result in illness. Excessive phlegm in the bowels resulted in dysentery and an excess in the lungs caused tuberculosis. Cancer was caused by a massive imbalance in the humors. Stroke was caused by an excess of blood, jaundice by excessive yellow bile and depression by too much black bile.

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### 1.2.10.1 Asahi Health <sup>w</sup>

Asahi (or Asahi Health) is a Finnish health exercise based on the eastern traditions of T'ai chi ch'uan, qigong, yiquan and yoga, with a western scientific viewpoint. Asahi is designed to suit everybody, regardless of physical condition or age.

Asahi exercise is taught and performed in instructed groups, but Asahi can also be performed alone as a form of daily self-treatment. Asahi exercise is ideal for short breaks. This exercise is equally effective in a group or alone.

#### The History of Asahi

Asahi was created in Finland 2004 by professional sports instructors and martial artists Timo Klemola, Ilpo Jalamo, Keijo Mikkonen and Yrjö Mähönen. They all had high regards towards classical body development techniques such as karate, T'ai chi ch'uan, yiquan and yoga, but these styles, as rewarding as they are, seemed to attract only a small marginal of the Finnish population.

These classical styles are quite complex and therefore may have a high starting level. They use concepts such as qi and prana, which may seem mystical to western people.

The purpose of Asahi was to get the best out of these techniques, put it in the most simplified form, make it overall scientific and turn it into an easily approachable form - a health exercise for everybody with no starting level at all.

Asahi is designed to treat and prevent shoulder- and back problems, fractures due to falling down and stress-related psychosomatic problems.

Asahi is a series of slow movements, completed in silence. It looks harmonious and beautiful, a bit like qigong.

The basic six principles of Asahi are:

1. The linking of movement and breath
2. Practicing vertically erect body alignment
3. Whole body movement
4. Listening to the slow motion
5. Cultivating the mind with mental images
6. The exercise as a continual, flowing experience The Asahi movements are soft and performed in the rhythm of breathing. The series is simple and easy to learn. The movements have also a practical function,



## History of all Medicine

for example picking up a ball from the floor or improving one's balance by standing on one foot. Advanced levels are designed for long-term trainees, yet they are equally simple to learn.

### The Principles of Asahi Distribution

Asahi can be practiced in major areas of Finland. Asahi Health Ltd has also been accepted as an Education Partner to Federation of International Sports, Aerobics and Fitness as the first Body Mind -product to be recognized and recommended by this organization. These exercises can be help my a teacher guiding a class, or through video instruction. Others that have experience can practice their own routine after learning from instruction.

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### **1.2.10.2 Biodanza<sup>w</sup>**

Biodanza (a neologism jointed the Greek bio [life] and the Spanish danza, literally "the dance of life") is a system of self-development utilizing music, movement and positive feelings to deepen self-awareness. It seeks to promote the ability to make a holistic link to oneself and one's emotions and to express them. Practitioners believe that Biodanza opens the space for one to deepen the bonds with others and nature and to express those feelings in a congenial manner.

It was created in the 1960s by the Chilean anthropologist and psychologist Rolando Toro Araneda. The Biodanza system is now found in 54 countries, including Argentina, Belgium, Brazil, Chile, Colombia, Czech Republic, Ecuador, France, Germany, Israel, India, Italy, Netherlands, New Zealand, Norway, Portugal, Spain, Switzerland, United Kingdom, Uruguay, Venezuela, Australia, Japan, South Africa, United States, Ireland and Russia. Practitioners describe Biodanza as a "human integration system of organic renewal, of affective re-education, and of relearning of Life's original functions. Its application consists in leading vivencias through music, singing, movements and group encounter situations". Proponents claim it can be used to develop our human capacities, communication skills, and relationships, including the feeling of happiness.

#### Origins and popularity

#### Purpose and process

Biodanza has been featured on CNN Chile, on BBC TV and national newspapers in the UK, and in lifestyle magazines in the UK and South Africa.

The Daily Telegraph describes Biodanza as "a series of exercises and moves that aim to promote self-esteem, the joy of life and the expression of emotions. Lots of bounding around and hugs".

Following the death of its founder in February 2010, two governing bodies of Biodanza currently exist, by means of which students may receive official certificates. The International Biodanza Federation (IBF) governs the Biodanza system in Europe, Australia, New Zealand, the United States and Canada. The US has official schools located in San Francisco, Los Angeles and Maryland. The International Organization of Biodanza SRT governs the Biodanza system in South America.

### **1.2.10.3 Speleotherapy<sup>w</sup>**

Speleotherapy (Greek σπήλαιον spélaion "cave") is an alternative medicine respiratory therapy involving breathing inside a cave.

## Speleotherapy

### History

Hippocrates believed that salt-based therapies, including inhaling steam from saltwater, provided relief of respiratory symptoms. There are claims of improvements in the breathing of miners in Roman times and medieval times. Speleotherapy hospitals existed in Italy in the 19th century. In the middle of the 19th century, a clinic, founded in Mammoth Cave (Kentucky, USA), was intended for tuberculosis patients. However, a few months after the death of five of the patients, the hospital was closed.

The history of modern speleotherapy dates back to the 1950s. At this time, speleotherapeutic hospitals arose in several Eastern and Central European countries.

Residents of Ennepetal in Germany used the Kluterthöhle cave as a bomb shelter during WW2.

Karl Hermann Spannagel began researching the therapeutic effect of caves.

Speleotherapeutic facilities in karst caves were started in Hungary and Czechoslovakia.

In 1968, in Solotvyn (now in Ukraine), the first speleotherapy clinic was opened on the territory of the USSR. In 1982, a climate chamber was patented, equipped with a salt filter-saturator to recreate the conditions of salt mines on the earth's surface.

### Indications

The treatment is claimed to be used for bronchial asthma, bronchitis, allergic and chronic runny nose, allergic and chronic sinus diseases, various allergies and skin diseases, fibrosing alveolitis and croup. However, as of 2022, there is no evidence to support these claims.

### Speleotherapy in the Czech Republic

The first speleotherapy in the Czechoslovakia was carried out by Mgr. Štefan Roda in Slovakia in the Tombašek Cave in the High Tatras (1969). In 1973-1976, doctors Timová and Valtrová from the Children's Clinic in Banská Bystrica treated childhood asthmatics with speleotherapy with favourable results, which were published in the medical literature. From 1981 to 1985, speleotherapy became the subject of official scientific research tasks, carried out under the responsibility of the Ministry of Health and the Geographical Institute of the Czechoslovak Academy of Sciences. In 1985, speleotherapy was recognized as an official climatic treatment method.

According to the chairman of the International Union of Speleology's Standing Commission on Speleotherapy, Prof. Svetozar Dluholucky, M.D., speleotherapy is "a natural way of treating asthma and allergies, which it would be a sin not to use." He has conducted research in Bystrianska Cave since 1974, according to which there has been a fivefold decrease in respiratory diseases and asthma in the children studied. In 1997, he conducted further research on 111 asthmatic children with the same results.

Allergists and immunologists remain sceptical, however.

There are two speleotherapy centres in the Czech Republic: the Children's Treatment Centre in Ostrov u Macochy and the Children's Treatment Centre for Respiratory Diseases in Zlaté Hory. The children's sanatorium in Mladč-Vojtěchov was closed in 2014.

### Research

Hoyrmír Malota led a research team that tested patients of the speleotherapeutic sanatorium in Mladeč in 1985-1987 and came to the clinically verified knowledge "that individual factors of the underground environment, or their complex connected by internal and external interactions, stimulate and modulate the immune system of the human organism directly. He confirmed that repeated exposure to the underground environment - without the use of anti-asthmatic, antihistamine, or immunomodulatory pharmaceutical preparations - induces positive and measurable changes in secretory and lymphatic lysosomes and immunoglobins after only a few days of exposure to the degree that any existing artificial immunomodulators cannot achieve."

Some factors characterizing cave endoclimates are controversial. While cave aerosols may theoretically contain high Ca and Mg ions, in practice, they are not present in the treatment sites known to date; Ca and Mg concentrations are everywhere the same as in the ambient air. It has been shown that the concentrations of Ca and Mg in cave air are not so significantly elevated as to be considered a therapeutic factor.

The elevated CO<sub>2</sub> concentration, or the absence of allergens in the cave (the presence of some molds in very small amounts), or the absence of ozone is also questionable.

According to the Cochrane Collaboration, three studies involving 124 children with asthma met the inclusion criteria for the 2001 meta-study. Still, only one study was of adequate methodological quality. Two studies reported that speleotherapy had a beneficial short-term effect on lung function. The other results could not be reliably evaluated. Due to the small number of studies, no reliable conclusion can be drawn from the available evidence on whether speleotherapy interventions are effective in treating chronic asthma. Randomized controlled trials with long-term follow-up are needed.

No evidence of the effectiveness of speleotherapy was found from randomized controlled trials and further research is needed.

According to a 2017 Romanian systematic review, speleotherapy is a valuable treatment method for asthma and other respiratory problems. Still, only a few studies can be found in international databases, reflecting the specificity of this field. On the other hand, basic studies in laboratory animals and in vitro cell cultures have demonstrated the efficacy and usefulness of speleotherapy.

### Quote

There are not so many karst caves, so salt mines have been used for treatment for a long time. So sanatoriums were created there, and it's called halotherapy. Wieliczka in Poland is very well known. Later on, there was an attempt to make halocaves artificially and they built a kind of igloo out of the salt that was mined. In various studies in the mid-1980s they compared the effect underground and in these salt chambers placed outside. It turned out that the above-ground salt caves had virtually no effect. And even, very easily contaminated with microbes, it can be dangerous. Many of the bacteria that causes severe respiratory infections love salt and settle in the surface layers of salt walls. Even salt mines that operate underground have very strict criteria to ensure that people do not contaminate the salt chamber with germs. Even in some, every three to four months, they grind off a few millimeters of the wall because of the bacilli. When their use was abandoned, it was quiet for about five years, and it started again. If it's not kept clean, it can be detrimental to health; some types of pneumococcus also stick in there. In our case, they tried to mitigate this by putting in air conditioning systems. But an artificial salt cave system that is fully air-conditioned cannot work. That's about like trying to replicate the Tatra air in a seventh-floor apartment block, it's stupid.

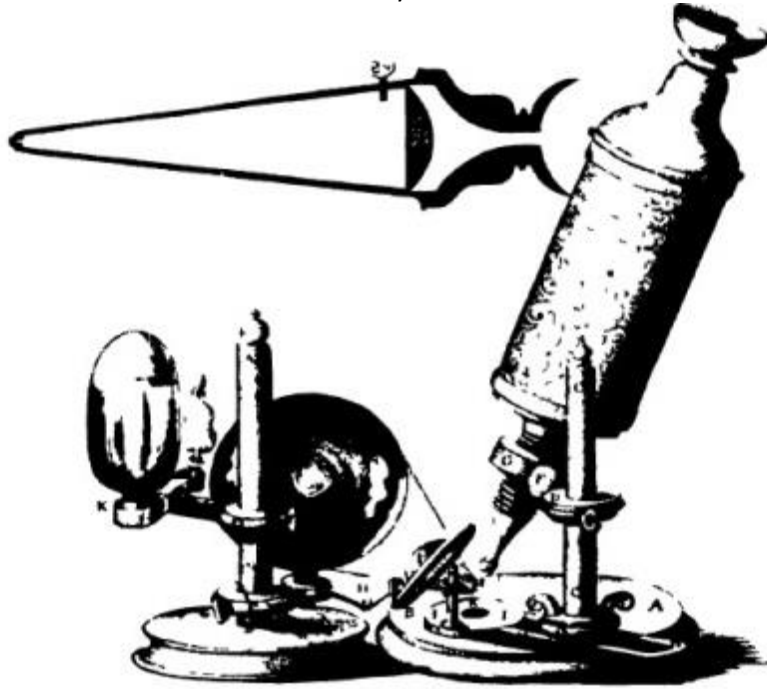
— Prof. MUDr. Svetozár DLUHOLUCKÝ, CSc

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### 1.2.10.1 Dark Ages<sup>f</sup>

The fall of the Roman Empire marked the beginning of the Dark Ages in Europe. The later stages of the Roman Empire were a period of epidemic disease and population decline. The population of cities in particular was to fall and the cities paved roads, drains, aqueducts and public baths soon fell into disrepair. The decline of the cities was accompanied by a decline in classical learning which was opposed by the new Christian church. In 391 CE a Christian mob set fire to the great library of Alexandria and murdered the pagan philosopher Hypathia. The last pagan school of learning, the academy in Athens was closed in 529 CE by order of the Emperor Justinian.

Medicine was not to escape the general decline of learning which accompanied the fall of the Roman Empire and the arrival of Christianity. There was a return to the belief that the cause of much illness was supernatural. Illness was a punishment from God for people's sins. The curing of such disease by medical practices was contrary to Gods will. The only appropriate treatment was prayer and penitence. Diseases might also be caused by witchcraft, possession by demons or spells made by elves and pixies. Some of the old learning did survive, ironically in Christian monasteries where monks copied and translated classical writings. Their work mixed superstition and religion with classical learning and knowledge. Bede, (born 673 CE) an English monk famous for his Ecclesiastical History of the English People and one of the most learned men of the Dark Ages, also wrote on medical matters. He referred to Hippocrates and the theory of the four humors and prescribed bleeding as the appropriate treatment for hot fevers caused, as he believed by an excess of blood. But he also considered magic incantations and the wearing of magic amulets as the way to deal with spells made by pixies. There are also stories of miraculous cures such as a leper sleeping where a saint died and being cured when waking the next morning.



Robert Hooke's microscope, from his *Micrographia*, 1665. The objective is a tiny double convex lens of short focus, mounted in a cell close to a pin-hole diaphragm. A wider field might be secured by a plano-convex lens within the tube at fixed distance from the eye. Hooke often dispensed with this

b

PLATE XXVI MECHANICAL AIDS TO MEDICINE AND SURGERY



Application of extension apparatus to a fractured arm. The procedure is surprisingly modern in principle. Woodcut from Gersdoff's *Feldbuch der Wundartzeu*, 1517



Method of expelling a worm from the body, described and illustrated by Bunschwig in his *Chirurgia*, 1497. By means of a winch the patient is suspended head downwards over a basin of hot goat's milk. As the worm emerges to drink the milk the winch is wound up until the entire worm is dislodged.

b

Not much had changed by the 12th century CE when Hildegard of Bingen began to bring together classical medical beliefs with 12th century religious beliefs. She considered the imbalance of the four humors resulted from mans ejection from the Garden of Eden. The eating of the forbidden fruit destroyed the balance of the four humors in the human body. Sin was to cause the imbalance of the humors and was therefore the cause of disease. Some of her medical beliefs could not be regarded as scientific or rational. Her cure for jaundice was to tie a live bat, first to the patient's back and then to the patient's stomach. Failing eyesight, caused by excessive lust, was to be cured by placing the skin of a fish's bladder over the patients eyes when he goes to sleep, but it had to be taken off by midnight.

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### 1.2.10.2 Arab medicine <sup>w</sup>

The Moslem prophet Mohammed was born in 570 CE and he and his successors were to conquer an empire extending from Spain to India. The early Moslems had a tolerant attitude to Christian and Jewish minorities who were allowed to freely practice their religions. The origins of Arabian medicine lay with a heretical Christian sect known as the Nestorians. The Nestorians under threat of persecution from orthodox Christians fled eastwards toward present day Iraq and Iran. They brought with them classical texts from a range of authors including Hippocrates, Aristotle and Galen which they proceeded to translate into Arabic. At this time the Arab world had a positive attitude to new ideas and was happy to adopt the ideas of classical scholars like Aristotle and Galen.

The first great Arab medical authority was Rhazes who was born in 854 CE. Rhazes believed illness had nothing to do with evil spirits or God and that classical authorities were not above criticism. He was in frequent disagreement with Galen. He considered Galen's cure for asthma consisting of a mixture of owl's blood and wine did not work as he had tried it and found it to be useless. He questioned the belief that disease could be diagnosed by studying the patient's urine and was the first medical authority to understand the difference between measles and smallpox. Rhazes gave a full description of diseases he encountered giving his diagnosis, prognosis and treatment. His understanding of the workings of the human body were however, hindered by the Islamic prohibition on dissections of the human body. Arabian medicine's second great authority was Avicenna (980-1037) whose book the Cannon of Medicine was to become the leading medical work in both Europe and the Middle East for some 600 years. Avicenna's Cannon includes many of the ideas of Hippocrates, Aristotle and Galen but also includes many of Avicenna's own ideas. The Cannon deals with a range of diseases and describes their diagnosis, prognosis and treatment. Avicenna accepted Hippocrates and Galen's theory of the four humors. Treatments included bleeding, enemas and purges while diagnosis included examining the pulse and urine. Over 700 drugs were recognized by Avicenna and the Cannon provided instructions on how they were to be prepared, which drugs should be used for which illness and their effects. Wounds were dealt with by cauterizing, a treatment that dates back to Ancient Egypt.

Surgery in the Arab world was not respected and surgeons were usually craftsmen. One exception to this is Albucasis (936-1013) who practiced in Cordoba in southern Spain. Albucasis wrote a book called *Tasrif* or the Collection which provided full accounts of surgery practiced at the time. The Collection was to become the standard book on surgery during medieval times. The book prescribes a range of surgical procedures including trepanning, dentistry, mastectomy and lithotomy and advocates cauterization as a treatment for a wide range of problems.

PLATE XV EARLY ARABIAN SURGERY

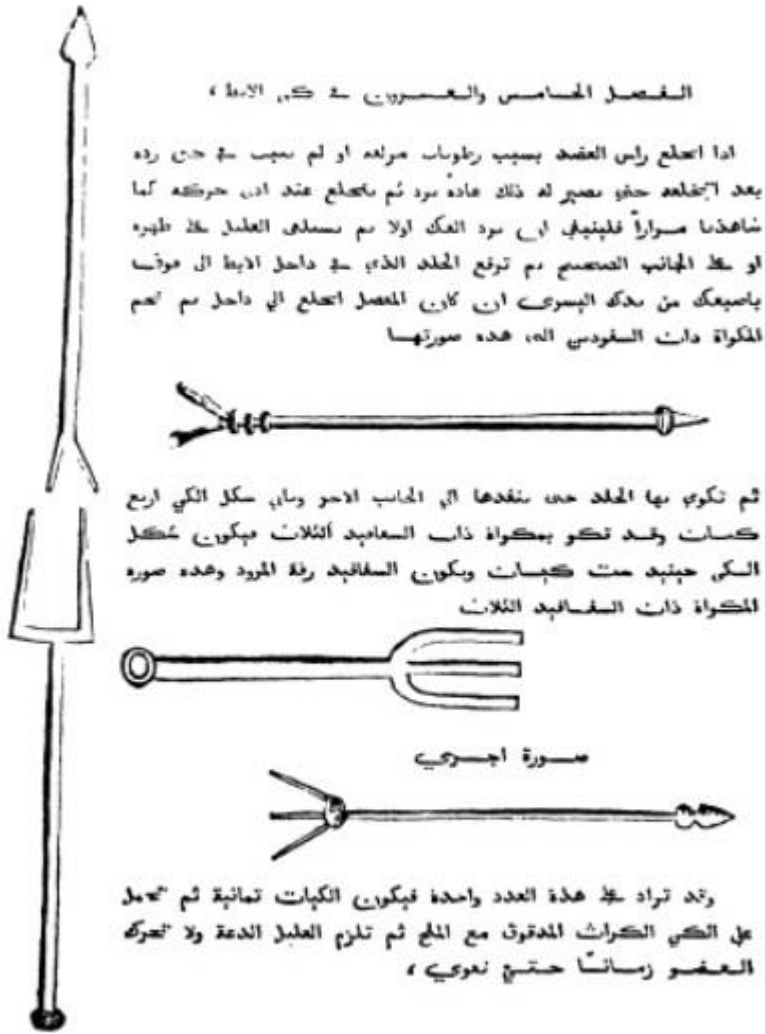


Treating a fracture-dislocation (? tuberculosis) of the spinal column (from *Canon of Avicenna*). *Upper*. Direct pressure by a board hinged on the wall, the operator throwing his weight on the other end. *Centre*. Direct pressure or pounding with a heavy instrument. *Lower*. Extension above and below the seat of injury, combined with local manipulation

b



PLATE XVII ARABIAN SURGICAL INSTRUMENTS



Page from the 1773 Oxford edition of Al-Bucasis' *De Chirurgia (Tasrif)*, printed in Arabic and Latin. The text is illustrated by various patterns of cauterizing, a favourite instrument with the early Arabian surgeons.

b

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1.2.10.2.1 Unani medicine <sup>w</sup>

Unani or Yunani medicine (Urdu: یونانی طب tibb yūnānī) is Perso-Arabic traditional medicine as practiced in Muslim culture in South Asia and modern day Central Asia. Unani medicine is pseudoscientific. The Indian Medical Association describes Unani practitioners who claim to practice medicine as quacks.

## History of all Medicine



Birbahuti (*Trombidium red velvet mite*) is used as Unani Medicine

The term Yūnānī means "Greek", as the Perso-Arabic system of medicine was based on the teachings of the Greek physicians Hippocrates and Galen.

The Hellenistic origin of Unani medicine is still visible in its being based on the classical four humours: phlegm (balgham), blood (dam), yellow bile (ṣafrā) and black bile (saudā'), but it has also been influenced by Indian and Chinese traditional systems.

### History

Arab and Persian elaborations upon the Greek system of medicine by figures like Ibn Sina and al- Razi influenced the early development of Unani.

Unani medicine interacted with Indian Buddhist medicine at the time of Alexander's invasion of India. There was a great exchange of knowledge at that time which is visible from the similarity of the basic conceptual frames of the two systems. The medical tradition of medieval Islam was introduced to India by the 12th century with the establishment of the Delhi Sultanate and it took its own course of development during the Mughal Empire, influenced by Indian medical teachings of Sushruta and Charaka. Alauddin Khalji (d. 1316) had several eminent physicians (Hakims) at his royal courts. This royal patronage led to the development of Unani in India, and also the creation of Unani literature.

### Education and recognition

There are several Indian universities devoted to Unani medicine, in addition to universities that teach traditional Indian medical practices in general. Undergraduate degrees awarded for completing an Unani program include the Bachelor of Unani Medicine and Surgery, Bachelor of Unani Tib and Surgery, and Bachelor of Unani Medicine with Modern Medicine and Surgery degrees. A small number of universities offer post-graduate degrees in Unani medicine.

The Central Council of Indian Medicine (CCIM), a statutory body established in 1971 under the Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), monitors higher education in areas of Indian medicine including Ayurveda, Unani, and other traditional medical systems. Another subdivision of AYUSH, the Central Council for Research in Unani Medicine (CCRUM), aids and co-ordinates scientific research in the Unani system of medicine through a network of 22 nationwide research institutes and units.

To fight biopiracy and unethical patents, the Government of India set up the Traditional Knowledge Digital Library in 2001 as repository of formulations used in Indian traditional medicine, including 98,700 Unani formulations.

In 1990, the total number of hakims or tabibs (practitioners of Unani medicine) in Pakistan was 51,883. The government of Pakistan's National Council for Tibb (NCT) is responsible for developing the curriculum of Unani courses and registering practitioners of the medicine.

## History of all Medicine

Various private foundations devote themselves to the research and production of Unani medicines, including the Hamdard Foundation, which also runs an Unani research institution

The Qarshi Foundation runs a similar institution, Qarshi University. The programs are accredited by Higher Education Commission, Pakistan Medical and Dental Council, and the Pakistan Pharmacy Council.

### Criticism and safety issues

Some medicines traditionally used by Unani practitioners are known to be poisonous.

The Indian Journal of Pharmacology notes:

According to WHO, "Pharmacovigilance activities are done to monitor detection, assessment, understanding and prevention of any obnoxious adverse reactions to drugs at therapeutic concentration that is used or is intended to be used to modify or explore physiological system or pathological states for the benefit of recipient."

These drugs may be any substance or product including herbs, minerals, etc. for animals and human beings and can even be that prescribed by practitioners of Unani or Ayurvedic system of medicine. In recent days, awareness has been created related to safety and adverse drug reaction monitoring of herbal drugs including Unani drugs.

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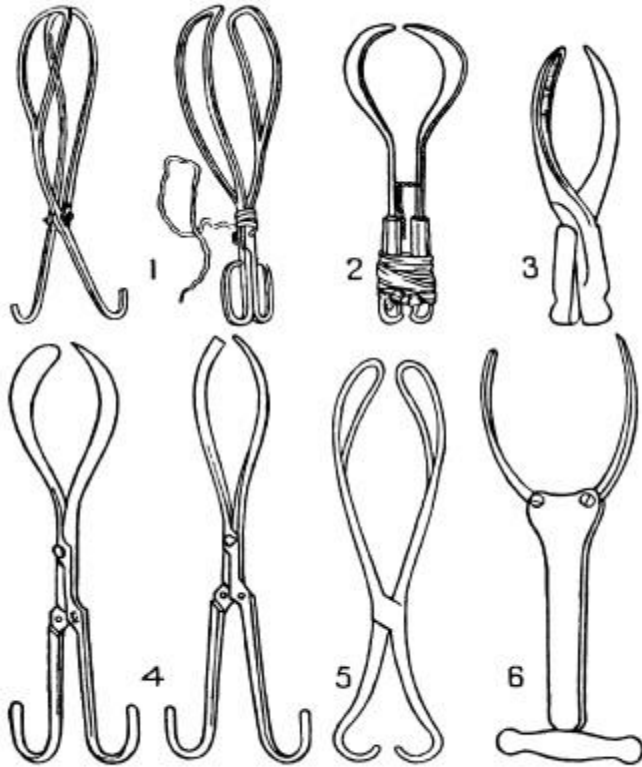
**1.2.10.3.1 Medieval European medicine**<sup>w</sup>

European medicine began to move away from the supernatural explanations of disease with the founding of a medical school at Salerno. The school was probably founded in the ninth century and reached its greatest heights between the tenth and thirteenth centuries. Anatomy was taught at Salerno based on the dissection of pigs whose internal organs were thought to be similar to those of humans. Passionarius, a book written by Gariopontus, one of the teachers at the school, was based upon classical Greek learning while the arrival in Salerno of Constantine the African around 1075 with many Arab medical works was to greatly improve the medical knowledge at Salerno and eventually all Europe. Constantine was to spend the remainder of his life translating the Arabic texts into Latin and so bring the classical Greek authors, upon whose work Arabic medicine was based, to Europe.

The translation of Arabic medical texts into Latin continued in early medieval times so that the works of Hippocrates, Aristotle, Galen, Rhazes, Avicenna and Albucasis became well known. They soon assumed a status of great authority and their initial impact was to help free medicine from supernatural and magical explanations and cures. Their status however was eventually to hold back the improvement of European medicine as new ideas contrary to those of the Greek and Arab writers had great difficulty in obtaining acceptance.

New medical schools at Montpellier, Bologna, Paris and Padua were founded that significantly increased medical knowledge. The knowledge of anatomy improved with the occasional human dissection being performed as post-mortem examinations for judicial purposes and with occasional dissections of the bodies of executed criminals. Anatomy was also improved by Mondino de Luzzi or Mundinus who taught at Bologna. His book *Anothomia* brought a new level of knowledge of anatomy, although he did repeat many of the errors of Galen. Mundinus however did most of his dissections himself, unlike other teachers who sat on a high chair somewhat above the body reading a book supposedly describing the dissection, but probably only loosely related to it. Guy de Chaulias, the leading surgeon of the 14th century was a pupil of Mundinus.

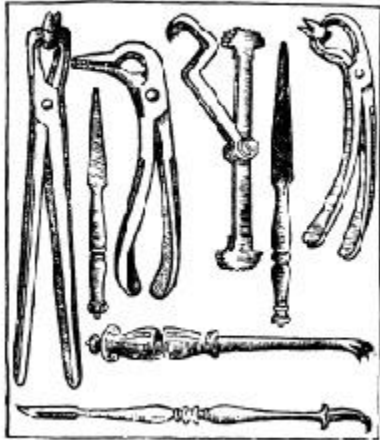
PLATE L EARLY PATTERNS OF OBSTETRIC FORCEPS



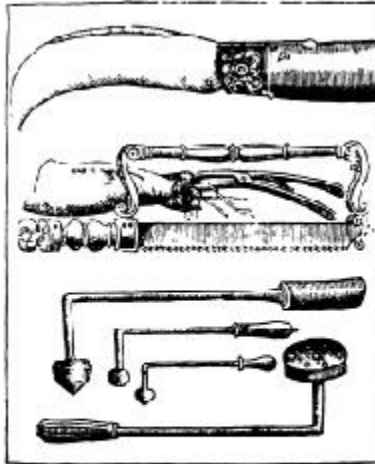
- 1 Forceps invented by Peter Chamberlen (the elder) about 1630, and retained as a family secret for many years
- 2 Palfyn's forceps (Mains de Palfyn, 1720) ; two spoons, with handles clamped together
- 3 Smellie's short wooden forceps, 1745, with the "English" lock
- 4 Dusée's forceps, 1733 ; the first attempt to articulate Palfyn's instrument by means of the "French" lock
- 5 Chapman's forceps, 1733 ; the blades united by a simple groove, easily detachable
- 6 Burton's forceps, 1751 ; slender blades controlled by screw handle. Burton, of York, was the original Dr. Slop of *Tristram Shandy*

b

PLATE XXIX SIXTEENTH-CENTURY SURGERY



Dental forceps, or  
"Instruments to pull out,  
cut, and tie Superfluous  
to."

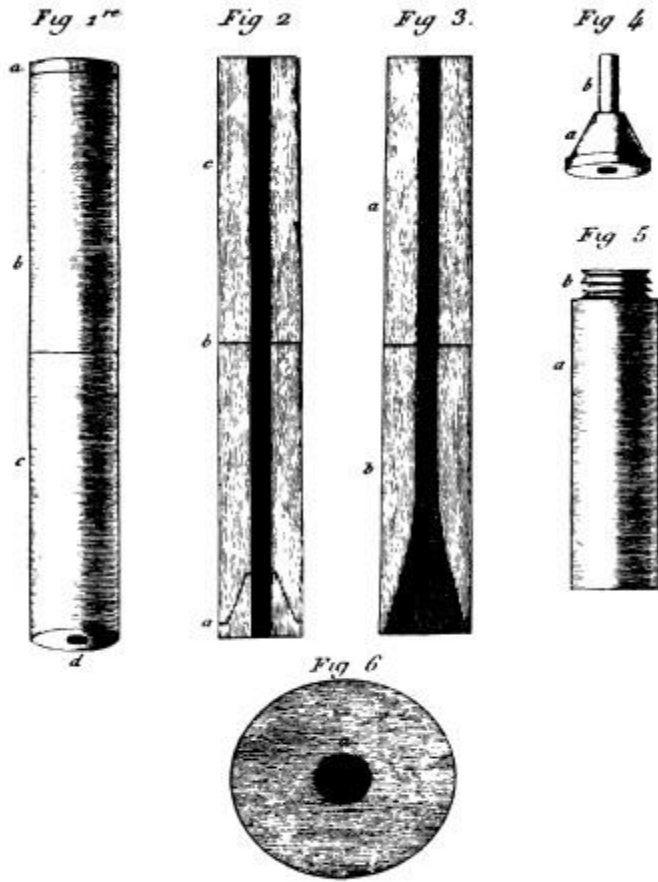


Amputating set, or  
"Instruments, and Casts  
or tools, for extirpation."

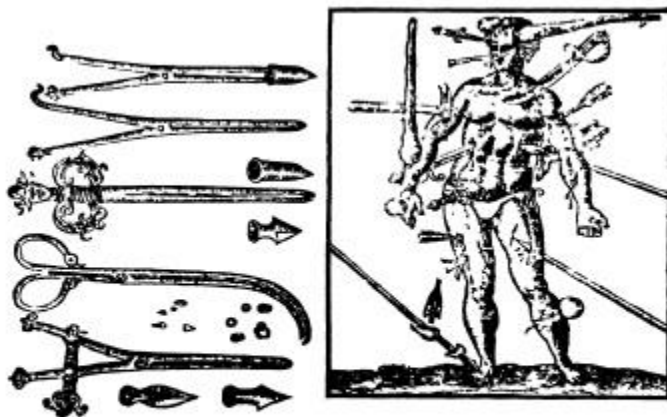
Both illustrations from *A Discourse of the Whole Art of Chyrurgery*, by Peter Lowe,

b

PLATE LVI LAENNEC'S STETHOSCOPE



Laennec's wooden stethoscope was designed as a more permanent substitute for his original roll of paper. The cylinder (Fig 1) was made in two pieces, screwed together (Fig 5), with a detachable funnel fitted into one end (Fig 4). Figs 2 and 3 show sections of the instrument with and without the funnel, while the end view (Fig 6, natural size), illustrates the relative size of the bore.



(l) Instruments for the removal of darts and arrowheads. (r) Type of illustration known as "Wound Man" (page 130, of Plate xxv). From *The Works of that famous chirurgion Ambrose Parey* (English translation of 1678).

b

### History of all Medicine

The most dramatic medical event of the 14th century in Europe was the arrival of the Black Death. It originated in China killing up to two thirds of the population and then spread along trade routes to Europe and the Arab world. It killed half the population of Cairo and between a quarter and a third of the population of Europe. The medical authorities in Europe had no solution to the Black Death. The idea of a contagious disease was beyond the understanding of medical knowledge in either the Arab or European world during the 14th century. The Arabs considered the Black Death was caused by evil spirits; the Europeans blamed everything from the Jews to Gods punishment for human's sins. Jews were accused of poisoning wells and entire Jewish communities were wiped out by vengeful Christians. Flagellants travelled around Europe whipping themselves for their sins hoping this would appease God. Conventional medicine of the time had no answers; bleeding, cauterizing and cleaning the air with incense were all tried and failed. Quarantining worked to some extent but the best advice was to run like the wind. The failure of conventional medicine during the Black Death led to a revival of supernatural explanations of disease.

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### 1.2.10.3.2 Traditional Mongolian medicine <sup>w</sup>

Traditional Mongolian medicine developed over many years among the Mongolian people. Mongolian medical practice spread across their empire and became an ingrained part of many other people's medical systems.

#### History

The Mongols were part of a wider network of Eurasian people who had developed a medical system of their own, including the Chinese, Korean, Tibetan, Indian, Uighur, Islamic, and Nestorian Christians. They took the medical knowledge of these people, adapted it to develop their own medical system and at the same time organized an exchange of knowledge between the different people in their empire. On their journeys throughout Asia, the Mongols brought with them a team of doctors. Usually foreign, these doctors themselves had brought medical knowledge from other people in Asia to the Mongol court. They serve three purposes on the journeys on which they accompanied Mongol princes. Their first purpose was to be the personal physicians of the princes in case they required medical attention. The second was to observe and obtain any new medical knowledge from the various groups of people that they encounter.

Finally, they were to also spread the medical knowledge that the Mongols had put together to the peoples they encountered. The Mongols were also able to contribute new or more advanced knowledge on topics such as bone setting and treatments of war wounds because of their nomadic lifestyle. The Mongols were the first people to establish a link between diet and health.

Traditional Mongolian doctors were known as shaman, or holy men. They relied on magic and spiritual powers to cure illness. They were called on to determine whether the illness was caused by natural means or because of malicious wishes. Though they were often used as healers, their main strength was in prophecy readings. Foreign physicians who used herbs to treat illness were distinguished from the shamans by their name, *otochi*, which meant herb user or physician. It was borrowed from the Uighur word for physician, which was *otachi*. When Mongolian medicine began to transition to using herbs and other drugs and had the service of foreign doctors, the importance of shamans as medical healers began to decline.

Hu Sihui (1314–1330) was a Mongol court therapist and dietitian during Mongol Yuan Dynasty reign in China. He is known for his book *Yinshan Zhengyao* (Important Principles of Food and Drink), that became a classic in Chinese medicine and Chinese cuisine. He was the first to empirically discover and clearly describe deficiency diseases.

#### Treatment practices

##### Animal blood

Animal blood was used to treat a variety of illness, from gout to blood loss. Recorded in the *Yuan Shih*, are many incidents where the blood of a freshly killed animal, usually a cow or an ox, was used to treat illness. Gout, which was a common affliction of the Mongol people, was treated by immersing the afflicted body part into the belly of a freshly killed cow. Placing a person in the stomach of an animal was also used as a method of blood transfusion. On the battlefield, when a soldier became unconscious due to massive amount of blood loss, he would be stripped and placed into the stomach of a freshly killed animal until he became conscious again. In less severe cases, the skin of a freshly killed ox was combined with the masticated grass found in a cow's stomach to form a sort of bandage and ointment to heal battle wounds. It was believed that the stomach and fat of the freshly killed animal could absorb the bad blood and restore the wounded to health.

## History of all Medicine

### Minerals

Mongolian medical literature mentions the use of minerals in medicine, usually in the form of powdered metals or stones. From the Chinese, Mongolians also used cinnabar or mercury sulfide as treatment options, despite the high number of casualties it caused. Both the Chinese and the Mongols believed that cinnabar and mercury sulfide were the elixir of life.

### Herbs

Herbs were the mainstay of Mongolian medicine; legend had it that any plant could be used as a medicine. An emchi is quoted as saying:

All those flowers, on which butterflies sit, are ready medicine for various diseases. One can eat such flowers without any hesitation. A flower rejected by the butterflies is poisonous, but it can become medicine, when it is properly composed.

### Acupuncture and moxibustion

The Mongolian adopted the practice of acupuncture from the Chinese. They adapted this tradition and made it a Mongolian form of treatment when they burned herbs over the various meridian points rather than used a needle. The tradition of Moxibustion (burning mugwort over acupuncture points) was developed in Mongolia and later incorporated into Tibetan medicine.

### Water

One unusual aspect of Mongolian medicine is the use of water as a medicine. Water was collected from any source, including the sea, and stored for many years until ready for use. Acidity and other stomach upsets were said to be amenable to water treatments.

### Bone setting

Bone setting is a branch of Mongolian medicine carried out by Bariachis, specialist bone setters.

They work without medicines, as anesthetics or instruments. Instead they rely on physiotherapy to manipulate bones back to their proper position. This was done without any pain to the patient.

Bariachis are laypeople, without medical training, and are born into the job, following the family tradition. They had the ability to fix any bone problem, no matter how severe or difficult. When

Chinese physicians were brought into the Mongolian empire, Wei Yilin, a famous Yuan orthopedic surgeon established particular methods for setting fractures and treating shoulder, hip, and knee dislocations. He also pioneered the suspension method for joint reduction. He was not only an orthopedic surgeon but also an anesthesiologist who used various folk medicine for anesthetics during his operations. It appears that this traditional practice is in decline, and that no scientific research has been carried out into it.

### Pulse diagnosis

Pulse diagnosis is very popular in Western Asia and especially Iran, and its introduction to the Islamic West can be traced back to the Mongols. The Mongol word for pulse, mai, has Chinese etymology. In China, pulse diagnosis was related to the balance between the yin and yang.

Irregular pulses were believed to be caused by an imbalance of the yin and the yang. However, when the Mongol adopted this medical practice, they believed that the pulse was directly related to moral order and that when the moral order was chaotic, so the pulse would be chaotic and irregular as well. This belief

## History of all Medicine

is highlighted in a story recounted in the Yuan Shih. In 1214, Ogodei Qa'an had an irregular pulse, and was very ill. His most trusted physician ordered that a general amnesty be declared all across the empire. Shortly afterwards, Ogodei Qa'an was restored to health and his pulse regular once again. For the Mongol, this account gives evidence to the direct relationship between pulse and moral order. Pulse diagnosis soon became the primary diagnosis' tool and became the cornerstone of Mongolian medicine. Qubilai decreed that Chinese manuals on pulse-based medicine be translated to Mongolian. His successor, Temür, in 1305, ordered that pulse diagnosis be one of the ten compulsory subjects in which Imperial Academy of Medicine medical students be tested. In pulse diagnosis, there was a distinction between measuring a child's pulse versus an adult's pulse, and this distinction was greatly emphasized in the Chinese texts that were translated, and later in the Mongolian texts.

### Discovery of the link between diet and health

In 1330, Hu Sihui, a Mongolian physician published *Yinshan Zhengyao* (Important Principles of Food and Drink). It was the first book of its kind. In this textbook, Hu Sihui preached the importance of a balanced diet with a focus on moderation, especially in drinking. He also listed beneficial properties of various common foods, including fish, shellfish, meat, fruit, vegetables, and 230 cereals. Grapes were recommended for character strengthening and boosting one's energy levels. However, eating too many apples could cause distension and indulging in too many oranges lead to liver damage. A common menu item, dog meat, was very beneficial because it calmed the liver, spleen, heart, lungs, kidneys, and pericardium. This link between diet and health was spread far and wide by the Mongols on their journeys across the Eurasian steppe lands.

### Dom

Dom is the tradition of household cures, many based simply on superstition – one instance being that a picture of a fox hung over a child's bed will help it sleep. Counting the frequency of breathing is also stated to be a relief for psychological problems and distress.

The practise apparently was part of lamaist popular medicine.

### Eating papers

Strip of Mongolian eating papers with Tibetan (left) and Mongolian (right) text Traditional Mongolian medicine today

A printing stock found in eastern Mongolia in the 1920s documents a historical custom of eating a piece of paper with words printed on it, in order to prevent or heal maladies. On fields of about 24x29 mm magical incantations in Tibetan are printed, along with use instructions in Mongolian.

### Traditional Mongolian Medicine Today

Today Mongolia is one of the few countries which officially supports its traditional system of medicine.

Since 1949, the Chinese government has steadily promoted advances in Mongolian medical care, research and education. In 1958 the Department of Traditional Chinese and Mongolian Medicine at the Inner Mongolia Medical College opened its doors to students. In 2007 it expanded, opening a state of the art campus just outside Hohhot City. The Chinese government has also established scores of Mongolian medicine hospitals since 1999, including 41 in Inner Mongolia, 3 in Xinjiang, and 1 each in Liaoning, Heilongjiang, Gansu and Qinghai.

### Coding (therapy)

Coding (also known as the Dovzhenko method) is a catch-all term for various Russian and post-Soviet alternative therapeutic methods used to treat addictions, in which the therapist attempts to scare patients into abstinence from a substance they are addicted to by convincing them that they will be harmed or killed if they use it again. Each method involves the therapist pretending to insert a "code" into patients' brains that will ostensibly provoke a strong adverse reaction should it come into contact with the addictive substance. The methods use a combination of theatrics, hypnosis, placebos, and drugs with temporary adverse effects to instill the erroneous beliefs. Therapists may pretend to "code" patients for a fixed length of time, such as five years.

Coding was created by Aleksandr Dovzhenko, a Soviet psychiatrist.

In the case of alcohol addiction, the procedure may be carried out with a drug that temporarily affects the respiratory system when mixed with alcohol, administered under hypnosis. The therapist gives patients the drug, then allows them a small amount of alcohol, which triggers an adverse reaction and makes them erroneously believe that the therapy has had a long-term effect. Another method involves the therapist giving patients hypnotic suggestions during a head massage, with the message that alcohol will cause blindness or paralysis.

In one method, the therapist numbs patients' mouths with local anaesthetic, then places electrodes with a very weak current into their mouths. This is to make patients believe that the "nerve points" in their mouth are being "manipulated" and that it is no longer safe for them to drink alcohol. A further method involves the therapist using a special helmet to persuade patients that the therapist's suggestions are controlling their minds. Typically, therapists will also make patients sign a disclaimer, supposedly absolving the therapist of any responsibility should the patient use the addictive substance and suffer ill effects or die.

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### 1.3.0 The Renaissance <sup>w</sup>

A revolution was to take place in medicine at the time of the Renaissance. It was to involve the breaking of the stranglehold classical and Arabic thought, especially Galen and Avicenna, had on medicine and its replacement by a belief in observation and experiment. One of the principal proponents of the new beliefs was Paracelsus who attacked academic learning, especially Galen and Avicenna and advocated learning from experience. His own ideas however were not much of an improvement on the classical learning. He rejected the humoral theory, but considered everything was made out of sulphur, mercury and salt. Sulphur caused inflammability, mercury volatility and salt solidity in substances. He also believed in the "doctrine of signatures" the idea that assumed plants capable of healing visibly showed their healing qualities. Heart shaped lilac leaves would cure heart disease and yellow celandine would cure jaundice.

However, Paracelsus's interest in alchemy led him to some significant discoveries. He noticed the anaesthetic effects of ether and tincture of morphine which he called laudanum. He recognised that particular substances had their own individual qualities and that compounds including those substances often had some of those same qualities. He considered that each disease needed to be cured by its own remedy. The main value of Paracelsus's ideas, were in his iconoclastic attack on classical medical learning, which was held in vastly excessive reverence in Paracelsus's time. After Paracelsus it became easier to criticise established medical learning and for new ideas to be accepted.

## History of all Medicine

A contemporary of Paracelsus, Fracastorius, suggested contagious disease was caused by tiny seeds invading the human body. The seeds were too small to be seen with the human eye and could find their way into the body from the air, from bodily contact or from infected clothes or bed linen. Once they had entered the human body they could multiply causing people to fall ill. Fracastorius also considered each disease was caused by its own particular seed leading Fracastorius to clearly distinguish between such contagious diseases as smallpox, measles, the plague, syphilis and typhus. Previously contagious diseases were sometimes considered to be versions of the same disease with varying degrees of intensity. Fracastorius's theory is virtually identical to the germ theory of disease but in the 16th century, without microscopes, he was unable to prove the theory. Physicians preferred other theories, such as the humoral theory, which while also unprovable at least had the support of tradition and ancient authority.

The study of anatomy was to undergo a revolution at the hands of Vesalius. Vesalius was able to dissect human corpses and this enabled him to provide a generally accurate picture of the human body. Previously anatomy had suffered from the prohibition on human dissection that extended back to classical times, so that knowledge of human anatomy was based on animal dissections. Before Vesalius the accepted authority was Galen whose anatomical studies were based on animal dissection and whose work had acquired such a status that to question it could involve accusations of heresy.

Vesalius was able to obtain human corpses for dissection; as public authorities were prepared to allow the dissection of the corpses of executed criminals. Some physicians had previously dissected the corpses of criminals, but such was the reputation of Galen that they had not noticed or not dared to point out that the dissection of humans showed that much of what Galen had said was wrong. Vesalius's strength was that he was prepared to rely on his observations and where these contradicted Galen he was prepared to say Galen was wrong. Vesalius's great work was the *De Humani Corporis Fabrica* usually called the *Fabrica*. It consisted of seven books, the first dealing with the skeleton, the second with the muscular system, the third with the veins and arteries, the fourth with the nervous system, the fifth with the abdominal organs, the sixth with the heart and lungs and the seventh with the brain. The *Fabrica* especially books 1 and 2 were illustrated with high quality drawings showing the various human parts in considerable detail. In book 1 Vesalius emphasizes that the bones supported the human body, played an important role in movement and provided protection for other parts of the body. The illustrations in book 2 show the muscles in the order in which a person dissecting a body would see them. The upper layer of muscles, are shown then the layer below them and then the next layer and so on. Book 3 gives a good description of the arteries and veins and book 7 describes some of the structure of the brain for the first time.

The book corrected certain of Galen's errors. It questioned Galen's suggestion that blood flowed from the right ventricle of the heart to the left ventricle. Vesalius also showed that the rete mirabile did not exist, that the liver was not divided into five lobes, that the uterus had multiple chambers and that the pituitary was directly connected to the nose. Vesalius's expose of such errors by Galen resulted in some criticism of Vesalius's work from physicians who considered any questioning of Galen to be outrageous.

Vesalius did make some errors. His descriptions of the visceral organs (the liver, the kidney and the uterus) were based upon those of pigs and dogs. He failed to notice the pancreas, the ovaries and the adrenal glands. His description of female organs was poor, probably due to there being fewer female bodies available for dissection. Nevertheless, the book still represented an enormous advance in human knowledge of anatomy.

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### 1.3.1 CIRCULATION OF THE BLOOD

Classical physicians were aware of the existence of the heart, but had little idea of its function in the human body. They realized when the heart stopped beating life would stop which led them to believe the heart had a significant role during and at the end of life. They considered the heart was where the soul was located when a person was living and the soul left the body when a person died.

Classical physicians had little understanding of the relationship between the heart and the blood. They did not know how blood got to the heart, how it got from the right ventricle to the left ventricle or what happened after it left the heart. They believed the heart provided a “vital spirit” to blood passing through the heart. They also believed the arteries did not contain blood as when a person or animal dies, the heart stops pumping blood into the arteries, which then contract and drive their blood into the veins. This only leaves air in the arteries of a dead person or animal and classical physicians only dissected dead bodies and so never discovered blood in the arteries. The veins in dead bodies are full of blood, especially the veins connected to the liver. This led classical physicians to believe that the liver created blood which was passed through the veins to the rest of the body. It was also believed that the body somehow absorbed the blood.

Galen, who had the opportunity to observe the internal organs of living human beings while acting as physician to injured gladiators had a better understanding of the heart and blood. He understood the arteries contained blood in living people and that the heart was a pump which pushed blood from the right ventricle of the heart into the lungs which then flowed into the left ventricle and from there into the arteries. This circulation from the right ventricle to the lungs and then to the left ventricle was known as the pulmonary transit. Galen however still believed that the liver created the blood, but also that it pumped the blood to the rest of the body and that blood was passed directly from the right ventricle to the left ventricle of the heart. The irony is that Galen’s work on the pulmonary transit, which was at least partly right, was largely not noticed, while other work which was quite erroneous like the humoral theory was treated as holy writ.

The idea of the pulmonary transit was revived by the Arab physician Ibn al-Nafis in the 13th century when he suggested that all the blood went from the right ventricle to the lungs and then to the left ventricle and none travelled directly from the right ventricle to the left ventricle. In the 16th century the same idea was suggested by Michael Servetus and accepted by Realdo Colombo. Colombo also suggested the heart could act as a pump and discovered the presence of valves in the veins which ensured that the blood could move only in a single direction from the right ventricle to the lungs and then to the left ventricle.

The classical ideas concerning the heart and blood were beginning to be challenged in the 16th century. Ideas of the pulmonary transit, the heart acting as a pump and valves in the veins ensuring blood flowed only one way questioned the classical orthodoxy still largely accepted in Renaissance Europe. Into this environment William Harvey proposed his ideas of the continuous circulation of the blood.

Harvey had been carrying out dissections on a wide range of living animals and it is from his observations of their living organs that he was able to understand how the blood circulates through the human body. His book *De Motu Cordis* begins by explaining the structure of the heart and what it does. The heart consists of two upper parts called the auricles and two lower parts called the ventricles. The left auricle and the left ventricle were separated from the right auricle and the right ventricle by an impenetrable muscular wall. The question of whether the auricles or the ventricles beat first was difficult to resolve as hearts would often beat too fast for normal observation to provide an answer. Harvey answered the question by observing the hearts of cold blooded animals like fish which beat slowly and then confirmed it by observing the slow beating hearts of dying warm blooded animals. He observed the auricles beat first, pushing blood into the ventricle which contracted pushing blood out of the heart.

## History of all Medicine

The classical theory considered blood was made by the liver, flowed through the heart and was absorbed by the body. Harvey calculated the amount of blood that flowed through the heart of a dog. He calculated the number of heart beats per minute, which was the number of times the heart pumped blood out into the body. He also calculated the quantity of blood that was pumped with each heart beat and concluded that the heart pumped blood weighing three times the weight of the whole body each hour. The question arose as to where all this blood came from, and where did it all go. Blood equivalent to three times a person's body weight per hour could not come from food and drink consumed. No one could eat or drink that much per hour. Nor could that quantity of blood be absorbed by the body every hour. Veins, arteries and tissues would explode with that quantity of blood being poured into them every hour. Harvey suggested the solution to this problem was that blood was not being created by the liver or absorbed by the body, but that the same blood was constantly circulating around the body.

Galen had suggested that the blood moved in both directions in the veins and arteries. Harvey showed that valves in the veins ensured that blood moved in only one direction. He showed that blood in the veins always moved towards the heart, by pressing a vein, blood accumulated in the vein on the side of the compression away from the heart. The side of the compression close to the heart would be emptied of blood as the blood flowed to the heart and away from the compression point. When an artery was pressed the blood built up on the side of the compression closest to the heart. This indicated the blood flowed in a single direction, in the veins towards the heart, and in the arteries away from the heart.

The consequences of the blood all flowing in one direction and the same blood constantly be circulated, without blood being created by the liver or absorbed by the body was a revolution in physiology. New ideas often receive considerable criticism and Harvey's idea of constantly circulating blood was attacked for daring to disagree with Galen. One rational criticism of Harvey's theory was that Harvey could not show how blood flowing out of the heart to the arteries could connect to the veins and flow back into the heart. Harvey suggested tiny connections, too small to be seen with the naked eye, linked the arteries and the veins but he could not prove their existence. This problem was solved by Marcello Malpighi, in 1661, when using a microscope he was able to observe the existence of capillaries linking the arteries and the veins which allowed blood to flow from the arteries to the veins so that the idea of the circulation of the blood was complete.

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### **1.3.2 JENNER AND VACCINATION**

Smallpox goes back at least to Ancient Egypt and was in Greece in the classical period and was present in Ancient China and India. The symptoms of the disease were described by Al-Razi in 910 CE and involved blisters filled with puss appearing on the eyes, face, arms and legs. Twenty to forty percent of those who caught smallpox died from it and the survivors were covered with disfiguring scars. In London in the 17th and 18th centuries a third of the people had smallpox scars and the majority of cases of blindness were caused by smallpox.

It had been observed that people who survived smallpox did not usually catch it again. The idea developed that if a mild case of smallpox could be produced it would protect a person from future smallpox attacks. In the East dust from a smallpox scab was blown into the nose to induce a mild case of smallpox to create immunity from future attacks. In Ottoman Turkey smallpox material was rubbed into small cuts made in a person's arm. These methods of conferring immunity from smallpox were made known in England in the early 18th century but were ignored.

## History of all Medicine

The practice of deliberately giving a person a mild case of smallpox began in England in the early 18th century with Lady Mary Montagu. The practice became known as variolation and Lady Montagu who had learnt about the practice in Turkey had her own daughter variolated in the presence of newspaper reporters which ensured substantial publicity. Lady Montagu then persuaded the Prince and Princess of Wales to have their children variolated which ensured even more publicity. Variolation also took place in America where Zabdiel Boylston, a Boston physician, heard of variolation from an African slave and faced with a smallpox epidemic variolated 244 people of whom only 6 died. Surgeons however demanded patients go through a 6 week period of bleeding, purging and dieting before variolation which limited the popularity of the practice and resulted in patients being weakened before variolation took place. Variolation turned out to be quite dangerous with modern estimates that 12% of patients died; a lower death rate than the 20-40% who might die in a smallpox epidemic, but certainly not a perfect treatment for the problem of smallpox.

A better treatment was to come with Edward Jenner, who while training as a surgeon in 1768, heard that milkmaids who had contacted cowpox were immune from smallpox. Cowpox resulted in lesions on the milkmaids hands, but had no other symptoms. Later Jenner met a Mr Frewster who in 1765 had presented a paper to the London medical society on the ability of cowpox to prevent future smallpox attacks. The paper was never published but reminded Jenner of what he had heard of cowpox from the milkmaids. Cowpox is part of a family of animal poxes, including horsepox, cowpox, swinepox and smallpox all caused by the orthopox virus. All the animal pox diseases can infect humans and an infection from anyone of them will protect people from all the other animal poxes. In December 1789 Jenner began a series of experiments. He inoculated three people including his son with swinepox and later variolated them with smallpox and none of them produced the rash that usually came from variolation with smallpox. Swinepox seemed to protect them from smallpox. Later in 1796 Jenner put cowpox into a healthy 8 year old boy and after he developed normal cowpox symptoms variolated him with smallpox. The boy did not develop any of the symptoms that normally occurred with variolation with smallpox. Jenner then took fluid from the boy's cowpox pustule and used it to inoculate some more children and fluid from their cowpox pustles was used to inoculate some more children. Two of these were later variolated with smallpox, but did not develop any of the symptoms that normally occurred with variolation, confirming the initial experiment. The experiment showed that cowpox could provide protection against smallpox without any of the risks of variolation. The practice of cowpox inoculations, which began to be called vaccination, was soon done throughout the British Empire, the United States and Europe although there was some opposition to it. The opposition gradually disappeared and eventually late in the twentieth century smallpox was completely eliminated.

### **1.3.3 THE DISCOVERY OF ANAESTHESIA**

A vital component of modern surgical operations is the use of anaesthesia. Without anaesthesia operations would be excruciatingly painful and as a result many patients chose not to have operations. The pain of having limbs amputated could result in patients dying of shock and forced surgeons to perform operations with extreme speed. The best surgeons could amputate a limb in less than a minute. The state of mind of a person awaiting surgery would be similar to that of a person about to be tortured or executed. When London hospital was built in 1791, and was to act as a model for other hospitals, the design took into account the lack of effective anaesthetics. The operating room was on the top floor, partly to allow sunlight through a skylight to illuminate the operation, but also so the patient's screams would not travel through the hospital and could be muffled by extra heavy doors. When an operation was to commence hospital staff would go to the top floor and assist in holding the patient down and if necessary in gagging the patient.



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The problem with an effective aesthetic that will allow major surgery is that it must place the patient in a state where the central nervous system is depressed to an extent where painful stimuli cause no muscular or other reflexes. This is far beyond ordinary sleep as obviously performing surgery on a sleeping person will wake them. Effective surgical anaesthesia must place the patient in a state close to that of death. In the past various attempts were made to reduce or eliminate pain during surgical procedures. Dioscorides, a Greek physician in the early Roman Empire, used drugs such as henbane and mandrake root to relieve pain. These drugs continued to be used into medieval times. Arab physicians seemed to have used drugs such as opium and hyoscyamus. Alcohol was often used but was probably more effective at making the patient easier to hold down than in relieving pain. Soporific sponges, involving the inhalation of drugs such as opium, mandragora and hyoscyamus were used from around the ninth century. However modern experiments with such sponges suggest they had no aesthetic effect at all. The use of soporific sponges was discontinued in the seventeenth century. It may well be due to the lack of effectiveness of pre-modern anaesthetics that their use was not widespread. Egyptian papyri and the Code of Hammurabi describe surgery without mention of anaesthetics. Only one Chinese surgeon, one Indian surgeon and a few Greek, Roman and Arab surgeons seem to have made any attempt to relieve pain during surgery. Pre-modern attempts to relieve pain during surgical operations seem to have been of little or no effect.

The first step in the development of modern anaesthetics was the discovery of ether. In 1275, the Spanish alchemist Raymundus Lullius produced ether by mixing alcohol with sulfuric acid. Paracelsus used ether to relieve pain in 1605 in some of his medical patients but not in surgery as he was not a surgeon.

Nitrous oxide, soon to be known as laughing gas, was discovered by Joseph Priestly in 1772. Priestley however did not realize nitrous oxide could act as an anaesthetic. Others however soon discovered both nitrous oxide and ether had an intoxicating effect when inhaled and soon "ether frolics" and "laughing gas parties" became a popular source of amusement. It was soon observed that minor injuries such as bruises received at the frolics and parties were not accompanied by any pain. In addition, Humphrey Davy discovered that nitrous oxide relieved the pain of an inflamed gum and jaw and suggested nitrous oxide could be used in surgery. Similar observations concerning nitrous oxide were made by William Barton in the United States. In 1842 ether was used to painlessly extract a tooth, by a dentist, Dr. Elijah Pope, acting on the suggestion of William Clark a chemistry student who had participated in ether frolics.

The first use of ether for surgical purposes was by Crawford Long in Georgia, USA in 1842. Long had attended ether frolics and had noticed bruises he had received while under the influence of ether had involved no pain. Realizing that ether had stopped the pain he used it in various surgical operations and in obstetrical procedures. He did not however publish his work until 1849.

A dentist, Horace Wells, while attending a nitrous oxide party in 1844 noticed a person injuring his legs without suffering any pain. Realizing nitrous oxide could serve as a dental anaesthetic Wells had one of his own decaying teeth removed by another dentist while he was under the influence of nitrous oxide. Wells experienced no pain and was soon performing dentistry using nitrous oxide on his own patients. However, when he attempted a public demonstration at Massachusetts General Hospital he used insufficient gas and the demonstration was not a success.

The public demonstration at Massachusetts General Hospital had been arranged by Wells former dentistry partner William Morton. Morton, who had possibly seen Long operate in Georgia, became interested in ether as an anaesthetic and had discussed it with Charles Jackson, a doctor in Harvard's medical faculty and at Massachusetts General Hospital. Intending to patent the anaesthetic Morton and Jackson disguised the ether by mixing it with aromatic oils and called it Letheon. They then arranged public demonstrations of the use of Letheon, in 1846, for pulling teeth and for an operation removing a tumour from a patient's

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jaw. Both the dentistry and the operation were carried out painlessly. Jackson and Morton however were forced to withdraw the patent for Letheon and reveal that Letheon was really ether by pressure from the surgeons involved in the operations. By the end of 1846 news of the use of ether as an anaesthetic had travelled across the Atlantic and in December 1846 it was used in an operation in London.

Jackson, Morton and Wells all claimed to be the discoverer of surgical anaesthesia and in 1847 the United States Congress became involved in trying to sort out who was the true discoverer of anaesthesia. Congress eventually dismissed Wells and Morton's claims and decided it was between Jackson and Long. The American Medical Association, in 1872, gave the credit to Wells, while in 1913 the electors of the New York University Hall of Fame named Morton as the discoverer of surgical anaesthesia. The American College of Surgeons, in 1921, decided Long should be credited with the discovery.

Attempts were soon made to use ether in obstetrics but it was found to be unsuitable. Ether often produced vomiting patients, irritated lungs and a bad smell. Chloroform had been discovered independently in 1831 by Samuel Guthrie in New York, by Eugene Soubeiran in Paris and by Liebig. Initially its anaesthetic quality was not recognised but Guthrie's daughter had become unconscious for several hours after tasting it. In 1847 Sir James Simpson while looking for an anaesthetic to use in obstetrics tried chloroform on himself and having found it to be an effective anaesthetic began using it in surgical operations. Its use was soon extended to obstetrics provoking considerable opposition from the Calvinist Church in Scotland on the grounds the Bible stated "In sorrow thou shalt bring forth children" showed women must suffer when giving birth. The Calvinist church opposition disappeared when Queen Victoria gave birth to her eighth child under the influence of chloroform. However, chloroform was soon discovered to have its own problems as it could cause liver damage and five times as many people died under chloroform as died under ether.

The method of application of the anaesthetic developed over time. Long had simply poured ether into a towel for his patient to inhale. Morton used an inhaler made up of a round glass bottle with two holes and a mouth piece. Air passed through one hole into the bottle which contained a sponge soaked in the ether which was then inhaled by the patient through the mouth piece which was attached to the other hole. Morton's inhaler did not allow the anaesthetist to have control over the amount of anaesthetic. Soon John Snow, who had provided the chloroform to Queen Victoria, created an improved inhaler which provided a 4% mix of chloroform in air. Joseph Clover produced a further improved inhaler in which the chloroform and air mixture was prepared in advance and held in an air tight bag. Sir Francis Shipway created an apparatus which allowed the anaesthetist to control a mixture of varying amounts of chloroform, ether and oxygen for inhalation by the patient.

A significant improvement in the provision of anaesthetics occurred with the introduction of the anaesthetic directly into the windpipe or trachea. This was first attempted by Frederick Trendelenburg, in 1869, who inserted the anaesthetic through a tube he inserted into a hole he had cut into the patient's windpipe. Sir Ian Macewan achieved the same result without cutting into the windpipe, in 1880, by inserting a metal pipe the throat and into the windpipe. This allowed the development of endotracheal anaesthesia which was important for operations on the mouth and the jaw and for many modern cardiac and pulmonary operations. Endotracheal anaesthesia was further improved, in 1919, when Sir Ian Magill put tubes through the conscious patient's nose and mouth and down into the windpipe by anaesthetizing the throat with cocaine before inserting the tubes.

General anaesthetics were often not necessary for minor operations. A local anaesthetic which worked on a particular part of the body and avoided the small risk of death and several hours of recovery time involved with general anaesthetics was sought. Peruvian Indians knew about the anaesthetic qualities of

the coca plants and in the nineteenth century cocaine was obtained from the plant. In 1872 Alexander Bennett observed that cocaine had anaesthetic properties and in the 1880's Carl Koller experimented with cocaine using it to anaesthetize frog's eyes. Soon cocaine began to be used as a local anaesthetic for eyes, the mouth, nose and throat and in the urethra. The use of cocaine was extended by injecting it into the nerves relating to the area to be operated on and eventually into the epidural space around the spinal cord which allowed a larger area to be anaesthetized. The use of cocaine as a local anaesthetic has discontinued with its replacement by novocaine which was synthesized as an aesthetic after 1905.

### 1.3.4 THE GERM THEORY OF DISEASE

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The first person to see micro-organisms was Anthony Leeuwenhoek (1632-1723) a Dutch draper who was an expert maker of microscopes. His microscopes gave a degree of magnification which was not exceeded until the 19th century. He used his microscopes for observing a wide variety of phenomena. In 1675 and 1676 he looked at drops of rain water and found tiny animals within the water. Those animals would have included what we now call bacteria and other micro-organisms. In 1683 Leeuwenhoek looked at plaque from his own teeth and found it contained large numbers of small animals. Later samples of plaque did not contain the small animals, which Leeuwenhoek suspected was because his drinking of hot coffee killed the little animals. Leeuwenhoek also looked at scrapings from his tongue when he was sick and at the decay in the roots of a rotten tooth he had removed. In both cases he found vast numbers of the little animals. The presence of these animals in such great numbers in places of illness and decay raised the question as to whether the animals arose from the decay or whether they were attracted to it or whether they caused the decay. The question of whether the small animals were spontaneously generated from decaying materials or were attracted to it was the subject of much controversy. Francesco Redi (1626-1698) kept boiled meat in sealed containers and when maggots failed to appear suggested this showed there was no spontaneous generation. However, in 1748 John Needham repeated the experiment and found small animals in the meat which he considered proved spontaneous generation. Lazzaro Spallanzoni suggested Needham had failed to seal his containers properly so that the small animals arrived on the meat through the air, rather than being spontaneously generated by the meat. Supporters of spontaneous generation argued that sealing the containers prevented some gaseous substance, necessary for spontaneous generation, from reaching the meat and so preventing the generation of the living organisms.

Whether micro-organisms caused the diseases they were so often found with, was investigated by Agostino Bassi. In 1835 he showed that the silkworm disease, muscarine, was caused by bacteria. When he inoculated healthy silkworms with the bacteria, he produced the sickness in the silkworms. This suggested that other diseases may be caused by bacteria.

The questions of spontaneous generation and whether micro-organisms played any role in causing disease were eventually settled by Louis Pasteur. He was to show that fermentation in wine, putrefaction of meat and infection in human disease all involved the same process and were all caused by the activities of micro-organisms. The micro-organisms were generated not by decaying matter but were continually present in the air and when they were present in great numbers and were of unusual strength they could cause matter to decay and human beings to fall ill.

Pasteur began with fermentation in wine. At the time chemists such as Wohler and Justus von

Liebig suggested fermentation was solely a chemical process with living organisms playing no role in the process. Fermentation in wine was a problem as sometimes the fermentation went wrong and soured the wine. Pasteur showed that fermentation was caused by micro-organisms in yeast and that round yeast

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cells produced good wine, but long yeast cells created lactic acid which caused the wine to go sour. Pasteur showed that if the wine was heated it would kill the yeast and stop any of the wine going sour.

Pasteur next began to investigate putrefaction in meat with an experiment that allowed air to reach boiled meat via an undulating u shaped tube. The meat did not putrefy and Pasteur considered this was because the dust particles containing the micro-organisms were caught on the low bend of the tube as they could not travel up the tube due to gravity. The micro-organisms did not reach the meat even though it was exposed to air so the meat did not putrefy. This showed it was not air that caused putrefaction, but micro-organisms in the air.

Pasteur then began to investigate diseases in living organisms, first with silkworms and then anthrax which affects sheep and cattle and occasionally humans. Pasteur showed the disease killing silkworms were two different sorts of micro-organisms which caused two different diseases in the silkworms. In relation to anthrax it was already known that the blood of cattle, which had died from anthrax, contained micro-organisms and that these micro-organisms were the cause of the disease. Robert Koch had discovered the anthrax bacteria, had cultured it, and injected it into animals which had immediately died. He also found that anthrax micro-organisms could sometimes form spores, which were tiny organisms' resistant to a range of environmental conditions. The spores were formed when the temperature was right and oxygen was present. Once the spores were formed they could survive for a considerable time and re-infect other animals making the disease difficult to control. Pasteur, with some difficulty, then produced an anthrax vaccine which he used to inoculate sheep which were later injected with the anthrax bacteria. The sheep did not develop anthrax and Pasteur had found a vaccine for anthrax.

Pasteur's last great achievement was to discover a vaccine for rabies. Rabies normally occurs in humans after they have been bitten by a rabid dog with the symptoms appearing between 10 days and several months after the dog bites took place. Pasteur studied the tissues of rabid dogs but could not find a micro-organism that could have caused rabies. He decided the organism was too small to be detected with a microscope. Pasteur considered the micro-organism entered the body through the bite wound and over time moved to the brain, explaining the period of time between the bite and the arrival of symptoms. After some time, Pasteur was able to produce a vaccine for rabies which was able to be injected in the period after the dog bite and before the onset of symptoms.

Pasteur's work had followed a logical path. He had first shown that fermentation was caused by micro-organisms, and that those micro-organisms originated in the air rather than from the fermenting matter and that micro-organisms also caused putrefaction and infectious disease. He then showed how the diseases in both animals and people could be cured by vaccination. Pasteur's work established the germ theory of disease and put an end to other theories of disease such as the humoral theory.

Robert Koch, after isolating the anthrax bacteria, began using an improved microscope with a light condenser and an oil immersion lens. This enabled him to see bacteria that had previously been too small to be seen even with the best microscopes available. He also used new aniline dyes which helped him to distinguish between different types of bacteria. Koch also found a way of producing pure cultures of different types of bacteria by placing the bacteria on a solid culture medium, in place of the liquid culture medium then currently used, which only worked well with bacteria that moved in the blood stream. With his improved microscope and better techniques for creating pure cultures of bacteria Koch began to search for a tuberculosis bacterium, in the tissue of humans who had died of tuberculosis. Using a microscope equipped with the oil immersion lens and condenser that was five times as powerful as Leeuwenhoek's microscopes he was able to find a tiny bacterium which he called the tubercle bacillus. The tubercle bacillus was much smaller than the anthrax bacteria and was too small to be found without

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the use of his new improved microscope. To prove the tubercle bacillus caused tuberculosis Koch needed to isolate it in a pure culture and to inject it into various animals. If it produced tuberculosis in those animals that would prove the tubercle bacillus was the cause of tuberculosis. After some difficulty he was able to produce a pure culture of the tubercle bacilli. He then injected this into animals which soon became sick and when he examined their diseased tissues he found they had tuberculosis. Koch had found the cause of tuberculosis giving hope that a cure would eventually become possible.

If Pasteur established the germ theory of disease, it was Koch who was to turn bacteriology into a science. Koch formalized the methods for studying micro-organisms and proving their relationship with particular diseases. To prove an organism was the cause of a disease Koch proposed the following criteria, which came to be known as Koch's postulates:

1. The organism must be present in every case of the disease.
2. It must be possible to prepare a pure culture, maintainable over repeated generations.
3. The disease must be reproduced in animals using the pure culture, several generations removed from the organism originally isolated.
4. The organism must be able to be recovered from the inoculated animal and be re-produced again in a pure culture.

Clearly the third and fourth postulates can only apply to diseases which apply to animals as well as humans and the postulates were not able to be applied to all micro-organisms for example viruses. Nevertheless, the postulates provided a set of procedures for the investigation of diseases which were to establish the causes of a range of diseases which opened up the possibility of finding cures and treatments for the diseases. Between 1879 and 1906 the micro-organisms causing many diseases were discovered. The diseases involved included gonorrhoea (1879), typhoid fever (1880), suppuration (1881), glanders (1882), tuberculosis (1882), pneumonia (1882 and 1883), erysipelas (1883), cholera (1883), diphtheria (1883-4), tetanus (1884), cerebrospinal meningitis (1887), food poisoning (1888), soft chancre (1889), influenza (1892), gas-gangrene (1892), plague (1894), pseudo-tuberculosis of cattle (1895), botulism (1896), bacillary dysentery (1898), paratyphoid fever (1900) syphilis (1905), and whooping cough (1906). The discovery of the micro-organism causing the disease did not always result in effective treatments.

### 1.3.5 ANTISEPTICS

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The increase in surgery produced by the use of anaesthetics simply highlighted another problem, the death of large numbers of patients due to infection. Patients dying from infection had long been a problem both in obstetrics and surgery. It was in obstetrics that the first understanding of the causes of infection arose, but it was in surgery that the solution to the problem was achieved.

Some doctors and surgeons sensed that a lack of cleanliness may be the cause of infection. Charles White in 1773 in Manchester suggested the cleaning of the surgery room, clothing and articles in contact with the patients but did not refer to cleansing of surgeons and others involved in operations. Alexander Gordon (1752-1799) suggested infection was carried from infected patients to uninfected patients. He suggested the cleansing of surgeons but did not realize that infected matter was involved in the spread of disease.

In the mid nineteenth century Ignaz Semmelweis was working at the maternity clinic at Vienna General Hospital. He noticed that the section of the hospital used for training medical students in obstetrics had a much higher rate of mortality, around 13% than the section used to train midwives, which was around

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2-3%. Explanations considered for the variations in the mortality rates included that the poor single mothers and prostitutes in the hospital were less embarrassed when treated by women. Semmelweis noticed that the puerperal fever which killed many of the women immediately after they had given birth seemed to be the same disease that had killed the surgeon Jakob Kolletschka who died after cutting his finger in a post mortem. Later Semmelweis realized that medical students going to their section of the maternity clinic came from anatomy classes involving dissections and the handling of diseased body parts. Little attempt was made to clean up between the anatomy classes and the work done in the maternity clinic. Semmelweis suspected the students coming from the anatomy classes were bringing infection into the maternity clinic so he ordered students to wash and scrub in a chlorine solution before entering the maternity clinic. Within a month the mortality rate in the students' section dropped to 2% the same as for the midwives' section. Despite his success Semmelweis became very unpopular with the medical students, his immediate superior and even the patients who felt he was suggesting they were dirty. Semmelweis left Vienna for a hospital in Budapest where he instituted similar hygienic reforms and again the mortality rate dropped dramatically. He published a paper on his discoveries, which was ignored, and then a book which was also ignored. Semmelweis then began to behave erratically writing angry letters to those who criticised his work. He was soon induced or forced to enter a mental hospital and within two weeks was dead in circumstances that may have amounted to murder.

Joseph Lister was a surgeon in Glasgow who noticed that the mortality rate for compound bone fractures where the bone was exposed to the air were much higher than for broken bones where there was no exposure to the air. Broken bones exposed to the air often developed gangrene which was usually blamed on "miasma" or bad air. Lister did some experiments on frogs legs and concluded that gangrene was a form of rotting, involving the decomposition of organic material. He also read Pasteur's work which suggested that putrefaction was the rotting of organic material caused by bacteria in the air. Lister accepted Pasteur's idea that it was not the air that caused the gangrene but bacteria in the air.

The question was how to destroy the bacteria both in the air and in the wounds. Carbolic acid or phenol had been isolated in the 1830's through coal tar distillation. It was used to clean sewers and after various experiments with crude carbolic, which killed tissue, Lister began to use carbolic acid. He would dress wounds in lint soaked with carbolic acid and sprayed the air in the operating room with carbolic acid. Lister published his work in 1867 in a paper entitled *On the Antiseptic Principle in the Practice of Surgery*. The mortality rates from Lister's amputation operations fell from 45% to 15%, but despite this some doctors still refused to believe that bacteria existed or could cause infection. However, the results of using Lister's methods soon became obvious and they began to be used throughout Europe. Over time he refined his procedures getting rid of the carbolic spray and putting greater emphasis on using heat to sterilize dressings and instruments. There was also a move from anti-septic measures which destroyed germs in wounds to aseptic measures which ensures that everything that touches the wound such as instruments and the surgeon's hands are free from germs.

Towards the end of the 19th century sterilized gowns, masks, caps and rubber gloves were introduced for surgical operations.

### 1.3.6 ANTIBIOTICS

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Scientists experimenting with bacteria had on various occasions noticed that penicillin and other biological organisms could inhibit the growth of bacteria. In 1875 John Tyndall had observed penicillin had killed bacteria in some of his test tubes. In 1877 Pasteur had noted anthrax bacilli grew in sterile urine but the addition of "common bacteria" stopped the growth. In 1885 Arnaldo Canteri noted certain bacterial strains killed tubercle bacilli and reduced fever in the throat of a tubercular child. In 1896 a French medical

student noted that animals inoculated with penicillin and a virulent bacterium did better than animals inoculated with the virulent bacteria only. In 1925 D A Gratia noted that penicillin could kill anthrax bacilli.

Alexander Fleming was experimenting with bacteria in 1928 when he observed bacteria in his petri dish had been killed by the Penicillium mould. Fleming began experimenting with the mould and soon isolated the substance that killed the bacteria. He called the substance penicillin and then tested its effectiveness against other bacteria. He found penicillin could kill a range of bacteria but there were some bacteria it did not affect. He injected it into animals and found that it did not do them any harm. Fleming then published his results in 1929 and then in a briefer report in 1932. Fleming's work was largely ignored and he then turned his research interests elsewhere. The prevailing scientific view at the time was that anti-bacterial drugs would not work against infectious disease and would be so toxic to use on humans.

This belief to change 1935 when it was that Prontosil could destroy streptococcal infection when given intravenously. Research on penicillin only began again in 1940, in Oxford, when Howard Florey and Ernest Chain discovered penicillin was an unstable simple molecule. They were able to stabilize it by freeze drying it in a water solution. This produced a powder that was tested on mice and did not harm them and cured them of streptococci. It was also discovered that penicillin could travel through the body to attack infections wherever they were. Their results were published in August 1940 and Florey, Chain and their colleagues began to manufacture penicillin as fast as possible.

The first human test of penicillin was on a badly ill policeman. The policeman improved until he seemed on the verge of total recovery when the supply of penicillin ran out and the policeman relapsed and died. More penicillin was manufactured and tested on humans and was found to regularly clean up infections. It was found to be effective against most forms of pus forming cocci and against tetanus, anthrax, syphilis and pneumonia. The manufacture of penicillin was greatly expanded when the United States began to produce it and new manufacturing techniques involving deep fermentation were developed. This involved submerging the mould below the surface of the culture medium. Eventually semisynthetic penicillins and penicillins that could be swallowed were produced.

Eventually a systematic search began for other anti-biotics. Howard Florey outlined the procedure to be followed which involved the investigation of micro-organisms to find out which ones produced an anti-bacterial substance, the isolation of that substance, testing the substance for toxicity, testing it in animal experiments and then testing it on people. The search for new anti-biotics was to produce a substantial number of new anti-biotics including streptomycin developed in 1944 which was effective against tuberculosis. Chloramphenicol, developed in 1949, was effective against typhoid fever. Anti-biotics were eventually found that could act against every bacteria that causes diseases in humans. Some of those bacteria are now developing resistance to anti-biotics and the development of new anti-biotics is inhibited by the extreme cost, running into hundreds of millions of dollars, of obtaining United States government approval for the drugs. Nevertheless, anti-biotics have saved hundreds of millions of lives.

### 1.3.7 MEDICAL STATISTICS

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The use of statistics in medicine to determine the cause of disease or the success of a treatment has a relatively short history. In the past the causes of disease and the success of treatments were usually decided by physician's personal experience with patients, which, assuming that physicians had similar experiences, led to accepted beliefs as to the efficacy of treatments and the causes of disease. The beliefs would be recorded in authoritative medical texts and would in many cases become a sort of medical dogma. Disputing the dogma could involve accusations of unorthodox opinions that could lead to bad practices that could endanger patients' lives.

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The idea of doing trials, to test the effectiveness of medical treatments, was suggested by the scientist, Johannes van Helmont and the philosopher George Berkeley. The first known trial to assess the cause of a disease seems to have been done by James Lind in an attempt to discover the cause of scurvy. Scurvy was killing large numbers of sailors on long sea voyages. Lind took 12 scurvy sufferers and divided them into 6 groups of 2 and each group was given a different dietary supplement. The two sailors given oranges and lemons rapidly recovered and the others did not. Lind eventually published his findings, and although there remained some confusion for some time, eventually lemon juice became standard on long sea voyages.

One question, much debated in the 18th century, was whether smallpox inoculation was a good thing. In England inoculation was generally favoured, in France it was opposed. Various calculations were made as to the death rate from smallpox which was considered to be around one in ten, excluding fatalities of those under 2 years old. Other calculations were 1 in 12 and 1 in 7. This was compared to the death rate from inoculation which James Jurin, secretary of the Royal Society, calculated at 1 in 91. The Swiss mathematician, Daniel Bernoulli calculated that inoculation increased the average life expectancy by two years. A further problem was that people inoculated with smallpox could spread it to others and this was not taken into account in calculating death rates from inoculation. If people who were inoculated could be isolated for a period, then the figure might not be too high, but then if people who got smallpox naturally were isolated that would reduce the death rate from normal smallpox. An additional problem was that the rate of smallpox infection varied considerably from large cities where nearly everyone would, sooner or later get smallpox and the small towns and villages where most people in the 18th century lived, and many people could live their lives without getting smallpox. Modern estimates of the death rate from inoculation are as high as 12%, not much better than the death rate from normal smallpox infection.

The difficulty in calculating accurate death rates for inoculation and normal smallpox infection, how to introduce into the figures people who caught smallpox from those who were inoculated and how to deal with the widely varying rates of smallpox infection between urban and rural areas gives some idea of the difficulty in working out whether inoculation was a good thing or a bad thing. The whole debate eventually became irrelevant when vaccination with cowpox, a quite safe form of immunization became available at the end of the 18th century. A further illustration of the problem of accurate statistical analysis of medical treatments is contained in the work of Pierre Louis in the first half of the nineteenth century. Louis conducted several trials to test bloodletting as a treatment for various inflammatory diseases. He concluded from his trials that bleeding resulted in patients recovering earlier than if there was no bleeding and that if bleeding is done, patients bleed earlier during the course of the disease recovered more quickly than those bleed later. However, the way Louis conducted the trial was not ideal. Those bleed earlier during the illness were on average 8 years and 5 months younger than those bleed later, which could explain the faster recovery. A further criticism of Louis's study was that the numbers involved in his trial were insufficient so there was a wide margin of error in his results so they were not reliable.

A more successful use of statistics to discover the cause of disease occurred in the mid-19th century when John Snow discovered the cause of cholera. Cholera was like many infectious diseases, assumed to be caused by miasma or bad air caused by putrefaction. Snow suspected that cholera could be transmitted by personal contact and through polluted water supplies. He examined the sources of the water supplies in London and compared it to mortality rates from cholera. Areas with clean water supplies, due to water being taken from the Thames above sewage outfalls, or with filtered water, or with water passed through settlement ponds, showed much lower rates of cholera than areas using unfiltered and unponded water taken from below sewage outlets. Areas with clean water had a death rate of 10 per 10,000 from cholera, areas with polluted water had a death rate of 110 per 10,000 from cholera.



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Snow also investigated the cholera levels for households in the same areas, where the water supplies came from two separate companies, one of which supplied clean water to its customers and the other which supplied polluted water. Those customers obtaining clean water had 5 cholera deaths per 10,000, those obtaining polluted water had 71 cholera deaths per 10,000. The 5 cholera deaths per 10,000 could have been caused by visiting houses, pubs and cafes with polluted water and people who had fallen sick with cholera.

Snow's final study concerned a small area around Broad Street in London where 500 people died of cholera in ten days. Snow suspected a water pump supplying drinking water in the centre of the area could be responsible so he asked the local authority to remove the handle from the pump. This was done and the cholera outbreak ended. More particularly Snow showed certain groups within the Broad Street area, people in a workhouse and those working in a brewery who did not use water from the pump had an unusually low cholera death rate. He also showed that certain individuals from outside the Broad street area who drank water from the pump also died of cholera within the ten day period.

Snow's three studies provided powerful evidence that polluted water caused cholera but his findings were initially rejected. Two inquiries considered cholera still came from bad air and another study which concluded that the death rate from cholera rose as one moved from highlands to sea level also suggested bad air was to blame. Eventually, when miasmatic theories of disease lost creditability with the rise of the germ theory of disease, Snow's explanation of cholera was accepted.

The first truly scientific randomised control test was that conducted on the drugs streptomycin and PAS as a treatment for tuberculosis. Tuberculosis was in the mid twentieth century, the most common fatal infectious disease in the western world. Its cause, the tubercle bacillus, had been identified by Robert Koch in 1885, but no effective treatment had been found for it. Antibiotics like penicillin did not work against it, as it had an impermeable waxy coat that protected it from antibiotics.

A new drug called streptomycin had been discovered in America in 1944 which seemed to work against tuberculosis germs. It inhibited the growth of tuberculosis bacillus on agar plates and was successful at curing tuberculosis in guinea pigs and when tried on a human patient with five courses of treatment between November 1944 and April 1945, cured the human patient. A second drug which showed promise as a tuberculosis treatment was PAS. It had been noted that Aspirin resulted in the tuberculosis bacilli absorbing increased amounts of oxygen and it was considered that a similar drug to Aspirin might block the supply of oxygen to the tubercle bacilli. PAS was tried and was shown to cause an improvement in the condition of tuberculosis patients. Immediately after World War II Britain was short of money and could afford only a very small amount of streptomycin. The Tuberculosis Trial Committee, encouraged by one of its members Austin Bradford Hill, recognised there was not enough streptomycin to provide to all patients, decided to conduct a random control test with the streptomycin, providing streptomycin to one set of patients and comparing the results with another set of patients not receiving the drug. There was enough streptomycin to provide to 55 patients and the results of the treatment were compared with 52 patients who received the usual treatment provided for tuberculosis patients. Which patients received the streptomycin and which received the usual tuberculosis treatment was decided completely at random to avoid any conscious or unconscious bias in the allocation of patients to either group.

Six months after the trial had begun it was found that only four patients had died from the group given streptomycin while fourteen had died from the group receiving the conventional treatment. Streptomycin seemed to be an effective treatment with significantly fewer deaths in the group receiving the streptomycin. However, a follow up investigation three years later revealed 32 of the group using the streptomycin had died compared to 35 in the group not receiving the drug. After three years the group

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using the streptomycin was only slightly better off than the group not using it. What had happened was that over the period of treatment some of the tubercle bacilli had become resistant to the streptomycin and when this happened patients who initially seemed to be getting better, worsened and often died. The test revealed that not only did streptomycin not work in the longer term but that there was a problem of the bacilli becoming resistant to the streptomycin which, if it could be overcome could mean that streptomycin could still be an effective treatment for tuberculosis. If the drugs had simply been provided to doctors for treating patients it would have taken much longer to work out why it was not working.

A further trial was conducted which combined streptomycin with PAS with the aim of overcoming the problem of resistance from the tubercle bacilli. In the second trial resistance to streptomycin developed in only 5 patients compared to 33 in the first trial. The combination of the two drugs proved to be an effective treatment for tuberculosis and survival rates for tuberculosis patients went up to 80%. Eventually other drugs such as isoniazid and rifampicin were introduced and it was found that combining three drugs resulted in survival rates approaching 100%.

Random controlled trials were also found to be effective in proving the causes of certain diseases. After World War II the great majority of the adult population smoked and lung cancer deaths were rapidly increasing. Bradford Hill, Edward Kennaway, Percy Stock and Dr Richard Doll were asked to investigate whether smoking was a cause of the increasing number of lung cancer deaths. Smoking was only one possible explanation, others such as increased air pollution especially from motor vehicles were considered to be as likely or more likely the cause of increased lung cancer deaths, than smoking. The asphaltting of roads was considered to be another possible cause of the escalating lung cancer deaths. Given that most adults smoked it was difficult to find a suitable control group of non-smokers. The investigation was conducted by creating a detailed questionnaire which patients suspected of having lung cancer completed. The questionnaire was also completed by patients who had other cancers and also by patients in hospital for reasons other than cancer to act as two control groups. It was found that 99.7% of the lung cancer patients smoked against 95.8% of the control group patients. This was not a great difference but it was also found that 4.9% of the lung cancer patients smoked 50 cigarettes a day as opposed to only 2% of the control group patients.

The lung cancer rate amongst those smoking 50 cigarettes a day was over double for lung cancer patients than for the control group. The more people smoked the greater their chances of getting lung cancer. The study conducted by Doll and Bradford Hill had looked at lung cancer patients and looked back in time at their smoking habits. They then decided to do a study of healthy people investigating their smoking habits and then observing how their health developed in the future. Doll and Bradford Hill decided to do the study on doctors, 40,000 of whom filled in and returned their questionnaire. Two and a half years later enough doctors had died for Doll and Bradford Hill to be able to show that the more the doctors smoked the greater the likelihood they had died of lung cancer. It was eventually found that doctors smoking 25 cigarettes per day were 25 times as likely to develop lung cancer compared to non-smokers.

The success of the random control tests on streptomycin and in showing that smoking caused lung cancer led to random control tests becoming standard practice to test new drugs and to identify the causes of disease. The testing has had its undesirable side with the testing costs running to hundreds of millions of dollars and so discouraging the production of new drugs and some studies of disease showing a relationship between environmental factors and the disease without giving any real indication of a cause and effect relationship.

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### 1.3.8 DIAGNOSTIC TECHNOLOGY

The twentieth century has seen the development of a series of new technologies that have enabled physicians to see inside the human body. The technologies began with X-Rays, and then CT scanners, PET scanners and MRI scanners were developed. These technologies all allowed physicians to see inside the body from the outside while other technologies such as endoscopy allowed physicians to invade the body with tiny cameras to observe the state of the interior of patients bodies.

X-Rays were first discovered by Wilhelm Roentgen in 1895. Roentgen was experimenting with a Crookes tube, a glass tube with the air removed to create a vacuum and with electrodes to allow the production of an electric current within the tube. The electric current, consisting of a stream of electrons known as cathode rays, would cause phosphorescent material within the tube to glow. When experimenting with a Crookes tube, the German physicist, Phillip Lenard has noticed that cathode rays could travel through an aluminium sheet he had placed over a window in the Crookes tube and turn slips of paper covered with barium platinocyanide salts, fluorescent. Lenard sent a Crookes tube to Roentgen for Roentgen to study the cathode rays. Roentgen repeated Lenard's experiments and found the cathode rays were escaping from the Crookes tube just as Lenard had found. Roentgen thought that the cathode rays might be passing through the walls of the Crookes tube as well as through the aluminium covered window in the tube.

When conducting the experiment Roentgen noticed a screen coated with barium platinocyanide, a yard away from the Crookes tube, turned fluorescent. This could not be caused by cathode rays which only travel a few inches in the air. Roentgen moved the screen further away from the Crookes tube and the screen still turned fluorescent when he turned on the electric current in the Crookes tube. Roentgen placed objects like a book and a deck of cards between the Crookes tube and the screen and the screen still lit up when he turned on the current in the Crookes tube. Further experiments revealed, that the ray causing the screen to light up, could penetrate a wide range of materials such as wood and flesh. Roentgen had no idea what the ray was so he called it an X-ray. When a human hand was placed in front of a photographic plate and exposed to X-rays, the plate showed the bones in the human hand. However, the X-rays did not easily pass through metals and could not pass through lead at all.

X-rays were found to have a number of uses such as in crystallography, astronomy and in microscopic analysis, but their most important use has been in medicine. X-rays can provide a photograph of the inside of the human body. X-rays have a shorter wave length than light so they can penetrate materials opaque to light. X-Rays can more easily penetrate materials of low density such as skin and muscle, but cannot penetrate materials of higher density, such as bone, bullets and kidney stones.

The use of x-rays in medicine was greatly extended by the employment of contrasting media such as barium salts and iodine solutions. Barium makes it possible to obtain x-rays of the large and small intestine and the stomach and the oesophagus. Iodine allows an x-ray picture of the kidneys and bladder and also the carrying out of angiographs. Angiography provides a view of the blood within the arteries and veins which will disclose blockages and other problems within the arteries and veins. The use of catheters allows contrast materials to be injected into the heart allowing x-rays of the internal structures of the heart. X-rays can be used to detect tumours, cancers and cysts.

A further enhancement of x-ray technology came with the development of CT or CAT scanners. The CT scanner uses x-rays, photon detectors and computers to create cross section images or tomograms of the human body. In 1963 Allan Cormack invented an improved x-ray machine using computers, an algorithm and tomograms. In 1972 Godfrey Hounsfield invented the CT or computerized tomography scanner. It allowed many x-rays to be taken, from multiple angles of thin slices of the human body and detectors opposite the x-ray tubes would collect the data, which was converted into digital data, which was then converted by an algorithm, a set of mathematical instructions, by a computer into x-ray pictures. The CT

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scanner could give three dimensional views of the body and provides much better resolution than ordinary x-ray images. It can show soft tissues and liquid parts of the brain and can show tumours as small as one or two millimetres in size. CT scanners have gone through a series of improvements involving various different generations of scanners. In the earlier scanners the x-ray beam lacked the width and the number of detectors to cover the complete area of interest requiring multiple sweeps to produce a suitable image. In subsequent scanners a wider x-ray beam and more detectors were used to shorten scanning times.

Endoscopy, also known as laparoscopy, involves inserting an instrument into the body either through the body's natural entrances or through a small hole surgically cut in the body. The instrument is used to observe the internal structures of the body and can also be used for surgery with tiny instruments at the end of the endoscope being manipulated by the surgeon through the endoscope.

Endoscopy goes back to the late nineteenth century but was not widely used as the views it provided of the interior of the body were too poor for practical use. Harold Hopkins, a physicist, heard about the problems with endoscopes and remembered that although light normally travelled in a straight line it could in certain circumstances be made to travel around corners by the use of curved glass. Hopkins considered that tens of thousands of flexible glass fibres operating together may be able to cause light to go around corners. He made an experimental endoscope and published his results in 1954. Basil Hirschowitz, a South African, working in the United States, read about Hopkins ideas and created his own endoscope. Several hundred thousand fibres were wound together and to stop light jumping from one fibre to another which could cause the loss of the image a technique of coating each fibre with a glass coating was developed. The endoscope allowed investigation of much of the interior of the body and some surgery on the interior of the body without having to make substantial incisions into the body.

Photography through an endoscope was not very satisfactory due to inadequate illumination and because the optical system was not good enough. Hopkins investigated the problem and found that an endoscope consisting of a glass tube containing thin lenses of air gave improved light transmission around eighty times stronger than conventional endoscopes made of an air tube containing thin lenses of glass. This allowed the taking of photographs through the endoscope and allowed greatly expanded surgical possibilities through the endoscope. Endoscopy can be used for surgery by instruments such as lasers or wire loop cautery devices attached to the head of the endoscope and controlled by the surgeon through the endoscope.

### 1.3.9 MODERN SURGERY

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Surgery, before the introduction of anaesthetics and anti-septic and aseptic practises, was limited to a narrow range of operations, of which limb amputation was by far the most common. The quickest operations only were possible without anaesthetics and the mortality rates from infection were enormous before anti-septic practices were introduced. The introduction of gowns, masks, rubber gloves and the sterilization of instruments dramatically cut the death rate in surgery.

Abdominal surgery only became possible with anaesthetics and anti-septics. Christian Billroth (1829-94) pioneered operations in this area. Operations to remove the appendix and to close a perforated gastric ulcer began to be performed in the late 19th century. Brain surgery began with Sir William Macewan (1848-1924) in Glasgow and Macewan also developed operations to deal with bone diseases such as rickets.

Plastic surgery was to make great progress in the 20th century, two New Zealanders Harold Gilles and Archibald McIndoe leading the way. Plastic surgery dates back to ancient times and was practiced in pre-

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British India and Renaissance Europe when it was used to deal with the terrible damage caused by syphilis. During World War I Harold Gilles carried out plastic surgery on the badly disfigured faces of soldiers and sailors. He developed an operation whereby a skin flap was sliced from the upper arm, one end of the flap remaining attached to the arm and the other end was moulded over the nose and then sewn down. After several weeks the skin sewn to the face would take and the skin attached to the arm could be cut and sewn into place on to the face. When the injured had no facial skin at all Gilles took the flap of skin from the abdomen rolling it over the chest and sewing one end to the face. Holes would be cut in the skin for the nose, eyes and mouth. When that end had taken Gilles cut the end still attached to the abdomen and then sewed that into place on the face. This system involved two operations as if the skin was completely removed from the donor area before it had taken on the face it would die due to lack of blood supply. These techniques were further developed by Archibald McIndoe while operating on air force pilots injured in World War II.

The first experiments with organ transplants had been made by Alexis Carrel early in the 20th century. He carried out various transplant operations on animals discovering the problem of rejection where the transplanted organ was rejected by the receiving animal's body. The problem of rejection was investigated by Peter Medawar when he observed skin grafts taken from a donor would last for ten days before rejection, while a subsequent skin graft from the same donor was instantly rejected. When the body suffers an infection from bacteria or viruses initially it takes time to identify the invading organism before the immune system attacks the invading organism. In the event of a subsequent attack by the same organism the organism is immediately attacked because the immune system recognizes it as foreign material due to its previous contact with the virus or bacteria. The way in which the first rejection takes some time but a second rejection of the same material occurs immediately led Medawar to realize that it was the immune system rejecting the transplant in the same way as it attacked invading bacteria and viruses.

Organ transplant required a practical surgical technique which was developed by Joseph Murray who improved on techniques experimented with by Alexis Carrel on animals. The technique involved the sewing together of small blood vessels which allowed the attaching of the transplanted organs blood supply to those of the recipient so that it could receive the recipient's blood. The first attempts at organ transplant were kidney transplants. This was because humans had two kidneys, but only need one so living donors were readily available. Kidney transplants were also relatively straight forward operations the main job being to connect the transplanted organs blood supply to the recipient's blood supply.

Kidney transplants did however require the prior invention of the kidney dialysis machine. The dialysis machine was invented by Wilhelm Kolff, a Dutch physician in 1941. The dialysis machine performs the work of the kidneys when the kidneys fail. This mainly involves removing waste material from the blood. The dialysis machine is needed during transplants to keep people alive before the operation and for a period of time after the operation, often ten days or so, until the donated kidney begins to work.

A workable surgical technique and the dialysis machine allowed kidney transplants to be performed and the first operation was performed in 1954 by Joseph Murray on a patient whose identical twin supplied the donated kidney. The operation was a success with no rejection problems as the donated kidney came from an identical twin so that the recipient's immune system did not treat the donated kidney as foreign material. When however, kidney transplants were attempted using close relatives as donors, the donated organs were rejected by the recipient's immune system resulting in the death of the recipient.

A drug, known as 6-mp, had been developed by George Hitchings and Gertrude Elion as a treatment for leukaemia. 6-mp worked by stopping the cancer cell from dividing by appearing to be a chemical necessary

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for the cancer cells division, but which was slightly different so that it stopped the cancer cell from dividing and so killed the cancer cell. 6-mp was tried to stop the immune system rejecting transplanted organs by stopping the division of cells in the immune system. 6-mp was tried on rabbits and found to stop the rabbit's immune system attacking foreign material, but leaving the rabbits immune system otherwise working. Hitchings and Elion also developed a new drug azathioprine that was an improved version of 6-mp. Azathioprine was tried on people but with poor results until high doses of steroids in short bursts were given to patients with the azathioprine. This had the desired effect of preventing the immune system attacking the transplanted organ while still leaving the immune system able to work against ordinary infections. Eventually another drug cyclosporine was developed which had the same effect and transplant operations for other organs such as the lungs, liver, bone marrow and hearts were developed.

Improvements in medicine and sanitation led to people living longer and an increasing exposure to the diseases of old age. Arthritis became much more common in the twentieth century than previously. Arthritis of the hip was particularly a problem causing constant and serious pain to patients and greatly reducing mobility. The pain was caused by the rubbing of bone against bone in the hip due to the erosion of cartilage between the bones.

Some attempts had been made to provide artificial hips in the 1930's and 1940's but none had been particularly successful. A major difficulty was that the hip has to maintain the weight of the body as well as being completely mobile. John Charnley looked at problem and came up with three innovations that were to lead to a practical artificial hip. He redesigned the socket, he cemented the artificial hip to the bones with acrylic cement and he lubricated the joint first with Teflon and then when that failed with polyethylene. Charnley's new artificial hip was an outstanding success and the hip replacement operation was to become a common operation in the late 20th century.

The heart is the most complex organ in the body and for the first half of the twentieth century surgeons did not touch it believing that to do so would kill their patient. In the 1930's and 1940's operations were carried out on the aorta and the pulmonary artery to ease symptoms caused by heart problems, but the heart itself was not touched. In the late 1940's surgeons began to widen heart valves through a hole cut in the wall of the heart while the heart was still working. However, much heart surgery, known as open-heart surgery, was only possible with the heart being stopped. If the heart was stopped some means of maintaining the blood supply to the body was necessary or the patient would die. John Gibbon and his wife Mary Hopkins began work on a machine that could perform the work of the heart and lungs in the 1930's. The machine needed to be able to add oxygen and remove carbon dioxide from the blood and to pump the blood through the body. The machine needed valves to ensure the blood all flowed in one direction and had to use glass tubes as plastic had yet to be invented. The Second World War delayed progress, but a heart-lung machine was created in the early 1950's. Early results were not promising but the machine was taken over and improved by the Mayo Clinic. Donald Melrose, in England, and Viking Bjork, in Sweden, also built similar machines to allow open heart surgery. The result was to be an effective heart-lung machine that could take over the functions of the heart and lungs during operations so as to allow surgery on the human heart.

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## **2.0 Analysis of the order of discovery in the history of medicine**

The question of the origin of infectious disease was in dispute for thousands of years, the matter not being settled until the late 19th century. The earliest cultures and civilizations considered the cause of diseases to be supernatural and the appropriate remedies to be appeals to the Gods and magical incantations. Such beliefs were perfectly reasonable based upon the knowledge available to our pre-historic ancestors and to early civilizations. They had no awareness of bacteria, viruses or other microscopic organisms. Given that beliefs in Gods were used to explain other mysterious events, such as earthquakes, storms and volcanic eruptions, the Gods were an obvious explanation of disease. Given also that diseases can kill human beings, it would be reasonable to assume they are caused by powerful beings, like Gods or powerful demons and evil spirits. As the body automatically tends to repair itself, due to the immune system, it must have appeared to our pre-historic ancestors that on occasions the magical incantations and appeals to the Gods had worked. When the patient died the death could be put down to the capriciousness of the Gods or the great power of the evil spirit, rather than there being anything wrong with the treatment used.

In the west, from the time of Hippocrates, natural causes of diseases, such as the four humors theory, were the favoured explanation, although supernatural explanations continued to find acceptance. The same situation existed in China with natural causes of disease such as inadequate or imbalanced Qi and Yin and Yang being considered to be the causes of disease. A similar situation existed in India where a balance of the three elements, air, bile and phlegm was required for good health. The Greek, Chinese and Indian explanations of disease are quite similar all involving imbalances in bodily substances and all acquired a status that made them impervious to criticism and a block on innovation.

The presence of blood, urine, vomit and diarrhoea clearly shows the body has many internal fluids. Vomit and diarrhoea particularly seem to be present at times of sickness and recovery often occurs after vomiting and diarrhoea so that it would appear that getting rid of fluids from the body could cure sickness. Even bleeding was often followed by recovery from injury so that a limited loss of blood could be seen as promoting recovery. It is because the human body has these fluids and because getting rid of the fluids with vomiting, diarrhoea and bleeding seemed to cure sickness and injury, ideas such as an imbalance of fluids caused ill health arose in Western, Chinese and Indian cultures. This gave rise to theories such as Hippocrates and Galen's four humors theory and to remedies such as bleeding and purging. The Chinese theory of an imbalance between Yin and Yang causing disease appears to be a more abstract version of the same idea. Given the knowledge of non-scientific societies these theories make good sense. A theory that micro-organisms, invisible to the naked eye, cause disease is hardly credible for societies that have no evidence of the existence of the micro-organisms. On the other hand, bodily fluids plainly do exist and their removal from the human body seems to be associated with recovery from disease and injury.

The medicine of Hippocrates and Galen did not just relate to the four humors. It also dealt with qualities such as hot, cold, dry and wet. This is because many of the symptoms of disease relate to these qualities for example if a person has a temperature or fever, they are hot, if they are perspiring, they are wet. If they do not have a temperature, they are cold, if they are not perspiring, they are dry. Galen's theory was built up from the way the human body acts, both when it is sick and when it is healthy. If the human body functioned in a different way, it would have led to a different type of medical theory. If for example the human body changed color when it was sick, rather than changing temperature, medical theory would likely involve explanations and treatments that involve colors with the aim of restoring the patient to his or her normal healthy color.

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The traditional Chinese theory of medicine has considerable similarities to the classical theories of Galen. The western idea of *pneuma*, a vital spirit taken into the body by breathing, is similar to the Chinese concept of *Qi*. Galen's theory of the four humors considers much sickness is caused by an imbalance in the body fluids. The Chinese theory also deals with body fluids, known as *JinYe*. A healthy person will have the body fluids in balance, but if the body fluids are deficient, or if there is an accumulation of fluids, sickness can result. A further similarity between Galen's humoral theory and the Chinese theory is that the Chinese theory of Yin and Yang, like the humoral theory considers sickness is caused by imbalances within the body. The Chinese theory of blood also emphasizes that imbalances can cause sickness. Given that Yin and Yang, body fluids and blood should all be in balance to avoid sickness in Chinese medical theory, it has considerable similarities with Galen's humoral theory which considers sickness is caused by imbalances in the four humors. In both the humoral theory and traditional Chinese medicine the weather could cause imbalances in body fluids.

A further similarity between Galen's theory and traditional Chinese medicine concerns the elements. Galen's theory uses the idea of the four Greek elements, air, fire, earth and water. Each element is associated with a particular organ, a particular humor and with the qualities of hot, cold, dry and wet. Water for example is associated with the organ, the brain, the humor phlegm and the qualities of cold and wet. Traditional Chinese medicine uses the Chinese elements of fire, earth, water, wood and metal. The elements are each associated with organs, one of which is a Yin organ and the other a Yang organ. Water for example is associated with the bladder and the kidney, while earth is associated with the stomach and the spleen. The elements are all interconnected so that if one of the organs and its element is in a state of imbalance, it will affect the other elements and their organs. This could affect the individual's facial color and emotional state as well as the functioning of the relevant organs. The Western and Chinese theories of medicine were so similar, because each was derived from the same source. The source was the human body and the environment that could affect the human body. If the human body and the environment were different the theories would be different.

The naturalistic and supernatural explanations of disease co-existed for thousands of years, sometimes with one dominant, and at other times, the other being the more powerful. Neither was more convincing than the other, in that both sometimes appeared to work and that both sometimes failed to work. When they failed to work, both the supernatural and naturalistic theories provided explanations for the failure. If the human body did not have an immune system, so that if a person got sick they inevitably died and the incantations to the Gods and the treatment provided by doctors never worked, then the supernatural and naturalistic explanations of disease and the treatments they gave rise to would never have existed. It is only because the human body fights against disease, often successfully, that the incantations to the Gods and doctor's treatments often appeared to be successful which suggested that the explanations of disease were true and the treatments provided were sometimes working. Both the supernatural and naturalistic explanations of disease could have been proved wrong with modern double blind testing, but such testing was not done in the past because it required knowledge of sophisticated statistical techniques that only became available in the last 400 years. Even in the 18th century the English and French were unable to agree as to whether smallpox inoculation was desirable, while in the first half of the 19th century Pierre Louis conducted trials which showed bleeding was a useful treatment. Even today, drug trials sometimes produce contradictory results. Even if testing had been done the theories would probably have survived due to the lack of serious alternatives.

It was not until the late 19th century with the development of the germ theory of disease that the question of the origin of infectious disease was settled in favour of a naturalistic theory, but a theory completely different from any of the naturalistic theories previously accepted. When Fracastorius in the 16th century



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suggested contagious disease was caused by tiny seeds invading the human body, the theory was quite reasonably not accepted, as there was no evidence of the existence of the tiny seeds, or that they caused disease. Fracastorius theory was almost identical to the germ theory of disease and the germ theory was only accepted in the late 19th century with the work of Pasteur and Koch. Leeuwenhoek had discovered micro-organisms in the late 17th century but that did not mean that they caused disease. In fact, the vast majority of micro-organisms do not cause disease in humans. It was only with the more powerful 19th century microscopes that Pasteur and Koch were able to discover particular organisms which caused particular diseases in humans. They were able to show the organisms were the causes of the disease by isolating the organisms and by preparing a pure culture of the organism, which in the case of animals would then be injected into an animal causing the disease in the animal. This procedure known as Koch's postulate established the germ theory of disease and was able to show which particular germs caused which disease.

The explanations of infectious disease were based upon the knowledge available to a society at a particular time. When that knowledge changed (the discovery of micro-organisms and the discovery that some of them cause disease) the explanations of disease changed. Societies that considered the activities of supernatural beings as explaining otherwise inexplicable phenomena used supernatural explanations for the cause of infectious diseases. Supernatural explanations and naturalistic explanations of disease co-existed for thousands of years. Each was as convincing as the other until the germ theory of disease arose in the late 19th century. Naturalistic explanations of disease were based upon the natural world, and in particular, on the human body itself. Body fluids, organs and the elements of the natural world all had a prominent role in both Western and Chinese naturalistic explanations of disease.

The Chinese and Western explanations of disease were similar because they had similar knowledge of the natural world and of the human body, so they developed similar theories to explain the origin of disease. If the natural world and the human body were different, then the theories explaining disease would have been different. When human knowledge of the natural world increased, with the discovery of micro-organisms in the 17th century and the discovery in the late 19th century that some of those micro-organisms caused disease in humans, the theories explaining the causes of disease changed. The germ theory of disease became the accepted explanation of infectious disease throughout the western world. The practice of immunization (the modern name for vaccination, also known as inoculation) has been one of the most successful medical practices in history. It has been responsible for an enormous reduction in human suffering and has saved an enormous number of human lives. The injection of dead bacteria or their toxins, or dead or weakened viruses into the human body to create immunity against disease, has eliminated or controlled a considerable range of diseases. Immunization has been used successfully against anthrax, bubonic plague, chicken pox, cholera, diphtheria, Haemophilus influenza type B, mumps, paratyphoid fever, pneumococcal pneumonia, poliomyelitis, rabies, rubella (German measles), Rocky Mountain spotted fever, smallpox, tetanus, typhoid, typhus, whooping cough and yellow fever.

Immunization works because the body's natural defenses against infection are able to remember dangerous bacteria and viruses they have already had contact with and are able to react more quickly and more strongly to later infections from the same organism. When an infection occurs certain cells in the body respond by moving to destroy the invading bacteria or viruses. In order to destroy the invading bacteria or viruses the body's immune system, a collection of free moving cells, has to recognize which materials in the body are foreign invaders and what is part of the body. It does this by matching the shape of receptors on the surface of defending cells to the shape of the surface of the invading organism and if they fit together the defending cells recognizes an invading organism. Once recognition of an invader has taken place other defending cells will attack and destroy the invading organisms. The defending cells can

also produce memory cells which, in the event of a future invasion by the same organisms, are able to immediately clone large numbers of the appropriate defending cells to attack the invading organism, without having to go through the process of recognizing the invading organism.

This makes the immune systems response to invading organisms, which it has recognized before, much stronger, faster and more effective. This process known as the amplification of the response is the basis for immunization. A dead or greatly weakened infectious organism is injected into the human body so that the defending cells will remember the organism, so that in a future attack the immune system does not have to go through the recognition process and can immediately attack the invading organisms with large numbers of cloned defending cells. If the body did not work in this manner, for example if it did not produce memory cells which instantly recognize invading organisms, the process of immunization would not work. This would mean that the wide range of diseases immunization is effective against would still be killing vast numbers of people.

Smallpox was the first infectious disease to be treated with immunization, partly because it was one of the worst and most persistent diseases in history and partly because nature provided a ready-made immunizing material, in the form of cowpox, which saved people from having to identify, isolate and produce a safe vaccine. The high mortality rate from smallpox and the observation that survivors were protected from future attacks, which could only be observed with a disease which was continually or often present made smallpox the obvious disease to immunize against. A disease which came and then disappeared often for centuries is a less urgent case to immunize against as it may well not come back for centuries making immunization unnecessary. Given that smallpox was often or continually around it made sense to immunize against it. It also made it more easily observable that survivors were protected against future attacks. This was not so easily observable with diseases which involved major epidemics and then disappeared for long periods of time, so there were no future attacks from which the victims of earlier attacks could be shown to be immune. However early attempts at variolation were so dangerous, that it is not surprising that it never really caught on.

The reason why smallpox was the first disease effectively treated with immunization was because nature provided, in cowpox, a ready-made vaccination material which was not dangerous to human beings. To produce effective vaccines for other diseases it was necessary to discover the bacteria or virus involved, to isolate it and to reproduce it. This process enunciated in Koch's postulates could only be done with better microscopes than was available in the 18th century. It also needed the understanding that germs cause infectious disease which was not established until late in the 19th century by Pasteur and Koch. This understanding was not needed for smallpox, where it could be empirically observed, even by milkmaids, that the natural vaccine, cowpox, prevented smallpox. With the other diseases it was necessary to understand the germ theory of disease and then to artificially produce a vaccine before it was possible to immunize against those diseases. The process of immunizing against smallpox was a lot simpler than the process of immunizing against other diseases, so immunization against smallpox occurred before immunization against the other diseases.

The taboo on human dissection applied in most human societies, except India, Ancient Egypt and Europe since the Renaissance. The result was substantially erroneous beliefs concerning human anatomy and physiology. Beliefs that the heart was the centre of thought, sense perception and controlled bodily movements, while the brain cooled the heart and blood held by Aristotle resulted from the taboo on human dissection. When the taboo was not present, such as in Alexandria during the Ptolemaic era, it was discovered, that the brain dealt with sense perception and bodily movements. Further progress in anatomy and physiology was delayed until the Renaissance when some dissections of the corpses of

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executed criminals was allowed. This eventually resulted in the anatomical discoveries of Vesalius and the circulation of the blood by Harvey. Many future developments in medicine, especially in surgery, were dependent upon the new knowledge of anatomy and physiology obtained from the lifting of the taboo on human dissection.

Progress in surgery was also dependent on the discovery of anaesthesia and anti-septic and a-septic practices. There were two main consequences from the discovery of anaesthesia. The first was that surgery became far more common as patients no longer tried to avoid it. The second was that surgical operations became a lot longer with emphasis being on precision and accuracy rather than on speed. With increasing time being spent on operations more intricate and complex operations could be performed which greatly widened the range of operations available. With much longer operations and the need for anaesthetics and anaesthetists the cost of operations went up as did the status of surgeons who were now able to do so much more for their patients. Surgery became a practical solution to many medical problems.

The idea that cleanliness was important to stop infections in surgery and obstetrics was only accepted after Pasteur had established the germ theory of disease which showed that bacteria in the air caused infections. Prior to the germ theory of disease being accepted suggestions that cleanliness was important, were ignored as there seemed to be no reason why cleanliness could stop infection or lack of cleanliness could cause infection. The discovery that infection was caused by bacteria in the air, led to the anti-septic idea of killing the bacteria to stop infection and then to the a-septic idea of sterilising everything that came in contact with the patient.

The ending of the taboo on human dissection resulted in vastly improved knowledge of anatomy and physiology, this, and the discovery of anaesthesia and the realisation of the importance of a-septics, formed the basis of modern surgery. Only when these developments came together, was it possible for modern surgery, with its sophisticated and intricate operations, to become a reality. This led to new types of surgery which had never before been developed such as abdominal and brain surgery. Plastic surgery, which had been practiced crudely in the past, improved enormously and later led to cosmetic surgery. Hip replacement operations were developed after the invention of a practical artificial hip. Organ transplants began when surgical techniques were developed for joining small blood vessels and when the problem of rejection of donated organs was solved by the development of appropriate drugs. Kidney transplants developed rapidly after the invention of the kidney dialysis machine as it is a relatively simple operation and because there is a better supply of donated kidneys as human beings have two kidneys and only need one so as to allow transplants from living donors. Open heart surgery and heart transplants were developed after the invention of the heart-lung machine to keep the patient alive during surgery.

The use of anti-biotics in medicine is only possible because nature provides such organisms that inhibit the growth of bacteria and allows the production of synthetic compounds that achieve the same result. If nature did not provide these organisms, or allow such compounds, there would have been no anti-biotics used in medicine. Without anti-biotics, medicine since the 1940's would have been much less effective and hundreds of millions, who were cured of infections, would have died. The discovery and use of anti-biotics was impossible before the development of microscopes capable of observing bacteria. Only when such microscopes existed was it possible to observe that certain organisms were capable of killing or inhibiting bacteria. A number of such observations were made in the late 19th and early 20th century and eventually it was realised that penicillin, a substance taken from one of those bacteria killing organisms, could be used against infectious disease. When penicillin was proved to be effective, a systematic search was made for other anti-biotics which resulted in the discovery of a number of other anti-biotics.

## History of all Medicine

However, it was only because nature has provided the anti-biotics that we have them, and we have only had them, since we acquired the knowledge of their existence and of how to use them.

The use of statistics in medicine has been of enormous use in showing the causes of disease and in assessing the effectiveness of treatments. Yet statistics are never able to provide a perfect answer to questions of drug effectiveness and the causation of disease. They may show a co-relation between two variables, for example people living close to the sea have higher rates of cholera, than people further from the sea. This does not however mean that proximity to the sea causes cholera. Co-relation does not prove causation as the correlated variable may be caused by a third factor, such as polluted river water which is more common closer to the sea. The third factor, often called a lurking variable, may well not be considered in the data so no effort is made to compare cholera rates among people drinking polluted water close to the sea with those drinking clean water close to the sea. If the comparison was made it would show that it was the quality of drinking water rather than proximity to the sea that was the important variable concerning cholera rates. When trying to discover the cause of increasing lung cancer after World War II, air pollution and asphaltting of roads were considered likely causes as both were increasing at the time lung cancer rates were increasing. Working out, which variable to study, when trying to discover the causes of disease, can be very difficult.

A further problem concerns trying to ensure the chosen sample is representative of the population which is being studied. Pierre Louis concluded bleeding was a useful treatment, but one of the groups he studied was substantially younger than another group. The sample must also be of sufficient size or simple coincidence and high margins of error may provide misleading results. Pierre Louis' study of bleeding was criticized for having insufficient numbers in his sample.

Given the difficulties of doing good statistical studies it is not surprising that the causes of diseases and the effectiveness of treatments were never accurately assessed until recently. Modern statistical methods were only developed in the 17th, 18th and 19th centuries and arose from probability theory. It was only with the development of modern statistical methods that it has been possible to identify the causes of many diseases and to evaluate the effectiveness of treatments. Even with modern statistical methods the causes of some diseases, for example some cancers, are still difficult to pinpoint. Often different studies of the same phenomena will produce different results. In these circumstances it was impossible for people in the past to discover the effectiveness of treatments and the real causes of disease until the discovery of modern statistical analysis.

Modern diagnostic technology began with the discovery of X-rays. X-rays however could not be discovered until certain earlier discoveries had been made. X-rays were discovered through the use of a Crookes tube which required prior discoveries of an efficient air pump to create a near vacuum in the tube and the ability to send an electric current through the tube. Only when these discoveries had been made was it possible to discover X-rays. The use of X-rays was eventually improved and extended by the use of contrasting media and eventually by CT scanners after the invention of computers.

X-rays are a form of electro-magnetic energy and are useful due to their property of being able to pass through matter of low density but not matter of high density. This allows X-rays to be used to produce photographs of the interior of the human body, which is why X-rays are so useful in medicine. It is only because nature has provided such a form of electro-magnetic energy that we have X-rays available to be used for medical diagnosis. If nature had not provided electro-magnetic radiation with that property, we could not have the ability to see inside the human body for medical purposes by means of X-rays.

## History of all Medicine

Endoscopy only became practical when Hopkins and Hirschowitz discovered a practical method to make light travel around corners. It was only because such a method exists that we are able to have modern endoscopy, and modern endoscopy could not exist until the discovery of how to make light travel around corners. Endoscopy was further enhanced when Hopkins discovered that thin lenses of air gave much greater light transmission than thin lenses of glass, so as to allow much better endoscope photography. If such lenses did not provide improved light transmission, then endoscope photography might still not be practical.

Our brief examination of the history of medicine has shown how the environment relevant to medicine has affected the history of medicine. The relevant environment includes the human body, how the human body works, the diseases that attack the human body, how the materials in the environment affect the human body and how the body reacts to disease and injury. If the human body was different then the history of medicine would have been different. If, for example, there was no immune system, then a lot of the confusion concerning the effectiveness of treatments used in the past would not have existed. When patients treated with prayers, incantations, herbs, medicines, moxabustion and bleeding recovered, it looked as though the treatment had worked. If patients died all the time, as they would have if there was no immune system, it would have been clear all these treatments were failing and they would have been abandoned. If there was no immune system then modern treatments such as immunization would not work and would not be available. If the human body was different, the theories as to what went wrong with it when people got sick would have been different. Galen's humoral theory and traditional Chinese theories were based on the human body and how it behaved in sickness and in health. If the body was different then those theories would have been different.

Anaesthesia was only possible as materials in the human environment had the property of making people so unconscious that they could not feel pain. X-rays were only possible as electro-magnetic energy of a certain wave length will pass through matter of low density but not matter of high density. Modern endoscopy is only possible because light can be made to travel around corners and thin lenses of air provide excellent light transmission. The use of anti-biotics is only possible due to bacteria killing organisms existing in the human environment and the ability to create compounds that will kill bacteria. The properties of materials and matter and forms of energy in the environment determine what is possible in medicine.

When knowledge of the environment relevant to medicine changed, this resulted in new theories, such as the brain being the centre of thought and emotions rather than the heart, the circulation of the blood and the germ theory of disease. These ideas were the logical explanations of the new knowledge that human beings had acquired, just as the previous theories were the logical explanations of the knowledge humans possessed at those times. Increasing knowledge of the environment, relevant to medicine, also led to the development of new treatments such as anaesthetics and new drugs. The new theories and treatments inevitably had significant social and cultural consequences, such as greater life expectancy, reduced suffering and different attitudes concerning religious beliefs, all of which would themselves result in further social and cultural consequences.

Where taboos existed against the acquisition of new knowledge, such as the taboo on human dissection, then the acquisition of new knowledge will be delayed until the taboo is removed. This, in the case of medicine, meant erroneous ideas of human anatomy and physiology continued for as long as the taboo remained in place. Only after the taboo was lifted was it possible to make the anatomical discoveries of Versalius and for Harvey to discover the circulation of the blood.

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**2.1 The Origins and History of Medical Practice with Fundamentals of Medical Practice Management** <sup>8</sup>

LIFELONG LEARNING

Practice management is changing rapidly in response to the ever-changing landscape of healthcare and the medical practice. Practice managers need to be committed to lifelong learning and be active in our professional organizations to ensure they are up-to-date on current knowledge.

The Medical Group Management Association (MGMA), with its academic arm, the American College of Medical Practice Executives (ACMPE), is the premier practice management education and networking group for practice managers. The organization dates back to 1926 and represents more than 33,000 administrators and executives in 18,000 healthcare organizations in which 385,000 physicians practice. MGMA (2016a) has been instrumental in advancing the knowledge of practice management, and ACMPE offers a rigorous certification program in practice management that is widely recognized in the industry.

ACMPE has identified eight areas that are essential for the practice manager to understand (exhibit 1.1).

This text examines each of these domains of the practice management body of knowledge to provide a sound, fundamental base for practice managers and practice leaders. It includes a comprehensive overview that does not assume a great deal of prior education in the field of practice management. Furthermore, it seeks to provide not only specific information about the management of the medical practice but also context in the larger US healthcare system. Too often, different segments of the healthcare system see themselves as operating in isolation. This point of view must change if medical practices are to transform and if managers are to lead successful practices in the future, whether a small, free-standing practice or a large practice integrated with a major healthcare system.

Another prominent organization for the education and advancement of practice management is the American College of Healthcare Executives (ACHE). ACHE is a professional organization of more than 40,000 US and international healthcare executives who Certification

A voluntary system of standards that practitioners meet to demonstrate accomplishment or ability in their profession. Certification standards are generally set by nongovernmental agencies or associations.

|                           |                        |
|---------------------------|------------------------|
| Business operations       | Financial management   |
| Human resource management | Information management |
| Organizational governance | Patient care systems   |
| Quality management        | Risk management        |

Source: MGMA (2016b).

Exhibit 1.1

THE EIGHT DOMAINS OF THE BODY OF KNOWLEDGE FOR PRACTICE MANAGERS

Natural healthcare systems, hospitals, and other healthcare organizations. Currently with 78 chapters, ACHE offers board certification in healthcare management as a Fellow of ACHE, a highly regarded designation for healthcare management professionals (ACHE 2016).

THE AMERICAN HEALTHCARE SYSTEM

The practice of medicine drives the US healthcare system and its components, and medicine is heavily influenced by the system as well. Medical practice and the healthcare system both are built on the foundation of the physician–patient relationship. Although the percentage of total healthcare costs

## History of all Medicine

attributed to physicians and other clinical practitioners was 20 percent in 2015, the so-called clinician's pen, representing the prescribing and referral power of medical practice clinicians, indirectly accounts for most healthcare system costs.

Administrators do not prescribe medication; admit patients, or order tests and services. This fact is just one illustration of a fragmented system whose segments can act independently.

This fragmentation must be addressed if medical practices are to provide high-quality healthcare to patients at the lowest cost possible.

To begin our study of practice management, the book first offers some perspective of medical practices in terms of the overall US healthcare system. A complete history of the practice of medicine is beyond the scope of this text, but the lengthy and enduring nature of medical practice is important to recognize. The first known mention of the practice of medicine is from the Old Kingdom of Ancient Egypt, dating back to about 2600 BC.

### BEHAVIOR

How an individual acts, especially toward others.

Later, the first known code of conduct, the Code of Hammurabi, dealt with many aspects of human behavior and, most importantly for our study, established laws governing the practice of medicine. The first medical text was written about 250 years later (Nunn 2002).

Exhibit 1.2 provides a sample of some significant points in the development of the physician medical practice from ancient times to the present. The reader may wonder why such a diverse series of events is listed, ranging from the recognition of the first physician to the occurrence of natural disasters and terrorist acts. Medicine, whether directly or indirectly, influences virtually every aspect of human life. Events such as Hurricane Katrina, the 9/11 terrorist attacks, the emergence of the human immunodeficiency virus (HIV), and the Ebola virus outbreak have had major impacts on the healthcare system and physician practice. Before 9/11, medical practices thought little about emergency preparedness and management; such activities were seen as under the purview of government agencies. Until HIV was identified in 1983 as the cause of acquired immunodeficiency syndrome (AIDS), and reinforced by the Ebola crisis of 2014, medical practices spent few resources and little time thinking about deadly infectious disease and the potential for it to arrive from distant locales. A traveler can reach virtually any destination in the world within a 24-hour period, which is well within the incubation period of most infectious agents. Modern air travel has made the world of disease a single place, so practices must be mindful of patients' origins and travels.

### Exhibit 1.2

#### SELECTED MAJOR EVENTS IN THE HISTORY OF MEDICINE AND MEDICAL PRACTICE

2600 BC: Imhotep is a famous doctor and the first physician mentioned in recorded history. After his death he is worshiped as a god. (Hurry 1978)

1792–1750 BC: The Code of Hammurabi is written, establishing laws governing the practice of medicine. (Johns 2000)

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1500 BC: The Ebers Papyrus is the first known medical book. (Hinrichs'sche, Wreszinski, and Umschrift 1913)

500 BC: Alcamaeon of Croton in Italy says that a body is healthy as long as it has the right balance of hot and cold, wet and dry. If the balance is upset, the body falls ill. (Jones 1979)

460–370 BC: Hippocrates lives. He stresses careful observation and the importance of nutrition. (Jones 1868)

384–322 BC: Aristotle lives. He says the body is made up of 4 humors or liquids: phlegm, blood, yellow bile, and black bile. (Greek Medicine.net 2016)

130–200 AD: Roman doctor Galen lives. Over following centuries, his writings become very influential. (Sarton 1951)

12th and 13th centuries: Schools of medicine are founded in Europe. In the 13th century, barber-surgeons begin to work in towns. The church runs the only hospitals. (Cobban 1999; Rashdall 1895)

1543: Andreas Vesalius publishes *The Fabric of the Human Body*. (Garrison and Hast 2014)

1628: William Harvey publishes his discovery of how the blood circulates in the body. (Harvey 1993)

1796: Edward Jenner invents vaccination against smallpox. (Winkelstein 1992)

1816: Rene Laennec invents the stethoscope. (Roguin 2006)

1847: Chloroform is used as an anesthetic by James Simpson. (Ball 1996)

1865: Joseph Lister develops antiseptic surgery. (Bankston 2004)

1870: The Medical Practice Act is passed. Licensure of physicians becomes a state function. (Stevens 1971)

1876: The American Association of Medical Colleges is founded. (Coggeshall 1965)

1880: Louis Pasteur invents a cure for chicken cholera, the first vaccine. (Debré 2000)

### Exhibit 1.2

#### SELECTED MAJOR EVENTS IN THE HISTORY OF MEDICINE AND MEDICAL PRACTICE

1895: Wilhelm Conrad Röntgen X-rays are discovered. (Glasser 1933)

1910: The Abraham Flexner report on medical education is published. (Flexner 1910)

1928: Penicillin is discovered by Scottish scientist Alexander Fleming, and it is established that the drug can be used in medicine. (Ligon 2004)

1929: The first employer-sponsored health insurance is created at Baylor Teachers College as Blue Cross. (Buchmueller and Monheit 2009)

1931: The electron microscope is invented. (Palucka 2002)

1943: Willem Johan Kolff invents the first artificial kidney (dialysis) machine. (Heiney 2003)



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1951: Epidemiology studies identify cigarette smoking as a cause of lung cancer. Sir Richard Doll is the first to make this link. (Keating 2009)

1953: Jonas Salk announces he has developed a vaccine for polio. (Koprowski 1960)

1953: The structure of DNA is determined. (Dahm 2008)

1965: Medicare and Medicaid are passed into Law. (Social Security Administration 2016)

1967: The first heart transplant is performed by Christiaan Barnard. (Barnard 2011)

1971: MRI scanning is invented. (Lauterbur 1973)

1973: The HMO Act is passed. (Dorsey 1975)

1989: President George W. Bush signs the Omnibus Budget Reconciliation Act of 1989, enacting a physician payment schedule based on a resource-based relative value scale. (AMA 2017)

1996: The Health Insurance Portability and Accountability Act is passed as an amendment to the HMO Act. (Atchinson and Fox 1997)

2001: The 9/11 terrorist attacks occur. (Bernstein 2003)

2003: The human genome is sequenced. (National Human Genome Research Institute 2010)

2005: Hurricane Katrina devastates the Gulf Coast, including New Orleans. (Knabb, Rhome, and Brown 2005)

2008: The Triple Aim for healthcare delivery is proposed by the Institute for Healthcare Improvement. (Berwick, Nolan, and Whittington 2008)

### Exhibit 1.2

#### SELECTED MAJOR

#### EVENTS IN THE HISTORY OF MEDICINE AND MEDICAL PRACTICE

2008: Medicare Part D is enacted. (Hargrave et al. 2007)

2010: The Affordable Care Act is passed. (HHS 2010)

2012: High-deductible health plans become more common. (Bundorf 2012)

2014: The Ebola crisis emerges in West Africa. (CDC 2014)

2016: Zika virus becomes a serious health threat. (CDC 2016b; Wang and Barry 2016)

The evolution of medical practices has coincided with and been driven in part by the development of medical technology and the scientific revolution. Medicine was limited in scope and primitive until the middle of the nineteenth century. Theories of disease were arcane, and diagnostic tools were largely absent (Rosenberg and Vogel 1979).

Prior to 1850, medical education constituted an apprenticeship that was inconsistent and poorly preceptored, with no standard curriculum (Rothstein 1972). Procedures focused on expelling the disease with bleedings and emetics. Surgery was limited because of the lack of anesthesia, and as a result, being

## History of all Medicine

fast was better than being good. Patients often directed the physician as to the care they should receive. One might say early medical practice was the first iteration of patient-centered care (Burke 1985).

### PRACTICE MANAGEMENT RESOURCES

#### Accounting

A system for keeping score in business, using dollars.

Now, however, the amount of information available about medicine and medical practice management is virtually endless, representing many points of view; ideas; political world views; notions about funding and access; and the numerous disciplines in the broader management field, such as accounting, finance, human resources management, organization development, and logistics. With the vast expanse of knowledge available, students of healthcare and practice management are encouraged to develop lifelong learning skills.

The field is changing so rapidly that the need for continuous updating of knowledge and skills is essential.

For example, practice managers need to build a virtual library of accurate and reliable sources. The list that follows comprises the foundation of that library, which should be referred to frequently (see the appendix to this text for each resource's website):

- ◆ Centers for Medicare & Medicaid Services (CMS)
- ◆ Advisory Board
- ◆ Dartmouth Atlas
- ◆ National Committee for Quality Assurance
- ◆ Institute for Healthcare Improvement
- ◆ Institute of Medicine
- ◆ Institute for Health Policy and Innovation
- ◆ Kaiser Family Foundation
- ◆ Robert Wood Johnson Foundation
- ◆ Annenberg Foundation
- ◆ Commonwealth Fund
- ◆ Centers for Disease Control and Prevention
- ◆ Agency for Healthcare Research and Quality

## THE DIMENSIONS OF MEDICAL PRACTICE

### Governance

A system of policies and procedures designed to facilitate oversight of the management of the enterprise.

Serves as the foundation of how the practice will behave, compete, and document its actions.

Medical practices can take many forms, ranging from small sole proprietorships to large multispecialty medical practices. Recent years have seen more medical practices embedded in large healthcare organizations, which also may be solo practices or large multispecialty entities (see exhibit 1.3).

A group practice is defined as a medical practice consisting of two or more practitioners working in a common management and administrative structure. Single-specialty groups are those that focus on one aspect of medicine, such as general surgery, family practice, orthopedics, cardiology, or internal medicine. Multispecialty medical groups contain more than one medical specialty in the organization. Multispecialty practices are highly integrated, with a common governance leadership and common management structure, and they have a highly developed corporate system for managing finances and dealing with regulatory agencies. Their operation and function are much more complex than solo or small practices.

### GOAL

A specific target that an individual or a company tries to achieve.

Integrated delivery systems (IDSs) are networks of healthcare organizations under a single holding company or parent organization that contain multiple components of healthcare delivery. An IDS often includes hospitals, physicians and other clinicians, and payment organizations, often referred to as third-party payer organizations. The goal is to provide as complete a continuum of care as possible.

### Exhibit 1.3

### PRACTICE

#### STRUCTURES—SIMPLE TO COMPLEX

Solo Practice – Group Practice – Integrated System

#### TYPES OF PRACTITIONERS

Physicians have, of course, played a pivotal role in the US healthcare system since its inception. Physicians—and now, other non-physician providers such as nurse practitioners (discussed later)—care for patients by

- ◆ assessing the patient's health status,
- ◆ diagnosing the patient's condition, and
- ◆ prescribing and performing treatment.

It has been said that the most expensive instrument in the healthcare industry is the provider's pen. An amusing statement, it also carries a lot of truth because all diagnostic and surgical procedures as well as

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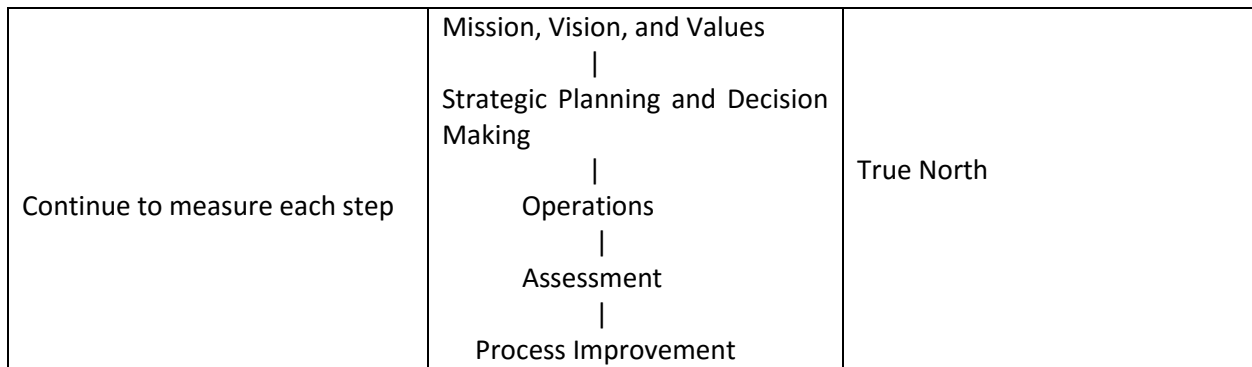
office-based and hospital-based assessments—in fact, all care in general—is either performed or ordered by a provider.

Furthermore, the medical practice is unlike any other organization in the medical field because the nature and identity of the practice is closely linked to the individual providers in the practice. The providers are the primary producers and the primary governance body, and they are held accountable for the performance of the practice in a personal way. Their income is directly tied to the practice’s performance, more closely than for other medical field workers. Exhibit 1.4 shows the fundamental components of a medical practice.

Often, the challenge in practice management is to serve the interests of the providers while maintaining a focus on the patient, with patient focus being the True North of the practice.

Exhibit 1.4

### THE PRACTICE MANAGEMENT MODEL



“True North” is a concept taken from Lean management that embodies the ideal state of a practice, its providers’ vision of perfection, and the type and quality of practice it should strive to achieve every day. True North should transcend the individual and his or her personal goals or actions. Achieving personal objectives is not mutually exclusive but coincidental with True North.

Exhibit 1.5 shows the number of physicians practicing in the United States. This number can be further broken down into the number of practices by size and multispecialty versus single specialty, as shown in exhibit 1.6. Note the increasing size of practices over time, a trend that is expected to continue.

Exhibit 1.5

### TOTAL ACTIVE PHYSICIANS IN THE UNITED STATES, APRIL 2017

| Primary Care Physicians | Specialist Physicians | Total   |
|-------------------------|-----------------------|---------|
| 443,962                 | 479,346               | 923,308 |

Source: Kaiser Family Foundation (2017).

A primary care physician (PCP) is often the first contact for a patient with an undiagnosed health concern. In addition, PCPs frequently provide continuing care for many medical conditions that are not limited by cause, organ system, or diagnosis. This purview of practice differs from a medical specialist, who has completed advanced education and clinical training in a specific area of medicine and typically focuses on the diagnosis and treatment of one organ system of the body and its diseases.

## History of all Medicine

Nurse practitioners and physician assistants are a growing segment of medical service provider, as seen in exhibit 1.7. A physician assistant (PA) is a nationally certified and state-licensed medical professional. PAs practice medicine with physicians and other providers and are allowed to prescribe medication in all 50 states, the District of Columbia, the majority of US territories, and the uniformed services. A nurse practitioner (NP) is a registered nurse qualified, through advanced training, to assume some of the duties and responsibilities of a physician.

PAs and NPs are sometimes referred to as advanced practice professionals or midlevel providers; however, the term mid-level provider is considered obsolete.

State laws vary as to the specific duties PAs and NPs are allowed to perform, so the practice manager must be fully informed on these regulations.

Advanced practice professionals are becoming increasingly important to medical practices because they can replace physicians in care delivery for many services, reserving the physician for more complex care requiring their expertise. For example, PAs and NPs often work as part of a care team with physicians. They may examine the patient first; collect facts and findings; and then, in collaboration with the physician, make a diagnosis

### Exhibit 1.6

#### DISTRIBUTION OF SINGLE- AND MULTISPECIALTY PHYSICIANS BY PRACTICE SIZE, 2014

| Number of Physicians in Practice | Single-Specialty Practice | Multispecialty Practice |
|----------------------------------|---------------------------|-------------------------|
| 1                                | 1.5%                      | 0.3%                    |
| 2 to 4                           | 42.0%                     | 13.8%                   |
| 5 to 10                          | 31.7%                     | 20.8%                   |
| 11 to 24                         | 13.7%                     | 17.2%                   |
| 25 to 49                         | 6.7%                      | 11.1%                   |
| 50+                              | 4.5%                      | 36.9%                   |
| Total                            | 100%                      | 100%                    |
| N                                | 1,452                     | 836                     |

Source: Kane (2014).

and develop a treatment plan. The physician supervises the process and conducts his or her own examination of the patients to ensure that the proper care is delivered. The physician often checks critical elements of the exam and establishes a relationship with the patient.

The PA or NP typically follows up with the patient once the treatment plan is established.

#### PRACTICE OWNERSHIP

In addition to the area of medicine practiced, physician practices can be classified by type of ownership. Exhibit 1.8 shows the distribution of medical practices by ownership.

Note the trend—also expected to continue—toward practice ownership by hospitals and healthcare systems.

#### LICENSING PHYSICIANS

All 50 states require physicians and medical providers to hold a license. The licensing of medical providers is performed under the auspices of a medical examining board. These boards have the right to grant a

## History of all Medicine

license to practice medicine and the responsibility to investigate and discipline providers in cases of inappropriate conduct.

### LICENSURE

A mandatory system of state-imposed standards that practitioners must meet to practice a given profession.

These licenses provide the practitioner a general right and privilege to practice medicine, but they usually do not grant specific privileges to practice a particular medical specialty. This activity is beyond the scope of licensure and typically is conducted by the hospital or hospitals at which the physician or advanced practice provider delivers care.

The licensing process includes a thorough, painstaking review and verification of the training and experience the physician or provider has received. Criminal background checks and reviews of the National Practitioner Data Bank (NPDB) are conducted in this process.

The NPDB contains documentation of any disciplinary acts leveled against the physician, malpractice settlements, and other practice restrictions the physician may have received.

Reciprocity, or the reciprocal granting of a medical license by states based on licensing of the provider in another state, has become a thing of the past because of concerns

### Exhibit 1.7

#### NURSE PRACTITIONERS AND PHYSICIAN ASSISTANTS

| Provider Type        | Total   | Percent Primary Care | Practicing Primary Care |
|----------------------|---------|----------------------|-------------------------|
| Nurse practitioners  | 106,073 | 52.0%                | 55,625                  |
| Physician assistants | 70,383  | 43.4%                | 30,402                  |

Source: AHRQ (2011).

### Exhibit 1.8

#### DISTRIBUTION OF PHYSICIANS BY PRACTICE OWNERSHIP

|   | 2012  | 2014  |
|---|-------|-------|
| At least some hospital ownership        | 23.4% | 25.6% |
| Wholly owned by hospital                | 14.7% | 15.6% |
| Jointly owned, physicians and hospital  | 6.0%  | 7.3%  |
| Unknown whether wholly or jointly owned | 2.6%  | 2.7%  |
| Direct hospital employee                | 5.6%  | 7.2%  |
| Not-for-profit                          | 6.5%  | 6.4%  |
| Other                                   | 4.4%  | 4.0%  |
| Total                                   | 100%  | 100%  |
| N                                       | 3,466 | 3,500 |

Source: Kane (2014).

## History of all Medicine

The origin and history of medical practice that practitioners with a poor record or history of committing fraud can simply cross state lines and begin anew.

Licensure should not be confused with certification. Many medical specialties offer special recognition through board certification, which indicates the practitioner has acquired additional, specific training and testing in an area of medicine (see exhibit 1.9). Contrary to licensure, the absence of board certification by itself does not prohibit a physician from practicing in a medical specialty in most states.

### MEDICAL TRAINING

According to the American Association of Medical Colleges (AAMC 2016), 145 accredited US and 17 accredited Canadian medical schools; nearly 400 major teaching hospitals and health systems, including 51 US Department of Veterans Affairs medical centers; and more than 80 academic societies offer medical education. In addition, the American Association of Colleges of Osteopathic Medicine (AACOM 2016) reports that 31 colleges of osteopathic medicine are in operation. Although both are fully licensed physicians in the United States and very similar in many respects, doctors of osteopathy (DOs), or osteopaths, differ from medical doctors (MDs) in the educational path they take for their medical education. DOs attend osteopathic medical schools, and MDs attend allopathic medical schools. Each type of school teaches the diagnosis and treatment of disease, but the disciplines vary somewhat in philosophy, with the osteopathic approach focusing more on a holistic view of human disease and treatment. Also worth noting is that DOs often complete their postgraduate training in allopathic residencies and fellowships, which further reduces the distinction between the two types of physician.

Among them, these organizations employ more than 128,000 faculty members, educate 83,000 medical students, and host 110,000 resident physicians (AAMC 2016).

### What Is Changing?

#### The Conundrum

Three fundamental aspects of practice management and care delivery are important to focus on in any discussion of medical practice: high quality, high access, and low cost.

Economists may argue that a practice can succeed as a business with any two of those three components, for instance, high quality and a high level of access, where cost is not low. Indeed, economic theory holds that a business cannot achieve all three simultaneously. However, medical practices must achieve each to be an effective and high-quality practice.

Consider that in some countries, to limit healthcare costs, a concern around the world, their healthcare systems limit access. For example, delays are seen with hip replacements, knee replacements, and even some essential surgeries. In the United States, these procedures can be undertaken almost immediately. But healthcare costs for care and treatment

### Exhibit 1.9

#### PARTIAL LIST OF MEDICAL SPECIALTIES

|                          |                    |                             |
|--------------------------|--------------------|-----------------------------|
| Allergies and immunology | Anesthesiology     | Cardiology                  |
| Dermatology              | Emergency medicine | Genetics                    |
| Gerontology              | Gynecology         | Hematology                  |
| Internal medicine        | Neurology          | Obstetrics                  |
| Oncology                 | Otolaryngology     | Palliative care and hospice |

## History of all Medicine

|                       |                                       |                     |
|-----------------------|---------------------------------------|---------------------|
| Pathology             | Pediatrics and related subspecialties | Preventive medicine |
| Primary care practice | Psychiatrist                          | Radiation oncology  |
| Radiology             | Surgery and related subspecialties    | Urology             |

are much higher than in other countries. Thus, one job of the practice manager and leader is to maximize or optimize the relationship between cost, access, and quality (see exhibit 1.10).

### SOCIAL CHANGE

As US society has changed, so has the practice of medicine. In social terms, the country has moved from a time when information about health and our healthcare was the sole purview of the medical professional to a time when individuals have access to an enormous amount of information. The Internet has had a profound impact on healthcare. Patients are now able to read about virtually any condition, diagnosis, or treatment, and in many cases, they make judgments about what option is in their best interest.

Patients also have demonstrated new, or renewed, interest in alternative forms of healthcare. A variety of terms are associated with alternative medicine, including complementary medicine and integrative medicine. Complementary and alternative medicine (CAM) modalities include acupuncture, energy therapies, magnetic field therapies, therapeutic touch, Reiki, Ayurvedic medicine, herbal medicine, and Chinese medicine, to name a few.

The effectiveness of these therapies has been demonstrated to varying degrees, but Americans spent more than \$33.9 billion in 2007 on CAM products and services, according to a National Institutes of Health survey conducted by the National Center for

Exhibit 1.10

### THE PRACTICE CONUNDRUM

#### COST – QUALITY – ACCESS

Complementary and Integrative Health (2009). These findings indicate that patients are seeking solutions that suit their healthcare needs better than traditional medicine does.

What Are Some of Today's Challenges?

To develop an appreciation for some of the important changes and challenges facing medical practice, this section touches on a few important issues, including the following:

- ◆ The cost of care
- ◆ The Patient Protection and Affordable Care Act of 2010 (ACA)
- ◆ Health policy issues, such as changes to Medicare and Medicaid
- ◆ Changing disease burden and rise of chronic disease
- ◆ Lack of a coordinated system of care
- ◆ Rising consumerism and patient-centered care



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- ◆ Patient safety and quality concerns
- ◆ Demographic changes in the population
- ◆ Rapidly changing technologies and treatments
- ◆ Digital transformation
- ◆ Nontraditional providers
- ◆ Workforce issues
- ◆ Uninsured and underinsured populations
- ◆ Financial constraints of practices
- ◆ Changing forms of payment and reimbursement, driven in part by the

Medicare Access and CHIP Reauthorization Act of 2015 (MACRA), which replaced the sustainable growth rate formula for physician reimbursement for services and includes

—— the Merit-Based Incentive Payment System and

—— advanced alternative payment models

- ◆ The political landscape, including the possible replacement or repeal of the ACA

### THE PERFECT STORM

The “perfect storm” metaphor describes the coalescing of multiple events to create dramatic and unique consequences. Similar to the scenario depicted in a novel with this title by Sebastian Junger (2009), in which he describes a catastrophic storm off the coast of New Bedford, Massachusetts, some US healthcare observers would describe what is happening today in healthcare as a perfect storm.

No factor has affected the sense of urgency to reform the US system of healthcare more than the cost. According to CMS (2015), US healthcare spending increased 5.3 percent to \$3.0 trillion in 2014, or \$9,523 per person. This growth was primarily the result of the coverage expansions under the ACA, particularly for Medicaid and private health insurance.

Of course, the trend of rapidly increasing healthcare costs was seen long before the passage and enactment of the ACA: The share of the US economy devoted to healthcare spending was 17.5 percent, up from 17.3 percent in 2013 and almost 2.5 times that of other Western countries.

Exhibit 1.11

### THE FORCES OF CHANGE ACTING ON MEDICAL PRACTICES: “THE PERFECT STORM”

|  |                              |
|--|------------------------------|
|  | Patient<br>Safety<br>Quality |
|--|------------------------------|

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|                                       |  |
|---------------------------------------|--|
| The Practice and the Practice Manager | Population<br>Technology<br>Digital<br>Care<br>Issues<br>Workforce<br>Financials<br>Consumers<br>Policy<br>Issues<br>ACA<br>The Cost of Care |
|---------------------------------------|--|

The Institute of Medicine, a prestigious federal research and policy organization established in 1970 as part of the National Academy of Sciences, estimates that roughly a third of US healthcare dollars is wasted, amounting to between \$700 and \$800 billion. This enormous amount of waste is a result of unnecessary services, insufficient care that leads to readmissions and other repeat care, excess administrative costs, and increasing prices (IOM 2001). As one might expect, waste and the resulting excess expenditure in the US healthcare system is one area of tremendous criticism from many observers.

According to the Organisation for Economic Co-operation and Development (OECD 2015), an international economic group composed of 34 member nations based in Paris, the important factors that differentiate the US healthcare system from that of other countries are as follows:

- ◆ The United States has fewer physicians per capita than many other OECD countries have, at 2.4 practicing physicians per 1,000 people in 2010, below the OECD average of 3.1 practicing physicians per 1,000 people.
- ◆ The number of hospital beds in the United States was 2.6 per 1,000 people in 2009, whereas the OECD average was 3.4 beds.
- ◆ In the United States, life expectancy at birth increased by nearly nine years between 1960 and 2010, while it rose by more than 11 years on average in other OECD countries and by more than 15 years in Japan. In 2010, the average American lived to be 78.7 years—more than a full year below the average for other OECD countries. Cultural factors, lifestyle issues, and health habits play a role in this difference.

### THE AFFORDABLE CARE ACT AND OTHER LEGISLATION

Since the passage of Medicare and Medicaid legislation in 1965, no other law has had a greater impact on the healthcare delivery system than the ACA. We discuss the ACA in detail in later chapters; here, we consider its impact on the healthcare system as well as the challenges and opportunities it brings.

The timeline shown in exhibit 1.2 includes a number of significant changes to healthcare regulations. As healthcare moved from a trade to a profession, its regulation increased. Every state now licenses the practice of medicine and enforces educational and training standards toward that end. Medical practices must comply with all regulations related to corporations and businesses in the state in which they operate and are subject to employment regulations by state and federal government.

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Major pieces of legislation have been instrumental in shaping the direction of the practice of medicine in some important ways; they include the following:

- ◆ Corporate Practices Act
- ◆ Medicare and Medicaid legislation
- ◆ Balanced Budget Act of 1997, which created the resource-based relative valuescale
- ◆ ACA
- ◆ MACRA

## THE CHANGING DISEASE BURDEN AND THE RISE OF CHRONIC DISEASE

### DISEASE BURDEN

Another significant issue facing the modern healthcare practice is how the burden of disease, or the impact of a health problem as measured by financial cost, mortality, morbidity, or other indicators, has changed and whether providers can keep up with these changes. In 1900, gastrointestinal infections, tuberculosis, pneumonia, and influenza were significant potential detriments to Americans' health and longevity. By 2010, however, cancer and heart disease became the major causes of mortality in the United States (Jones, Podolsky, and Greene 2012). Add to these conditions emerging diseases such as fibromyalgia and infections from the Zika virus—some of which may not have become known until recently—and the enormity of disease states medical practices must be equipped to treat is daunting.

The number of services provided in practice offices is substantial. Most individuals receive most of their care in a medical practice; the following statistics are just a sampling of the scale (NCHS 2015a):

- ◆ Number of drugs ordered or provided—2.6 billion
- ◆ Percentage of visits involving drug therapy—75.1 percent
- ◆ Most frequently prescribed therapeutic classes
  - Analgesics
  - Antihyperlipidemic agents
  - Antidepressants
- ◆ Percentage of persons using at least one prescription drug in the past 30 days—48.7 percent (2009–2012)
- ◆ Percentage of persons using three or more prescription drugs in the past 30 days—21.8 percent (2009–2012)

- ◆ Percentage of persons using five or more prescription drugs in the past 30 days—10.7 percent (2009–2012)

## CHRONIC DISEASE

Almost half of US residents have at least one chronic condition, and more than 85 percent of those older than 65 have a chronic disease. As defined by the Centers for Disease Control and Prevention (CDC 2016a), chronic diseases are those that persist for three months or more. They generally cannot be prevented by vaccines or cured by medication, and they do not disappear spontaneously. Chronic disease is a major driver of cost because approximately 80 percent of healthcare resources expended are used by people with chronic conditions.

Importantly, most of the treatment of these diseases occurs in the medical office setting.

According to the CDC (2016a), chronic diseases are responsible for seven out of ten deaths in the United States. Common chronic diseases include the following:

- ◆ Diabetes
- ◆ Heart disease
- ◆ Arthritis
- ◆ Kidney disease
- ◆ HIV/AIDS
- ◆ Lupus
- ◆ Multiple sclerosis

Because chronic disease cannot be cured, prevention is the key to reversing the cost, morbidity, and mortality trends currently seen in the healthcare system. Prevention is viewed as taking place in one of three levels:

1. Primary prevention seeks to avoid the onset of a disease using risk-reduction strategies such as altering behaviors or eliminating exposures that can lead to disease, or by enhancing resistance to the effects of exposure to a disease agent.

An example of primary prevention is vaccination against flu.

2. Secondary prevention includes procedures that detect and treat so-called preclinical health status changes and controlling disease progression. An example of secondary prevention is mammography to detect early breast cancer.

3. Tertiary prevention reduces the impact of disease on the patient's functioning, longevity, and quality of life. An example of tertiary prevention is cardiac rehabilitation following a heart attack.

A Large and Growing Problem: The Number of People with Chronic

## CONDITIONS

Boyle and colleagues (2001) projected a 165 percent increase in diabetes by 2050 to a prevalence of 7.2 percent of the population, affecting 29 million US residents. More recent evidence suggests those figures might be underestimations (CDC 2012). Unless that incidence curve is changed, US society will continue to see the devastating complications of this disease, including neuropathy (nerve damage), blindness, kidney failure, and heart disease.

Type 2 diabetes and many other chronic diseases are classified as “lifestyle diseases” because they are preventable and closely related to diet, exercise, and other lifestyle behaviors (Al-Maskari 2010).

In addition to causes such as obesity, observers expect to see a steady increase in the number of people with chronic conditions, in part because the US population is aging, and older people tend to have more chronic disease than younger people have.

Health-conscious behavior, including a focus on eating natural and chemical-free foods, has become a more popular way to combat chronic disease. Medicine has come a long way from the time of Hippocrates, but we are wise to remember what he said: “Let medicine be thy food and let food be thy medicine” (Lloyd 1950). That old wisdom must be reinserted into medical practice, at least to some degree.

## LACK OF A COORDINATED SYSTEM OF CARE

The US healthcare system currently does not pay adequate attention to the continuum of health services and the continuum of care. As human beings, we have healthcare concerns starting before we are born and present or emerging all the way until the end of our lives.

An effective system of care needs to reflect all the stages of one’s life.

In particular, end-of-life care is an issue that lacks a coordinated model in the United States. Many observers consider that the US healthcare delivery system does not deal with end-of-life care well. For example, a significant amount of money is spent at the end of life for care that, in many cases, is at best futile and at worst harmful to the patient and his or her family.

A coordinated system of care also should be concerned with the determinants of health. Exhibit 1.12 shows some major factors that determine health status. Healthcare is a component, but many others are present. The increased focus on the determinants of health points to the need for medical practices to be aware of and attend to the other

Practices can do more in this area than they are currently; we discuss those ideas in later chapters.

## RISING CONSUMERISM

An area of medical practice and healthcare in general that also has received regular attention recently is the experience of the patient and his or her family. In considering this issue, one must first distinguish between two primary modes of practice as they relate to patient care.

PROVIDER-DIRECTED CARE

The first is provider-directed patient care. In this model, which has been practiced for decades in the United States, the provider makes the vast majority of decisions and determines the type and extent of care the patient receives.

One concern related to provider-directed care is that the patient may have little understanding about the treatment being received and, therefore, be less committed to complying with instructions. For provider-directed healthcare to result in satisfactory outcomes, a patient must have both the desire and the ability to comply with treatment recommendations; thus, his or her individual circumstances are very much a part of the treatment equation.

Exhibit 1.12

DETERMINANTS OF HEALTH

|                    |   |
|--------------------|---|
| Societal Issues    | <ul style="list-style-type: none"> <li>• Crime</li> <li>• Housing</li> <li>• Family relationships</li> <li>• Culture</li> <li>• Behavior</li> </ul>   |
| Health Policy      | <ul style="list-style-type: none"> <li>• Access to healthcare</li> <li>• Affordable Care Act</li> <li>• Environmental protection</li> <li>• Funding for services</li> <li>• Funding for research</li> </ul> |
| Biological Factors | <ul style="list-style-type: none"> <li>• Genetics</li> <li>• Biology of disease</li> <li>• Sex</li> <li>• Age</li> </ul>  |

PATIENT-CENTERED CARE

The second model is patient-centric healthcare. In this model, the patient and his or her family play a central role in conjunction with the provider (Jones 2014). The provider offers multiple options to the patient, all of which are medically acceptable, and the patient assumes greater decision-making responsibility regarding the approach to treatment.

Patient-centered care can be seen in decisions related to treating prostate cancer.

Prostate cancer is often a slow-growing tumor. In fact, more than 80 percent of men older than age 80 have prostate cancer, but the disease has limited medical consequences in many of these cases. Due to the slow-advancing nature of prostate cancer, two viable approaches are considered for its treatment. One approach, known as watchful waiting, involves careful monitoring of the patient’s condition whereby aggressive intervention is not undertaken until definitive signs indicate the cancer is growing. The second option is aggressive therapy.

This approach may involve surgery, chemotherapy, or other forms of treatment.

The question is, which to choose? According to a study published in the New England

Journal of Medicine (Bill-Axelsson et al. 2014), the benefits of aggressive therapy were found to be highly dependent on the age of the patient and the type of prostate cancer.

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This finding gives enhanced credence to the notion of watchful waiting, which may also reduce unnecessary surgery, side effects, and cost.

One major initiative in population health management related to patient-centric care that involves the medical practice is the patient-centered medical home (PCMH).

The PCMH provides a starting place for the patient to receive all his or her nonemergency medical care. The model is characterized by 24/7 access to tightly coordinated care by a team of providers. Primary care is offered at the PCMH location, and other medical services are referred to specialists as appropriate (NCQA 2014).

Today, physicians are becoming increasingly patient centered. In addition to bringing the patient to the decision-making table, they are accommodating him or her in other ways, such as adopting alternate forms of communication, such as e-mail (Dalal et al. 2016).

### PATIENT SAFETY AND QUALITY CONCERNS

In terms of patient safety and quality, the medical practice must ensure that it provides healthcare that meets the following standards (IOM 2001; AHRQ 2016):

#### VALUES

The beliefs and guidelines an individual uses to make choices when confronted with a situation.

- ◆ Safe—Protecting patients from being harmed by the care that is intended to help them. This goal includes the prevention of nosocomial infections, which are infections acquired in the hospital or healthcare setting; wrong-site surgery; medication errors; falls; and other harmful events.
- ◆ Effective—Providing services on the basis of scientific knowledge to all who can benefit and refraining from providing services to those not likely to benefit (i.e., avoiding underuse and misuse, respectively).
- ◆ Patient centered—Providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions.
- ◆ Timely—Reducing wait times for and eliminating harmful delays in care.
- ◆ Efficient—Avoiding waste, including waste of equipment, supplies, ideas, and energy.
- ◆ Equitable—Providing care that does not vary in quality because of personal patient characteristics such as race, gender, ethnicity, geographic location, and socioeconomic status.

### DEMOGRAPHIC CHANGES

#### THE GRAYING OF AMERICA

The baby boom generation is retiring at the rate of about 10,000 people per day. In fact, the most rapidly growing segment of the US population is people older than age 85. US residents are living much longer than in the past, and as people age, they tend to need more healthcare. Although healthcare is a major contributor to longevity, it is not the only important contributor; other factors may have an even more

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significant impact on length of life (Nelson 2016). Only in the past 100 years has longevity been linked to healthcare.

Before that time, life expectancy was largely determined by uncontrollable risk, such as infections, accidents, childbirth, starvation, and other similar events. For example, George Washington died from acute laryngitis, a condition that is easily treated today with an antibiotic (Knox 1933).

The graying of America will continue to be a significant issue for medical practices, as from age 65, on average, men and women will live almost 20 additional years (NCHS 2015b):

- ◆ Both sexes at 65 years—19.3 years of average additional life expectancy
- ◆ Men at 65 years—17.9 years of average additional life expectancy
- ◆ Women at 65 years—20.5 years of average additional life expectancy

### CHANGES IN THE US POPULATION

The increase in immigration to the United States and the diversity of the population are major new considerations for medical practices. US providers encounter more languages, customs, and beliefs than in the past, making service to patients an increasing challenge.

Mastering the nuances of diversity is essential for a modern practice to be successful.

### RAPIDLY CHANGING TECHNOLOGIES AND RELATED TREATMENTS

The healthcare industry has seen a dramatic shift in the types and complexity of medical technology and the available treatments for patients. This unrelenting trend has led to commensurate complexity and increased cost, as well as the need for greater specialization in the delivery of services.

### DIGITAL TRANSFORMATION AND NONTRADITIONAL PROVIDERS

#### AMBULATORY CARE

Healthcare services provided to patients on an outpatient basis, rather than by admission to a hospital or another healthcare facility.

Not only has the science and technology of treatment changed, but the way healthcare is delivered is rapidly changing as well. A major transformational force in the medical practice has been the rise of digital media tools and the nontraditional provider who has been enabled by digital innovations.

Transformation often does not occur from within the industry being transformed, and healthcare is no exception. In 2015, more than 165,000 healthcare apps were available for smartphones and tablet computers, many of them targeted to the ambulatory care environment and most developed outside the healthcare industry (Terry 2015).

The medical practice must compete with entrants from the information technology industry, the retail pharmaceutical industry, the insurance industry, medical device companies, and Internet-based providers from around the world. The emergence of web-based providers has created a whole new mobile health industry known as mHealth.

The digital transformation of healthcare is not limited to the alternative delivery modes; it also has revolutionized the availability of information. One may consider this development to have a democratizing



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effect on healthcare, as information about virtually any condition, treatment, or procedure is available on the Internet. Like most innovations, it can carry both positive and negative consequences. Although a tremendous amount of information is available, this information is often of limited value unless it can be properly interpreted by a professional. A patient may be aware of information, but he or she may not understand it and certainly will not be able to apply it to the situation at hand.

Another major issue regarding Internet-based information is its accuracy. Physicians are often concerned that patients access information that is either misunderstood or, in some cases, blatantly inaccurate, which can cause difficulties in the physician–patient

The patient may be skeptical of information provided by the physician because it conflicts with inaccurate information the patient obtained from another source and believes to be true. One solution to this problem is to provide patients with high-quality sources for Internet-based information about their condition and encourage them to obtain more detailed information. Therefore, the Internet can be an educational resource for the physician practice when proactively embraced and used properly.

## WORKFORCE ISSUES

For the first time in US history, four generations of employees are in the workforce, and that workforce is becoming increasingly diverse in many other areas as well. These factors present unprecedented challenges, as each generation and ethnic group brings its own temperament; belief system; and preferences for structure, authority, and workplace interaction (Knight 2014).

One issue that arises from intergenerational and ethnic diversity is that people tend to focus on differences instead of looking for similarities to forge collaborations and embrace new ideas. This is a key consideration, as the process of collaboration allows people to produce the best outcome possible.

How do we get multiple generations to work effectively in a collaborative fashion?

Everyone has much to contribute and share, and practice managers must devise ways for the organizations to tap the power of diversity. One means to do so is to focus on the shared objective in light of the value each generation and group brings to the work environment.

By making the most of our diverse workforce, practice managers and leaders can combine new concepts and innovations to solve problems together.

## FINANCIAL CONSTRAINTS

By definition, constraints limit the scope, the time, or the quality of the product or service being provided. As resources are limited, decisions must be made in an effort to optimize the constraint relationship and thereby deliver optimum outcomes. Of course, financial resources are no different. Financial constraints limit the freedom to act and provide support for people and projects in the organization (Travis et al. 2004).

## STAKEHOLDER

Individual or group that has a vested interest in the practice.

In a later chapter, we delve into the issues related to fighting financial constraints in more detail. Here, we consider the unique nature of healthcare financing as a source of concern for the practice manager. Although practices set their own fees, in most cases healthcare is paid for by so-called third-party payers,

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such as Medicare. Medicare establishes reimbursement limits for services, effectively setting the fees for the practice. Similarly, in the case of nongovernmental payers, such as insurance companies, fees may be negotiated, but negotiation is often limited by the size and market power of the practice. Small practices may be dealt with on a take-it-or-leave-it basis. Most enterprises have their actual payment rate or price established by external stakeholders; these represent a unique and challenging aspect of medical practice management.

As in a society, practice managers and leaders must balance the ideal outcome with what is possible given that all resources are limited to some extent. Doing so requires a combination of personal responsibility and practice accountability.

### LEADERSHIP CHALLENGES

The list of challenges discussed to this point is significant. To address them, medical practice leaders and managers must be adept at guiding change in their practice.

### THE REIMBURSEMENT PARADIGM SHIFT

#### PARADIGM SHIFT

A change in the way a practice views its business.

The paradigm of medical practice is currently experiencing a seismic shift. Most businesses and industries undergo transitions of their business and operational models over time as the environment of the industry changes. However, the current paradigm shift means medical practices will be paid differently than in the past, placing a lot of pressure on how practices adapt to other changes occurring in the healthcare system, such as the way medical care is delivered.

#### What Happens to Organizations When a Paradigm Shift Occurs in an Industry?

A paradigm is the way stakeholders think an industry should behave—the model they hold in their mind. This model has a strong hold, like a set of strong beliefs; thus, changing a paradigm is difficult.

A paradigm shift is a major change in the way the world thinks about something.

One example of a paradigm shift occurred in the photography industry when cameras became digital. Kodak, a company with a history spanning more than a hundred years, was fixated on film and slides, and the cameras that used these photographic modes. As digital photography became widely adopted, Kodak refused to act on the paradigm shift and continued to focus on film and cameras and more film. Essentially, Kodak's leaders forgot that the business they were in was not about photography but about people. And people—consumers—had become less interested in film cameras; they were more interested in recording their lives and preserving memories. The modality mattered less to them than the activity. The irony is that Kodak invented digital photography but chose not to pursue the technology for the commercial market (Lucas and Goh 2009). Steve Jobs of Apple Computer saw the potential of making the digital camera part of the popular iPhone, providing an effortless way to take pictures that met the needs of most photography consumers.

### TELEMEDICINE

Involves the use of electronic communication and information technologies to provide or support clinical care at a distance.

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This is an example of the second curve. This concept was introduced by healthcare futurist Ian Morrison in 1996. He posits that service and product innovation go through a series of curves. Each curve represents a product or service that matures over time and is then replaced by either a new or improved service or product. Entities that operate in an industry undergoing a paradigm shift must move past the first curve or be doomed to failure. In healthcare, the second curve is represented by telemedicine, web-based medical services, on-demand medical services, and new information technologies used to analyze and understand patient populations and their needs. Those practices that fail to enter the second curve will become obsolete as well. An important aspect of paradigm shifts is that they cause participants' knowledge base to shrink; every player starts over to build a new model of care.

The transition point from the first curve to the second curve is called the strain.

## PAY FOR PERFORMANCE

(P4P)

Mechanism whereby providers are reimbursed on the basis of their level of success in meeting specific performance measures.

Here, the demand for and provision of healthcare shift from being experienced predominantly the old way to predominantly the new way, for example, from office visits to virtual visits. The strain is a difficult point in a practice's operational life, and many businesses fail during this period. The organization must function in both paradigms simultaneously, aiming to move safely from the first curve to the second curve. Because the US healthcare system is changing incrementally from volume-based reimbursement (the old paradigm) to value-based reimbursement or pay for performance (the new paradigm), the second curve challenge for medical practices is that they must continue to operate in a volume-based system while slowly transitioning to the value paradigm. At the time of this writing, the majority of revenue for medical practices remains volume based (Center for Healthcare Quality and Payment Reform 2013).

## REVENUE

The amounts received by or due to a practice for goods or services it provides to customers.

Receipts are cash revenues; revenues may also be represented by accounts receivable.

What Is Value?

Value is a function of cost and quality, as demonstrated by the following equation:

$$\text{Value} = f(\text{Cost/Quality})$$

In practical terms, value is what we are willing to pay for: what we see as a fair exchange of our resources (money) for something we receive (healthcare). Cost comprises all the economic and noneconomic input needed to receive the service. It includes money, of course, but also such factors as waiting time, access issues, and perception of caring, and many others that may be particular to the individual expending the cost.

Quality is a measure of how good the service is. In healthcare, it can be determined by many factors. Some questions that may help ascertain quality include the following:

◆ Did I get well?

◆ Was the service timely?

### DETERMINANTS OF HEALTH

Another important issue in practice management, and healthcare administration in general, is understanding the determinants of health. (Review the select factors listed in exhibit 1.12 that go into determining health.) Many determinants are outside of individuals' control, such as in what generation or era one is born and one's biological sex, race, and other genetic and biological factors. Others, including individual behaviors; family and community networks; living and working conditions; and broad social, economic, cultural, health, and environmental conditions, are controllable to greater or lesser degrees. All these determinants can have a tremendous impact on overall health.

Every practice must consider its role in mitigating these issues, which go beyond what are traditionally considered to be "healthcare issues." Practices should engage patients in improving self-care and self-management, and they must be leaders and advocates for change in the lifestyle behaviors that have led to increases in the disease burden.

Furthermore, public policy plays a major role in health determinants, such as equity of care, and healthcare professionals should advocate for improvements to health policy that influences these issues.

### CHANGES IN HEALTH COVERAGE

Since health insurance became commonplace after World War II, numerous changes have occurred in how healthcare is paid for. Originally, health insurance was primary indemnity coverage. This coverage provided payment to physicians or repaid the patient for the out-of-pocket costs incurred by the patient in seeking medical treatment as set forth in the policy.

### BAD DEBT

Amount owed to a practice that will not be paid.

Managed care became common in the 1980s and has gone through a number of transitions over the years. A relatively recent invention in health insurance, the consumer directed health plan (CDHP), is having a profound impact on the medical environment.

CDHPs provide coverage for medical services, but only after a substantial out-of-pocket deductible has been met by the patient. This requirement has led some patients to delay care or fail to pay the provider for care received because they do not have sufficient funds to cover the deductible. The latter results in the provider or medical practice encountering increasing amounts of bad debt.

Healthcare finance is covered in detail in a later chapter.

### CHANGES IN ORGANIZATIONAL STRUCTURE

In modern times, the predominant form of medical practice has been solo practice or small practice groups and partnerships. However, as the US healthcare system has evolved in response to value-based reimbursement and other environmental factors, consolidation of medical practices is occurring. Much more about this topic is covered throughout the remainder of the book.

## ENVIRONMENTAL FACTORS

Forces that influence the business but are external to the business itself, such as public policy, regulations, and economic conditions.

## THE COMPLEXITY OF THE HEALTHCARE ENVIRONMENT

The healthcare environment has become highly complex and will only continue to increase in complexity. Numerous new technologies and services as well as increasing volumes of information lead to new management challenges. For example, as discussed in depth in chapters 6 and 7, the move from using the International Classification of Diseases, Ninth Edition, Clinical Modification (ICD-9-CM) to ICD 10 for documenting diagnostic codes for reimbursement increased the number of codes from approximately 14,000 to more than 69,000. In addition, an entirely different set of codes, Current Procedural Terminology codes, recently increased to more than 71,000 codes from the previous set of 3,824 codes (CDC 2015).

## SCIENTIFIC AND TECHNOLOGICAL CHANGE

The technological achievements in healthcare have been nothing short of remarkable. Consider that just a few years ago major surgery was a common treatment option for a person suffering from stomach ulcers, requiring a hospital stay and posing surgical risk. Today, many people with stomach ulcers can be treated with a simple over-the-counter medicine known as a proton pump inhibitor.

[\(back to content\)](#)

## 2.2 History of Use of Traditional Herbal Medicines <sup>h</sup>

By definition, ‘traditional’ use of herbal medicines implies substantial historical use, and this is certainly true for many products that are available as ‘traditional herbal medicines’.

In many developing countries, a large proportion of the population relies on traditional practitioners and their armamentarium of medicinal plants in order to meet health care needs. Although modern medicine may exist side-by-side with such traditional practice, herbal medicines have often maintained their popularity for historical and cultural reasons. Such products have become more widely available commercially, especially in developed countries. In this modern setting, ingredients are sometimes marketed for uses that were never contemplated in the traditional healing systems from which they emerged. An example is the use of ephedra (= Ma huang) for weight loss or athletic performance enhancement (Shaw, 1998). While in some countries, herbal medicines are subject to rigorous manufacturing standards, this is not so everywhere. In Germany, for example, where herbal products are sold as ‘phytomedicines’, they are subject to the same criteria for efficacy, safety and quality as are other drug products. In the USA, by contrast, most herbal products in the marketplace are marketed and regulated as dietary supplements, a product category that does not require pre-approval of products on the basis of any of these criteria. These matters are covered extensively in Section 3 below.

### 1.1 The role of herbal medicines in traditional healing

The pharmacological treatment of disease began long ago with the use of herbs (Schulz et al., 2001). Methods of folk healing throughout the world commonly used herbs as part of their tradition. Some of these traditions are briefly described below, providing some examples of the array of important healing practices around the world that used herbs for this purpose.

#### 1.1.1 Traditional Chinese medicine

## History of all Medicine

Traditional Chinese medicine has been used by Chinese people from ancient times.

Although animal and mineral materials have been used, the primary source of remedies is botanical. Of the more than 12 000 items used by traditional healers, about 500 are in common use (Li, 2000). Botanical products are used only after some kind of processing, which may include, for example, stir-frying or soaking in vinegar or wine. In clinical practice, traditional diagnosis may be followed by the prescription of a complex and often individualized remedy.

Traditional Chinese medicine is still in common use in China. More than half the population regularly uses traditional remedies, with the highest prevalence of use in rural areas. About 5000 traditional remedies are available in China; they account for approximately one fifth of the entire Chinese pharmaceutical market (Li, 2000).

### 1.1.2 Japanese traditional medicine

Many herbal remedies found their way from China into the Japanese systems of traditional healing. Herbs native to Japan were classified in the first pharmacopoeia of Japanese traditional medicine in the ninth century (Saito, 2000).

### 1.1.3 Indian traditional medicine

Ayurveda is a medical system primarily practiced in India that has been known for nearly 5000 years. It includes diet and herbal remedies, while emphasizing the body, mind and spirit in disease prevention and treatment (Morgan, 2002).

## 1.2 Introduction of traditional herbal medicines into Europe, the USA and other developed countries

The desire to capture the wisdom of traditional healing systems has led to a resurgence of interest in herbal medicines (Tyler, 2000), particularly in Europe and North America, where herbal products have been incorporated into so-called 'alternative', 'complementary', 'holistic' or 'integrative' medical systems.

During the latter part of the twentieth century, increasing interest in self-care resulted in an enormous growth in popularity of traditional healing modalities, including the use of herbal remedies; this has been particularly true in the USA. Consumers have reported positive attitudes towards these products, in large part because they believe them to be of 'natural' rather than 'synthetic' origin, they believe that such products are more likely to be safe than are drugs, they are considered part of a healthy lifestyle, and they can help to avoid unnecessary contact with conventional 'western' medicine.

While centuries of use in traditional settings can be used as testimony that a particular herbal ingredient is effective or safe, several problems must be addressed as these ingredients are incorporated into modern practice.

One problem is that ingredients once used for symptomatic management in traditional healing are now used in developed countries as part of health promotion or disease prevention strategies; thus, acute treatment has been replaced by chronic exposure (e.g., herbal products used for weight loss, Allison et al., 2001). This means that a statement about 'thousands of years of evidence that a product is safe' may not be valid for the way the product is now being used. This does not expressly mean that an ingredient is unsafe; it does mean that safety in the modern context cannot be assumed.

A second problem is that efficacy and effectiveness have rarely been demonstrated using modern scientific investigations. An evidence-based approach to this issue has only recently been implemented,

and the results reveal that for most herbal products, considerable gaps in knowledge need to be remedied before one can be convinced about their efficacy.

One of the most difficult issues to contend with in translating traditional herbal practices into conventional 'western' medicine is the individualization of prescriptions containing multiple herbal and other ingredients. There is little incentive for standardization of products for a mass market, when the intention has been to provide an individual prescription. To the small grower or the traditionally trained herbalist, standardization means understanding the growth conditions, the time of harvesting, the manner of extraction or other preparation of material so that a reliable (albeit small amount of) active ingredient can be offered to people. To the manufacturer or distributor of large quantities that will be sold in a supermarket or a health food store, standardization refers to industrial production under defined conditions, using so-called Good Manufacturing Practices (GMP) (Food & Drug Administration, 2002) akin to those used for drug production.

In the USA, there is both small-scale and large-scale production of herbal products and there can be wide variation in their content and quality in the marketplace. Regulations in the USA do not yet require that dietary supplement manufacturers adhere to standard manufacturing practices, and so quality is not guaranteed (see Section 3). The public becomes discouraged by reports that products taken from store shelves do not consistently contain the ingredients—or in the amounts—that are claimed on the label.

For herbal products in common use, evidence of efficacy may be based upon traditional use, testimonials, clinical studies, both controlled and uncontrolled, and randomized, double-blind, placebo-controlled trials. For the most part, however, there is a lack of systematic clinical studies to support claims.

Safety of some herbal ingredients has been recently called into question, in part because of the identification of adverse events associated with their use and, increasingly, because of the demonstration of clinically relevant interactions between herbs and prescription drugs.

Adverse events (stroke, heart attacks, heart-rate irregularities, liver toxicity, seizures, psychoses and death) associated with use of ephedra for weight loss, body-building effects and increased energy or kava-kava (also known as kawa), widely used in Europe and increasingly in Canada to treat anxiety, nervousness, insomnia, pain and muscle tension, for example, have caused some countries to issue regulations restricting or banning these products (e.g. Health Canada Online, 2002a,b). Only a few herbs in common use have been suspected of causing cancer. These include *Aristolochia*, *Rubia tinctorum*, *Morinda officinalis* and *Senecio riddellii*, as discussed in detail below.

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### 2. Use of Traditional Herbal Medicines in Developed Countries

#### 2.1 Origin, type and botanical data

Plants and their secondary metabolite constituents have a long history of use in modern 'western' medicine and in certain systems of traditional medicine, and are the sources of important drugs such as atropine, codeine, digoxin, morphine, quinine and vincristine.

Use of herbal medicines in developed countries has expanded sharply in the latter half of the twentieth century. Monographs on selected herbs are available from a number of sources, including the European Scientific Cooperative on Phytotherapy (ESCOP, 1999), German Commission E (Blumenthal et al., 1998) and the World Health Organization (WHO, 1999). The WHO monographs, for example, describe the herb itself by a number of criteria (including synonyms and vernacular names) and the herb part commonly

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used, its geographical distribution, tests used to identify and characterize the herb (including macroscopic and microscopic examination and purity testing), the active principles (when known), dosage forms and dosing, medicinal uses, pharmacology, contra-indications and adverse reactions. Other resources that provide detailed information about herbal products in current use include the Natural Medicines Comprehensive Database (Jellin, 2002) and NAPRALERT (Natural Products ALERT) (2001).

Information about other available databases has been published by Bhat (1995).

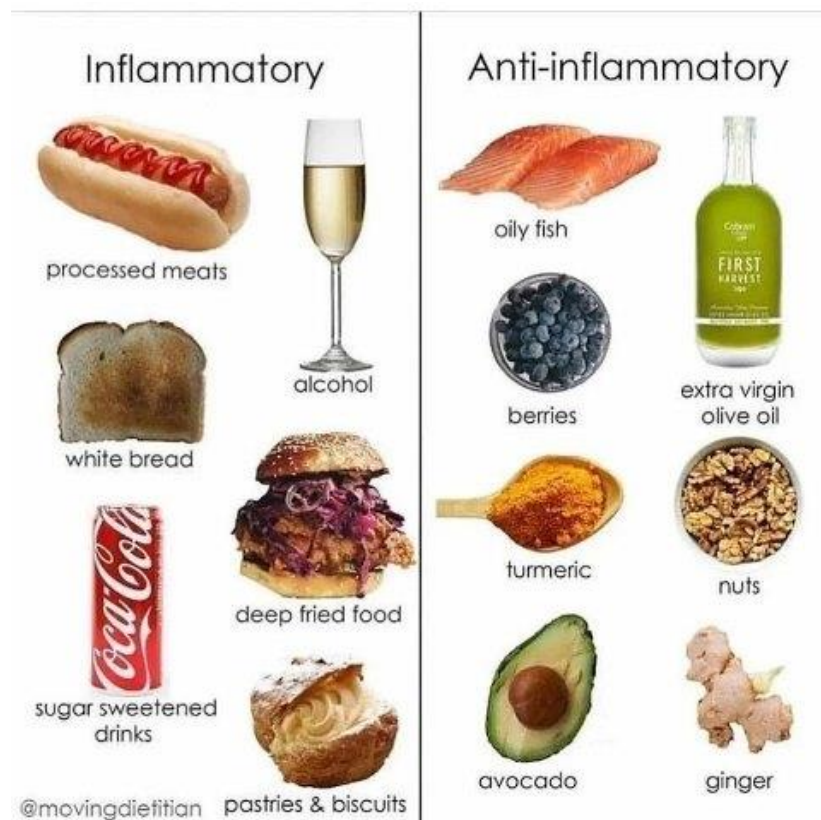
### 2.2 Medicinal applications, beneficial effects and active components

In some cases, the active principles of plant-derived products have been isolated and characterized, and their mechanisms of action are understood (e.g., ephedrine alkaloids in some species of Ephedra). For many, however, including virtually all of the most common products in the marketplace, such information is incomplete or unavailable.

This is in large part due to the complexity of herbal and botanical preparations; they are not pure compounds. It is also a function of the traditionally-held belief that the synergistic combination of several active principles in some herbal preparations is responsible for their beneficial effects.

### 2.3 Trends in use

Data on the global nutrition products industry, in which herbal and botanical products are often included, are given in Table 1.



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Table 1. The global nutrition products industry in 1999, including herbal and botanical products (in millions of US \$)

| Country                         | Vitamins/<br>minerals | Herbs/<br>botanicals | Sports, meal<br>replacement,<br>homeopathy,<br>specialty | Natural<br>Foods | Natural<br>personal<br>care | Functional<br>foods | Total   |
|---------------------------------|-----------------------|----------------------|--|------------------|-----------------------------|---------------------|---------|
| USA                             | 7070                  | 4070                 | 4320   | 9470             | 3590                        | 1680                | 44520   |
| Europe                          | 5 670                 | 6 690                | 2 510  | 8 280            | 3 660                       | 15 390              | 42 200  |
| Japan                           | 3 200                 | 2 340                | 1 280  | 2 410            | 2 090                       | 11 830              | 23 150  |
| Canada                          | 510                   | 380                  | 250  | 700              | 330                         | 1 500               | 3 670   |
| Asia                            | 1 490                 | 3 170                | 970  | 710              | 880                         | 1 450               | 8 670   |
| Latin<br>America                | 690                   | 260                  | 250  | 460              | 250                         | 360                 | 2 270   |
| Australia<br>and New<br>Zealand | 300                   | 190                  | 90   | 340              | 140                         | 540                 | 1 600   |
| Eastern<br>Europe and<br>Russia | 350                   | 220                  | 250  | 180              | 40                          | 269                 | 1 300   |
| Middle<br>East                  | 180                   | 90                   | 60   | 70               | 30                          | 140                 | 570     |
| Africa                          | 160                   | 80                   | 70   | 80               | 10                          | 120                 | 520     |
| <b>Total<br/>global</b>         | 19 260                | 17 490               | 9 960  | 22 700           | 11 020                      | 47 670              | 128 470 |

From Nutrition Business Journal (2000), derived from a number of sources. Totals may not add up due to rounding.

a. Natural foods: foods grown or marketed with a focus on the perceived benefits of 'foods derived from natural sources' and that are, to varying degrees, free of pesticides, additives, preservatives, and refined ingredients

b. Functional foods: foods fortified with added or concentrated ingredients to improve health and/or performance

Sales of dietary supplement products, including herbal and botanical supplements, in the USA increased dramatically during the 1990s, stimulated in the latter part of the decade by the Dietary Supplements Health and Education Act of 1994 (DSHEA) (Tyler, 2000). This pattern of growth has been replicated elsewhere in the world (Table 2), although more recently, sales of herbal products have apparently experienced a decline.

In the European Union (EU), in general, herbal products for which therapeutic claims are made must be marketed and regulated as drugs, while those that do not make such claims may be found in the food or cosmetic categories. Attempts are at present being made to harmonize the scientific and regulatory criteria that govern the marketing of herbal products (AESGP, 1998).

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Table 2: Trends in the global nutrition products industry, 1997–2000 (in millions of US \$)

|   | 1997           | 1998           | 1999           | 2000           |
|---|----------------|----------------|----------------|----------------|
| Vitamins/minerals                               | 18 000         | 18 870         | 19 620         | 20 440         |
| Herbs/botanicals                                | 15 990         | 16 980         | 17 490         | 18 070         |
| Sports, meal replacement, homeopathy, specialty | 8 760          | 9 310          | 9 960          | 10 710         |
| Natural foods <sup>a</sup>                      | 16 690         | 19 910         | 22 700         | 25 420         |
| Natural personal care                           | 9 620          | 10 280         | 11 020         | 11 850         |
| Functional foods <sup>b</sup>                   | 40 320         | 43 940         | 47 670         | 51 480         |
| <b>Total</b>                                    | <b>109 380</b> | <b>119 290</b> | <b>128 470</b> | <b>137 980</b> |

From Nutrition Business Journal (2000), derived from a number of sources

a. Natural foods: foods grown or marketed with a focus on the perceived benefits of ‘foods derived from natural sources’ and that are, to varying degrees, free of pesticides, additives, preservatives, and refined ingredients

b. Functional foods: foods fortified with added or concentrated ingredients to improve health and/or performance

In 1994, when the Dietary Supplements Health and Education Act (DSHEA) was passed in the USA, approximately 50% of the adult population of the country was reported to use dietary supplements and sales of all products combined were approximately \$4 billion. This category of products includes vitamins, minerals and a variety of other ingredients; herbal products accounted for about one quarter of those sales. In 2000, the last year for which comparable data are available, again 50% of the adult population reported use of dietary supplements, and sales were close to \$15 billion; herbals accounted for nearly one third of those sales. Table 3 identifies some trends in herbal supplement use in the USA from 1997 to 2000.

Table 3: Ten top-selling herbs in the USA, 1997–2000 (in millions of US \$) <sup>a</sup>

|  | 1997  | 1998  | 1999  | 2000  |
|--|-------|-------|-------|-------|
| Combination herbs <sup>b</sup>                 | 1 659 | 1 762 | 1 740 | 1 821 |
| <i>Ginkgo biloba</i>                           | 227   | 300   | 298   | 248   |
| Echinacea <sup>c</sup>                         | 203   | 208   | 214   | 210   |
| Garlic ( <i>Allium sativum</i> )               | 216   | 198   | 176   | 174   |
| Ginseng <sup>d</sup>                           | 228   | 217   | 192   | 173   |
| St John’s wort ( <i>Hypericum perforatum</i> ) | 100   | 308   | 233   | 170   |
| Saw palmetto ( <i>Serenoa repens</i> )         | 86    | 105   | 117   | 131   |
| Soy (soya)                                     | NA    | NA    | 36    | 61    |
| Valerian ( <i>Valeriana officinalis</i> )      | 30    | 41    | 57    | 58    |
| Kava-kava                                      | 22    | 44    | 70    | 53    |
| Total herbal supplements                       | NA    | NA    | 4 070 | 4 130 |

NA, not available

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- a. From Nutrition Business Journal (2001) and Schulz et al. (2001). US consumer sales via all channels (includes all retail channels, direct sales, multilevel marketing, mail order and practitioner sales)
- b. Combination herbs include products sold for weight management, athletic performance enhancement or energy enhancement and often include mixtures of several herbal extracts, as well as single-compound ingredients. Others that have appeared in the top 10 list in earlier years, but not in 2000, include: goldenseal (*Hydrastis canadensis*), cranberry, bilberry (European blueberry), aloe (see monograph on *Rubia tinctorum*, *Morinda officinalis* and anthraquinones in this volume).
- c. Two types of coneflower preparation can be recommended and prescribed today: alcoholic extracts made from the root of the pale purple coneflower (*Echinacea pallida*) and juices expressed from the fresh aerial parts of the purple coneflower (*Echinacea purpurea*). It is noteworthy that until about 1990, the root of *Echinacea pallida* appears to have been regularly confused with that of the species *Echinacea angustifolia*.
- d. *Panax ginseng* is cultivated in Asia; *panax quinquefolius* is cultivated in the USA.

In the 1990s, the USA saw the growth of government organizations concerned with dietary supplements, such as the National Institutes of Health (NIH) National Center for Complementary and Alternative Medicine and Office of Dietary Supplements, and the National Cancer Institute (NCI) Chemoprevention Program of the Division of Cancer Prevention and Control. Organizations involved with dietary supplements such as the American Nutraceutical Association and the Foundation for Innovative Medicine, as well as industry trade associations such as the American Herbal Products Association, the Consumer Healthcare Products Association, the National Natural Foods Association, the Utah Natural Products Alliance and the Council for Responsible Nutrition have been expanding during the 1990s.

In Canada, herbal use has also increased. Berger (2001) noted, in summarizing the results of a 2001 survey of 2500 persons, 15 years of age and older, that herbal remedies were used by 38% of respondents, up from 28% in 1999. A survey in 1998 of the most popular remedies reported in Canada is given in Table 4. In 1994, the European herbal medicine market was worth over £1.8 billion [US\$ 2.8 billion] at retail selling prices. Although the UK market was smaller than that of Germany (in 1994 it was £88 million, compared with £1400 million), it had one of the highest forecast growth rates in Europe (Shaw, 1998).

Table 4: Top 10 most popular herbal remedies in Canadaa

|  |    |    |
|--|----|----|
| Echinacea  | 54 | 19 |
| Garlic ( <i>Allium sativum</i> )                     | 52 | 18 |
| Ginseng <sup>b</sup>                                 | 42 | 15 |
| Camomile ( <i>Chamomilla recutita</i> ) <sup>c</sup> | 38 | 13 |
| <i>Ginkgo biloba</i>                                 | 20 | 7  |
| Evening primrose ( <i>Oenothera biennis</i> )        | 20 | 7  |
| Devil's claw ( <i>Harpagophytum procumbens</i> )     | 17 | 6  |
| St John's wort ( <i>Hypericum perforatum</i> )       | 17 | 6  |
| Tea tree oil ( <i>Melaleuca alternifolia</i> )       | 15 | 5  |
| Valerian ( <i>Valeriana officinalis</i> )            | 13 | 5  |

From Non-Prescription Drug Manufacturers Association of Canada (1998), Sibbald (1999) and Schultz et al. (2001)

- a. From a survey of 6849 adults in April 1998
- b. See Table 3.

c. Reported previously as *Matricaria chamomilla* (WHO, 1999)

The European market for herbal medicinal products was estimated to be worth \$5.6 billion at public price level in 1995 (AESGP, 1998).

### 3. Awareness, Control, Regulation and Legislation on Use

#### 3.1 WHO guidelines for herbal medicines

In 1992, the WHO Regional Office for the Western Pacific invited a group of experts to develop criteria and general principles to guide research work on evaluating herbal medicines (WHO, 1993). This group recognized the importance of herbal medicines to the health of many people throughout the world, stating: 'A few herbal medicines have withstood scientific testing, but others are used simply for traditional reasons to protect, restore, or improve health. Most herbal medicines still need to be studied scientifically, although the experience obtained from their traditional use over the years should not be ignored. As there is not enough evidence produced by common scientific approaches to answer questions of safety and efficacy about most of the herbal medicines now in use, the rational use and further development of herbal medicines will be supported by further appropriate scientific studies of these products, and thus the development of criteria for such studies'.

The document covered such topics as developing protocols for clinical trials using herbal medicines, evaluating herbal medicine research, guidelines for quality specifications of plant materials and preparations, and guidelines for pharmacodynamic and general pharmacological studies of herbal medicines and for toxicity investigations of herbal medicines.

WHO has also issued Guidelines for the Assessment of Herbal Medicines (WHO, 1996). These guidelines defined the basic criteria for the evaluation of quality, safety and efficacy of herbal medicines with the goal of assisting national regulatory authorities, scientific organizations and manufacturers in assessing documentation, submissions and dossiers in respect of such products. It was recommended that such assessments take into account long-term use in the country (over at least several decades), any description in the medical and pharmaceutical literature or similar sources or documentation of knowledge on the application of a herbal medicine, and marketing authorizations for similar products. Although prolonged and apparently uneventful use of a substance usually offers testimony of its safety, investigation of the potential toxicity of naturally occurring substances may reveal previously unsuspected problems. It was also recommended that regulatory authorities have the authority to respond promptly to new information on toxicity by withdrawing or limiting the licenses of registered products containing suspect substances, or by reclassifying the substances to limit their use to medical prescription. The guidelines stressed the need for assessment of efficacy including the determination of pharmacological and clinical effects of the active ingredients, and labeling which includes a quantitative list of active ingredient(s), dosage, and contraindications.

#### 3.2 The European Union

The Association Européenne des Spécialités Pharmaceutiques Grand Public (Association of the European Self-Medication Industry; AESGP) has carried out a study for the European Commission on herbal medicinal products in the European Union (EU).

The following summary is taken from this report (AESGP, 1998).

The importance of herbal medicinal products varies from one country to another.

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These products are not a homogeneous group. In general, they are either fully licensed medicinal products with efficacy proven by clinical studies or by references to published scientific literature (in accordance with Article 4.8 a (ii) of Council Directive 65/65/EEC) (European Commission, 1965) or are available as products with a more or less simplified proof of efficacy according to their national use. Many Member States have these two categories, but there are major discrepancies between the Member States in the classification of individual herbal drug preparations and products into one of these categories as well as in the requirements for obtaining a marketing authorization.

### SOME TRADITIONAL HERBAL MEDICINES

#### 3.2.1 Definition of herbal medicinal products

According to Council Directive 65/65/EEC (European Commission, 1965), which has been implemented in national law in all Member States, medicinal products require prior marketing approval before gaining access to the market. In almost all Member States, herbal medicinal products are considered as medicinal products, and are, in principle, subject to the general regulations for medicines as laid down in the various national medicine laws. In many cases, a specific definition of herbal medicinal products is available, which is in line with the EU Guideline 'Quality of Herbal Medicinal Products'. This includes plants, parts of plants and their preparations, mostly presented with therapeutic or prophylactic claims. Different categories of medicinal products containing plant preparations exist or are in the process of being created. For instance, draft legislation in Spain includes the definitions 'herbal medicinal products' and 'phytotraditional products'. The latter are not considered as 'pharmaceutical specialties' and are therefore not classified as herbal medicinal products.

#### 3.2.2 Classification of herbal products

Generally, herbal products are classified as medicinal products if they claim therapeutic or prophylactic indication, and are not considered as medicinal products when they do not make these claims. Products not classified as medicinal in most cases belong to the food or cosmetic areas, although they sometimes contain plants which have pharmacological properties. For example, senna pods (from *Cassia* plants, used as laxatives) (see General Remarks and monograph on *Rubia tinctorum*, *Morinda officinalis* and anthraquinones in this volume) can be marketed as food in Belgium. Specific categories of non-medicinal products exist in some Member States, such as the so-called 'therapeutic supplement products' in Austria. In Ireland, Spain and the United Kingdom, there exist preparations defined as medicinal products, which are under specific conditions exempt from licensing requirements.

#### 3.2.3 Combination products

Herbal ingredients used in combination are widely used in Europe, and their assessment is often performed according to specific guidelines. Combinations of herbal and homeopathic ingredients exist in a few countries. Their assessment follows rather strict criteria, usually those of a 'full' application procedure. Combinations of herbal ingredients and vitamins are available in many countries.

#### 3.2.4 Documentation of quality, safety and efficacy

A marketing authorization for a herbal medicinal product is, in principle, granted based on an extensive dossier in terms of proof of quality, safety and efficacy in all Member States, with the exception of Denmark and Finland, where it is possible to use only references to published data for herbal medicinal products. Luxembourg, in practice, only grants marketing authorization based on the assessment of other countries.

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In principle, according to Article 4.8 (a) (ii) of Council Directive 65/65/EEC (European Commission, 1965), the option of using reviews on published data is available in all Member States. However, this 'bibliographical' option is sometimes only available through assessment on a case-by-case basis or not used in practice. Austria permits this type of application for safety documentation only.

### 3.2.5 ESCOP and WHO monographs

European Scientific Cooperative on Phytotherapy (ESCOP) (see Awang, 1997) or WHO monographs may be used in many Member States as a summary of published data.

Many regulatory authorities regard them as helpful documentation for clarifying efficacy and safety.

The European Commission (EC), the EMEA (European Agency for the Evaluation of Medicinal Products) Executive Director and the EMEA Management Board established the EMEA Ad Hoc Group in 1997. This Working Group is made up of representatives from the Member States (primarily health authorities) and representatives from the European Parliament, the EC and the European Pharmacopoeia. The Working Group has reviewed the criteria for the demonstration of quality, pre-clinical safety and clinical efficacy in marketing authorization applications for herbal medicinal products as set out in the Council Directives. The Working Group has proposed requirements for nonclinical testing of herbal drug preparations based on a draft EC Guideline for old substances with long market histories (EMEA, 2000). The Group has also discussed the appropriate role of scientific monographs prepared by the WHO and ESCOP.

### 3.2.6 Simplified proof of efficacy

Various traditional herbal medicinal products exist in many Member States in addition to fully licensed herbal medicinal products. For these products, national authorities usually verify the safety and ensure a sufficient level of quality. For proof of efficacy, the level of requirements is sometimes adjusted to take into account the long-term experience and is therefore simplified. For example, a specific simplified procedure exists in Austria, Belgium, France and Germany. Most other countries in the EU do not use this strategy.

### 3.2.7 Further developed products

For herbal medicinal products that have been proposed for non-traditional indications or are modified from their traditional form (e.g., highly processed or special extracts), a full license is required in most cases, and efficacy has to be proven by clinical studies. In several countries, such products are not used.

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### 3.2.8 Individual supply

Herbal medicinal products (like other medicinal products) are made up and/or supplied to individual patients following a one-to-one consultation between patient and practitioner. Some herbal medicinal products are made according to accepted formulae and are prepared by pharmacists. According to Article 2.4 of Council Directive 65/65/EEC (European Commission, 1965), a marketing authorization is not needed. A specific situation exists in the United Kingdom, where a practitioner, according to Section 12 of the Medicines Act 1968 (Griffin, 1998), may supply products to a customer without a license.

### 3.2.9 Products from foreign countries

The quality of imported medicinal plants and their preparations is assessed differently in different Member States. In some cases, no specific regulations exist concerning the control of raw materials or

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crude drugs, particularly for products that enter the market as foodstuffs or other products that are not controlled in the same way as medicinal products. Finished products are often treated as new chemical entities with full proof of quality, safety and efficacy being required.

### 3.2.10 Good manufacturing practices and quality control

All Member States apply the manufacturing requirements of Council Directive 75/319/EEC (European Commission, 1975) to herbal medicinal products. Starting materials for herbal medicinal products are in principle controlled in accordance with the European Pharmacopoeia in all Member States. Good manufacturing practice inspections are carried out in nearly all Member States.

The European Pharmacopoeia was created in 1964; its efforts have resulted in the creation of 83 monographs on herbal drugs which are used either in their natural state after desiccation or concentration or for the isolation of natural active ingredients (Council of Europe, 1996).

### 3.2.11 Post-marketing surveillance

The adverse reaction reporting systems of the Member States also monitor herbal medicinal products if they are authorized medicinal products. This system has demonstrated its effectiveness in the case of several withdrawals of marketing authorizations for herbal medicinal products due to safety concern in connection with certain plants.

Consumer reports could provide a picture of the spectrum of adverse reactions to herbal medicinal products and alert authorities to potential problems; the degree of acceptance of such reports varies between Member States.

### 3.2.12 Advertising, distribution and retail sale

All Member States have implemented Council Directive 92/28/EEC (European Commission, 1992a) on advertising in national law. This directive covers herbal products if they are authorized as medicinal products.

Wholesale marketing of all medicinal products as well as authorized herbal medicinal products is covered by Council Directive 92/25/EEC (European Commission, 1992b). The retail sale of herbal medicinal products is restricted to pharmacies in Belgium, France, Greece, Ireland, Italy, Luxembourg, Portugal and Spain. It is permitted in other outlets in the case of certain herbal medicinal products in Austria, Denmark, Finland, Germany, the Netherlands, Sweden and the United Kingdom. Distance selling and teleshopping are not permitted for herbal medicinal products in most countries.

### 3.2.13 Differences between Member States

Herbal medicinal products are regarded as medicinal products in most of the Member States and have, in theory, the option of obtaining marketing authorization in the same way as all other medicinal products. However, the legal systems of the Member States differ in the classification of herbal products, in the availability of an application process for a marketing authorization based on a full application, bibliographical application or simplified proof of efficacy, and in the permitted outlets for retail distribution. Member States have different traditions regarding the therapeutic use of medicinal plant preparations, which may make it more difficult for manufacturers of herbal medicinal products to apply for marketing authorization using the decentralized procedure.

## 3.3 Individual countries (Calixto, 2000)

## 3.3.1 France

The French Medicines Agency (Agence du Médicament) grants marketing authorizations based on abridged dossiers by making reference to traditional use. The shortened procedure requires limited or no pharmacological, toxicological and clinical tests and is detailed in the Agency Instructions No. 3. The list of drugs with accepted traditional uses was first published in 1985 by the Ministry of Health and has subsequently been revised several times (Table 5). Traditional use of approximately 200 herbal drugs or preparations derived from these drugs has been recognized for minor indications. Agency Instructions No. 3 includes rules for labeling and packaging of herbal medicinal products. If the drug is not specifically included in the list, there is no option to use an abridged procedure (AESGP, 1998). As of 1997, local medicinal plants were on the A list of the French Pharmacopoeia (Castot et al., 1997) which groups the 454 herbs which benefit/risk ratio is considered as positive when traditionally used.

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Table 5: Examples of plants and indications from the French Agency Instructions No. 3 (Cahiers de l'Agence No. 3) (Agence du Médicament)

| Medicinal plant          | Information for the medical profession  | Information for the public   |
|--------------------------|---|--|
| Valeriana<br>Officinalis | Traditionally used in the symptomatic treatment of neurotonic conditions of adults and children, notably in cases of mild sleeping disorders  | Traditionally used to reduce nervousness in adults and children, notably in case of sleeping disorders   |
| Matricaria<br>Chamomilla | Traditionally used topically as a soothing and antipruriginous application for dermatological ailments and as a protective treatment for cracks, grazes, chapped skin and insect bites.<br>Traditionally used in the symptomatic treatment of digestive upsets such as epigastric distension, slow digestion, eructation and flatulence.<br>Traditionally used to stimulate appetite.<br>Traditionally used in cases of eye irritation or discomfort due to various causes (smoky atmospheres, sustained visual effort, swimming in the sea or swimming baths, etc.). | Traditionally used topically as a soothing application and to calm the itching of skin ailments and in cases of cracks, grazes, chapped skin and insect bites.<br>Traditionally used to promote digestion.<br>Traditionally used to stimulate appetite.<br>Traditionally used in cases of eye irritation or discomfort due to various causes (smoky atmospheres, sustained visual effort, swimming in the sea or swimming baths, etc.).<br>(Precaution: use only for mild conditions. If the symptoms increase or persist for more than two days, consult a doctor). |



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|                           |  |  |
|---------------------------|--|--|
|                           | Traditionally used locally (mouth and throat washes, lozenges) as an analgesic in conditions of the oral cavity and/or larynx.   | Traditionally used for the temporary relief of sore throat and/or transient hoarseness.  |
| Cassia senna <sup>a</sup> | Short-term treatment of occasional constipation.   | This medicinal product is a stimulant laxative; it stimulates bowel evacuation. It is intended for the short-term treatment of occasional constipation.  |
| Hypericum Perforatum      | Traditionally used topically as a soothing and antipruriginous application for dermatological ailments and as a protective treatment for cracks, grazes, chapped skin and insect bites.<br>Traditionally used for sunburn, superficial burns or small area and nappy rash.<br>Traditionally used locally (mouth and throat washes, lozenges) as an analgesic in conditions of the oral cavity and/or larynx. | Traditionally used topically as a soothing application and to calm the itching of skin ailments and in cases of cracks, grazes, chapped skin and insect bites (Precaution: do not use before exposure to the sun).<br>Traditionally used for sunburn, superficial burns or small area and nappy rash (Precaution: do not use before exposure to the sun).<br>Traditionally used for the temporary relief of sore throat and/or transient hoarseness. |
| Plantago major L.         | Traditionally used topically as a soothing and antipruriginous application for dermatological ailments and as a protective treatment for cracks, grazes, chapped skin and insect bites.<br>Traditionally used in cases of eye irritation or discomfort due to various causes (smoky atmospheres, sustained visual effort, swimming in the sea or swimming baths, etc.).                                      | Traditionally used topically as a soothing application and to calm the itching of skin ailments and in cases of cracks, grazes, chapped skin and insect bites (Precaution: do not use before exposure to the sun).<br>Traditionally used in cases of eye irritation or discomfort due to various causes (smoky atmospheres, sustained visual effort, swimming in the sea or  |

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|  |  |   |
|--|--|---|
|  |  | swimming baths, etc.).<br>(Precaution: use only for mild conditions. If the symptoms increase or persist for more than two days, consult a doctor). |
|--|--|---|

From AESGP (1998)

a. See General Remarks

Castot et al. (1997) have reviewed the surveillance or pharmacovigilance of herbal medicines in France. Between 1 and 15 October 1996, the authors observed 15 publications or publicities in 23 magazines widely available in France; these publications/ publicities offered for sale by mail a number of medicinal plants found or not found on the list of 34 'approved' plants. (These plants were listed in 1979 by the government in reason of lack of reported toxicity in traditional use or following complete bibliographic investigation.)

Between 1985 and 1995, the French national surveillance system registered 341 cases of undesirable effects possibly linked to herbal medicines; this figure represents only 0.35% of the total adverse effects from all drugs reported during the same period.

The number of adverse effects from herbal medicines is almost certainly under-reported.

The population concerned was largely female (73%) with a mean age of 50 years; reasons for taking herbal medicines were constipation, obesity and anxiety. Undesirable effects reported were quite diverse, including allergic and cutaneous responses, eczema, liver damage (linked to germander (*Teucrium chamaedrys*, tonic, diuretic)), digestive problems (linked to laxative plants), neurological effects such as vertigo (linked to plants classified as sedatives) and blood pressure fall and hypokalaemia (linked to plant laxatives containing anthraquinones (see monograph in this volume)). Outcome of these cases was generally favourable (Castot et al., 1997).3.3.2 Germany (see Kraft, 1999; Calixto, 2000)

Keller (1991) summarized the legal requirements for the use of phytopharmaceutical drugs in the Federal Republic of Germany. The legal status for herbal remedies was defined by the Medicines Act of 24 August 1976. For finished drugs a marketing authorization is obligatory. Herbal finished drugs have to comply with the same criteria for quality, safety and efficacy as all other finished drugs. Finished herbal drugs may be authorized for marketing in one of three ways:

(i) Evaluation and validation of old medicines. Finished drugs registered in 1978 possessed a provisional marketing authorization and could remain on the market until the end of April 1990. The medical evaluation of these drugs was mainly based on published data and was carried out by a special expert committee, the Commission E (Expert Commission for Herbal Remedies). The preparation of new monographs by Commission E ended in 1993 (Sandberg & Corrigan, 2001).

(ii) Standardized marketing authorization. Medicines that do not represent a direct or indirect risk for health can be exempted from the need for an individual marketing authorization by reference to a previously existing monograph.

## History of all Medicine

(iii) Individual application for marketing authorization. In this procedure, complete documentation including the results of analytical tests, results of pharmacological and toxicological tests and results of clinical or other medical tests are required.

In addition, drugs sold outside pharmacies and only for traditional uses without clinical evidence for efficacy have to be labeled as 'traditionally used' (Table 6).

### 3.3.3 United Kingdom

A number of papers have discussed the situation regarding herbal medicines in the United Kingdom. De Smet (1995) recommended that herbal products be licensed as special products 'medicines'; he estimated that unlicensed preparations accounted for over 80% of herbal sales. Many medicine-like products on the British herbal market remain unregistered for two reasons: acceptable data on efficacy, safety and quality may not be available, and the licensing fee is high. Traditional experience with herbs can be a useful tool in detecting acute toxicity, but is less useful in detecting rare adverse reactions or those that develop after long-term exposure or after a latent period.

Therefore, traditional experience needs to be supplemented with orthodox data from research and post-marketing surveillance. Such post-marketing surveillance is only partly helpful, as herbal suppliers and traditional practitioners are not obliged to report suspected adverse reactions and herbal products are of variable quality.

Table 6: Examples of plants and indications from the German 'traditional' list

Active ingredients Dosage form Indication 'Traditionally used for ...'

Ginseng root (liquid extract prepared with wine)

Liquid for oral administration

Improvement of the general condition St John's wort (aqueous liquid extract)

Liquid for oral administration

Improvement of the condition in case of nervous stress

Garlic + mistle herb + hawthorn flowering tops

Sugar-coated tablets Support of cardiovascular function

Garlic oil Gastro-resistant capsules

For prevention of general atherosclerosis

Hamamelis leaf (aqueous liquid extract)

Cream Support of skin function

Ginger + juniper berries Tablets Support of digestive function

Onion (oily viscous extract) Capsules Prevention of general atherosclerosis

Melissa leaf Sugar-coated tablets Improvement of the condition in case of nervous stress, for support of stomach function

Dandelion root (aqueous solid extract)

Capsules Support of the excretory function of the kidney

Adapted from AESGP (1998)

Shaw (1998) has discussed the safety aspects of herbal remedies in the United Kingdom. The legal status of herbal remedies/medicines in the United Kingdom can be broadly divided into three categories:

(i) Most herbal products are unlicensed and therefore no medicinal claims can be made. These are regarded as food supplements and come under food legislation (Ministry of Agriculture, Fisheries and Food (MAFF), 1998).

(ii) Licensed medicinal products require evidence of quality, safety and efficacy and are regulated by the Medicines Control Agency.

(iii) Herbal medicines supplied by a herbalist are exempt from licensing under the 1968 Medicines Act.

Since 1996, the Medicines Control Agency has included adverse reaction reports on unlicensed herbal remedies within its remit and now monitors all three categories (Griffin, 1998).

The House of Lords Science and Technology Committee in early 1999 reviewed a large amount of oral and written evidence from a wide variety of sources in order to scrutinize complementary and alternative medicine (CAM) including herbal medicines (Mills, 2001). The report noted that public satisfaction with CAM was high and that use of CAM was increasing. Evidence was required that CAM has an effect above and beyond placebo, and this information needed to be available to the public. The current lack of regulation of CAM did not protect the public interest adequately. Acupuncture and herbal medicine should be subject to statutory regulation under the Health Act 1999, as should possibly non-medical homeopathy. The regulatory status of herbal medicines was viewed as particularly unsatisfactory. The report recommended that training for CAM professionals should be standardized and independently accredited and, for many, should include basic biomedical science. Conventional health professionals should become more familiar with CAM and those working in the best-regulated CAM professions should work towards integration with conventional medicine.

### 3.3.4 United States

In the USA, the Food Drug and Cosmetics Act characterizes a product primarily on the basis of its intended use. For a botanical product, this intended use may be as a food (including a dietary supplement), a drug (including a biological drug), a medical device (e.g., gutta-percha) or a cosmetic as shown by, among other things, the products' accompanying labeling claims, advertising materials, and oral or written statements (21 Code of Federal Regulations (CFR) 201.128) (Food and Drug Administration (FDA), 2000).

For products classified as drugs, the FDA regulates them under the authority of the Food Drug and Cosmetics Act and its amendments. Under current regulations, if there is no marketing history in the USA for a botanical drug product, if available evidence of safety and effectiveness does not warrant inclusion of the product in an existing, approved category of OTC (over-the-counter) drugs, or if the proposed indication would not be appropriate for non-prescription use, the manufacturer must submit a new drug application to obtain FDA approval to market the product for the proposed use. If existing information on the safety and efficacy of a botanical drug product is insufficient to support a new drug application, new clinical studies will be needed to demonstrate safety and effectiveness.

Most botanical products in the USA are marketed as dietary supplements. Under the Dietary Supplement Health and Education Act of 1994 (DSHEA), an orally ingested product that meets the definition of a

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'dietary supplement' under section 201(ff) of the Food Drug and Cosmetics Act may be lawfully marketed using a statement that (1) claims a benefit related to a classical nutrient deficiency disease (and discloses the prevalence of the disease in the USA); (2) describes how the product is intended to affect the structure or function of the human body; (3) characterizes the documented mechanism by which the product acts to maintain such structure or function; or (4) describes general well-being derived from consumption of the product (section 403 r (6)(A) of the Food Drug and Cosmetics Act, 21 U.S.C. 343 r(6)(A)). The term 'dietary supplement' is defined in section 201 (ff) of the Act and means a product (other than tobacco) intended to supplement the diet that contains one or more of certain dietary ingredients, such as a vitamin, a mineral, a herb or another botanical substance, an amino acid, a dietary substance for use by people to supplement the diet by increasing the total dietary intake, or a concentrate, metabolite, constituent, extract, or combination of the preceding ingredients (Chang, 1999). A dietary supplement is a product that is intended for ingestion in a form described in section 411C(1)(B)(i) of the Act (i.e., tablet, capsule powder, softgel, gelcap and liquid), which is not represented as conventional food, or as the sole item of a meal or of the diet, and which is labelled as a dietary supplement. It is the responsibility of the manufacturer to ensure that a dietary ingredient used in a dietary supplement is safe for its intended use.

The FDA has issued regulations defining the types of statement that can be made concerning the effect of a dietary supplement on the structure and function of the body.

The regulations distinguish these statements from the types of statement that require prior approval as drug claims or prior authorization as health claims.

Safety monitoring of dietary supplements focuses on the post-marketing period. The FDA receives spontaneous reports of suspected adverse events through a variety of means, including through a programme called MEDWATCH, the FDA Medical Products Reporting Program (Goldman & Kennedy, 1998). The post-marketing surveillance system for foods and dietary supplements, called the Adverse Event Reporting Systems, is a passive system that relies on voluntary reporting by concerned parties, primarily health professionals and consumers (AESGP, 1998).

The DSHEA extended the definition of dietary supplements beyond vitamins and minerals and established a formal definition of a dietary supplement using new criteria.

The Congressionally mandated Commission on Dietary Supplement Labels (CDSL) suggested that some botanicals may qualify as OTC products under existing statutes; these state that a product may avoid 'new drug' premarket approval requirements and may be eligible for marketing under an OTC drug monograph if the product is generally recognized as safe (GRAS) and effective under the conditions for use for which it is labelled and if the product has been used 'to a material extent and for a material time' under those conditions. The FDA's response to the Commission stated that it does not regard marketing experience outside the USA to meet conditions of historical use.

Angell and Kassirer (1998) stated that the primary factor that sets alternative medicine, including its most common form, herbal medicine, apart from conventional medicine is 'that it has not been scientifically tested and its advocates largely deny the need for such testing'. Angell and Kassirer defined 'testing' as the gathering of evidence of safety and efficacy, as required by the FDA. 'There cannot be two kinds of medicine — conventional and alternative. There is only medicine that has been adequately tested and medicine that has not, medicine that works and medicine that may or may not work.

Once a treatment has been tested rigorously, it no longer matters whether it was considered alternative at the outset. If it is found to be reasonably safe and effective, it will be accepted. Alternative treatments should be subjected to scientific testing no less rigorous than that required for conventional treatments'.

SOME TRADITIONAL HERBAL MEDICINES

3.3.5 Canada

The Canadian Food and Drug Act and findings of an Expert Advisory Committee on Herbs and Botanical Preparations were consulted by Kozyrskyj (1997) to provide an overview of the issues regarding regulation of herbal products in Canada. Case reports of herbal toxicity were identified to illustrate some of the hazards of herbal products, and references were provided to guide health professionals in searching the literature for clinical trials that have evaluated the efficacy of these drugs.

Herbal products not registered as drugs in Canada are sold as foods and are thus exempt from the drug review process that evaluates product efficacy and safety. An Expert Advisory Committee on Herbs and Botanical Preparations was formed in 1984 to advise the Health Protection Branch (HPB). HPB published lists of hazardous herbal products in 1987, 1989, 1992 and 1993. The last publication elicited a large response from consumers and the herbal industry. As of 1995, the list was still under review (Kozyrskyj 1997).

The recently formed Office of Natural Health Products (currently the Natural Health Products Directorate) (Sibbald, 1999) is responsible for all regulatory functions including, but not limited to pre-market assessment for product labeling, licensing of manufacturers, post-approval monitoring and compliance and implementation of the recommendations of the standing House Health Committee.

In December 2000, the provincial government of British Columbia approved regulations that established traditional Chinese medicine as an alternative form of primary health care. The cost is not covered under Canadian medicare and practitioners face several practice restrictions. For example, 'no acupuncturist or herbalist may treat an active serious medical condition unless the client has consulted with a medical practitioner, naturopath or dentist or doctor of traditional Chinese medicine, as appropriate' (Johnson, 2001).

3.3.6 Chile

In 1992 the Unidad de Medicina Tradicional was established with the aims of incorporating traditional medicine with proven efficacy into health programmes and of contributing to the establishment of their practice. Herbal medicines are legally differentiated into: (a) drugs intended to cure, alleviate or prevent diseases; (b) food products for medicinal use and with therapeutic properties; and (c) food products for nutritional purposes (Calixto, 2000).

Herbal products with therapeutic indications and/or dosage recommendations are considered to be drugs. Distribution of these products is restricted to pharmacies. A registration for marketing authorization is needed for herbal products, homeopathic products, and other natural products. An application for such registration consists of the complete formula, the labeling, samples of the product, and a monograph which permits identification of the formula and characteristics of the product (Zhang, 1998).

3.3.7 Japan (Zhang, 1998; Eguchi et al., 2000; Saito, 2000)

Japanese traditional medicine, as used in Japanese society for more than a thousand years, may be divided into folk medicine and Chinese medicine (or Kampo medicine). Kampo medicine is so popular that the per capita consumption of herbal medicine in Japan seems to be the highest in the world. One hundred and forty-six Kampo drugs are registered as drugs by the Ministry of Health and Welfare (MHW) and are included in coverage under the National Health Insurance. Acceptance of Kampo drugs took place without clinical validation studies. In 1989, about 80% of physicians reported prescribing Chinese medicine.

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Physicians generally recognize Chinese medicine as a complement to modern medicine; traditional drugs are viewed in Japanese society as safe.

Raw herbs which have long been used as folk medicine and which have also been used for a considerable period as components of an industrial product are each described in a corresponding monograph. These products are freely usable for the purposes indicated in the monograph. Local traditional usage is not sufficient for approval as a drug; the claims and rules of combinations of herbal ingredients are determined on the basis of the pharmacological actions of the ingredients. If a monograph is not available, the claims reported in the Japanese Pharmacopoeia are used as a guide.

In the evaluation of a Chinese medicine, importance is given to 'empirical facts or experience', such as reference data, clinical test reports, etc., rather than the pharmacological action of each ingredient. Safety and efficacy have been estimated based on general methods employed by modern medical science. In 1972 the MHW designated 210 formulae as OTC drugs; this selection was based primarily on the experience of doctors actually practising traditional Chinese medicine. In 1976, the MHW specified 146 formulations as 'National Health Insurance (NHI) applicable prescription drugs'. In the case of an application for approval of a prescription drug other than those previously listed, specified data on safety, stability, comparison with other drugs, clinical test results, etc. must be submitted.

New Kampo drugs are regulated in essentially the same way as 'western' drugs in Japan. The same data required for new 'western' drugs are required for new Kampo drugs, including data from three-phase clinical trials.

Since 1971, the MHW has been running a programme for re-evaluation of all drugs marketed before 1967; a new system to re-evaluate the efficacy and safety for all drugs every five years was launched in 1988.

An Advisory Committee for Kampo drugs was established in 1982 in close association with the MHW in order to improve quality control of Kampo drugs. Since the 1986 Good Manufacturing Practice Law, the standard applied to all pharmaceutical drugs has also applied to Kampo drugs. In addition, in 1985, guidelines for ethical extract products in oriental medicine formulations were developed.

The MHW has three major systems for collection of adverse reaction data. The first is a voluntary system involving 2915 monitoring hospitals. The second system — the Pharmacy Monitoring System — which includes 2733 pharmacies, collects data on cases SOME TRADITIONAL HERBAL MEDICINES 63 of adverse reactions to OTC drugs. The third system is Adverse Reaction Reporting from Manufacturers. These cases are reported to the MHW by the responsible company, with information arising from medical conferences and from journals.

### 3.3.8 Korea (Republic of)

The Pharmaceutical Act of 1993 explicitly allowed pharmacists to prescribe and dispense herbal drugs (Cho, 2000).

### 3.3.9 China

Many herbal medicines have been used for hundreds of years and it is assumed in many cases that they must work. For example, about 7000 species of plants are used in China as herbal medicines, but only 230 of the most commonly used ones have been subject to in-depth pharmacological, analytical and clinical studies.

## History of all Medicine

The 2000 edition of the Chinese pharmacopoeia included 784 items on traditional Chinese medicines and 509 on Chinese patent medicines. Herbal medicines in China are normally considered as medicinal products with special requirements for marketing.

New drugs have to be investigated and approved according to the Drug Administration Law. New traditional Chinese medicines are classified under five categories based on the Amendment and Supplement Regulation of Approval of new traditional medicines:

### Class 1

- (1) Artificial alternatives of Chinese crude drugs.
- (2) Newly discovered Chinese crude drugs and their preparations.
- (3) Active constituents extracted from Chinese crude drugs and their preparations.
- (4) Active constituents extracted from a composite formulation of traditional Chinese medicines.

### Class 2

- (1) Injection of traditional Chinese medicines
- (2) Use of new medicinal parts of Chinese crude drugs and their preparations.
- (3) Effective fractions extracted from Chinese crude drugs or natural drugs and their preparations.
- (4) Chinese crude drugs artificially developed in an animal body and their preparations.
- (5) Effective fractions extracted from a composite formulation.

### Class 3

- (1) New composite formulations of traditional Chinese medicines.
- (2) Composite preparations of traditional Chinese medicines and chemical drugs with the main efficacy due to the traditional Chinese medicine.
- (3) Domestically cultivated or bred crude drugs originally imported and commonly used in China, and their preparations.

### Class 4

- (1) Preparation with a change of dosage form or route of administration.
- (2) Botanical crude drugs acclimatized from their origin, or crude drugs from a domesticated wild animal in China.

### Class 5

Marketing drugs with new indications or syndromes.

In Hong Kong in 1989, the Government appointed a Working Party to review and make recommendations for the use and practice of traditional Chinese medicines. In 1995 the preparatory Committee on Chinese medicines was formed to manage the implementation of these recommendations: as a result 31 potent Chinese medicines that may potentially cause adverse effects have been identified. Proprietary



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preparations containing a combination of herbal ingredients and conventional drugs are regulated in the same manner as other conventional drugs.

The majority of suppliers are state-owned or state-connected. The extensive pharmacopoeia relating to traditional Chinese medicine allows the parallel manufacturing and sale of both pharmaceutical drugs and traditional herbal blends (Chan, 1997; Zhang, 1998).

### 3.3.10 Saudi Arabia

Registration of medicinal products by the Ministry of Health is obligatory, as is that of products, in addition to drugs, with medicinal claims or containing active ingredients having medicinal effects such as herbal preparations, health and supplementary food, medicated cosmetics, antiseptics or medical devices (Zhang, 1998).

### 3.3.11 South Africa (Zhang, 1998)

The trade in crude indigenous herbal products is completely unregulated. A large number of South Africans consult traditional healers, generally in addition to medical practitioners. There are about 200,000 traditional healers in the country.

Once a health-related claim is made for a finished herbal product, that product must go through a full drug evaluation in the Medicines Control Council (MCC) before marketing.

Specific regulations for registration and control of new 'traditional' herbal medicines do not exist. Old medicines, including such well known herbal medicines as senna or aloe, are already registered by the MCC, according to internationally accepted standards of efficacy and safety. Pharmaceutical standards need to be consistent with those of the United States Pharmacopoeia or the British Pharmacopoeia.

## SOME TRADITIONAL HERBAL MEDICINES

### 3.3.12 Australia and New Zealand (Moulds & McNeil, 1988; Zhang, 1998)

The Therapeutic Goods Act 1989 sets out the legal requirements for the import, export, manufacture and supply of medicines in Australia. It details the requirements for listing or registering all therapeutic goods in the Australian Register of Therapeutic Goods (ARTG), as well as many other aspects of the law including advertising, labeling and product appearance. Australian manufacturers of therapeutic goods must be licensed and their manufacturing processes must comply with the principles of Good Manufacturing Practice (GMP). All medicines manufactured for supply in Australia must be listed or registered in the ARTG, unless they are specifically exempt or excluded. Listed medicines are considered to be of lower risk than registered medicines. Most complementary medicines (e.g., herbal, vitamin and mineral products) are examples of listed products.

Medicines assessed as having a higher level of risk must be registered (not listed). Registered medicines include non-prescription (low-risk, OTC) medicines and prescription (high-risk) medicines. Complementary medicines (also known as 'traditional' or 'alternative' medicines) include vitamin, mineral, herbal, aromatherapy and homeopathic products. Complementary medicines may be either listed or registered, depending on their ingredients and the claims made. Most complementary medicines are listed in the ARTG and some are registered (Therapeutics Good Administration, 1999).

In New Zealand, supplements in the market place are largely manufactured in the USA. Regulations are not restrictive; there are no limits on ingredients or potencies and 'structure/function' claims are allowed.

## THE HISTORY OF HEALTH AND HEALING IN AFRICA

Over the past two decades or so, historians have developed a complex literature on the history of health and healing in Africa. This course examines why the topic of health and healing occupies such a central role in our understanding of Africa's pasts.

Drawing on the works of both historians and anthropologists, we explore the creative and shifting ways in which Africans have sought to compose healthy communities through the expansion of therapeutic repertoires. The course covers a wide chronological span and considers a variety of topics, including: faith and healing; therapy management and medical pluralism; debility and bodily misfortune; the use of contraceptives; epidemics and colonial planning; the HIV/AIDS epidemic; and the relationship between public healing and political authority. This is a fascinating history of how changes in health and healing are inseparable from broader changes in control over political institutions and the organization of economic production. It is a history situated at the core of some of the most critical challenges facing contemporary African societies and one that therefore begs for critical understanding.

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### 2.3 Herbal medicine <sup>c</sup>

Herbal medicine (also herbalism) is the study of pharmacognosy and the use of medicinal plants, which are a basis of traditional medicine. There is limited scientific evidence for the safety and efficacy of plants used in 21st century herbalism, which generally does not provide standards for purity or dosage. The scope of herbal medicine commonly includes fungal and bee products, as well as minerals, shells and certain animal parts. Herbal medicine is also called phytomedicine or phytotherapy.



An antique selection of herbal medicines

Paraherbalism describes alternative and pseudoscientific practices of using unrefined plant or animal extracts as unproven medicines or health-promoting agents. Paraherbalism relies on the belief that preserving various substances from a given source with less processing is safer or more effective than manufactured products, a concept for which there is no evidence.

### History



A physician preparing an elixir, from an Arabic version of Dioscorides's pharmacopoeia, 1224

Archaeological evidence indicates that the use of medicinal plants dates back to the Paleolithic age, approximately 60,000 years ago. Written evidence of herbal remedies dates back over 5,000 years to the Sumerians, who compiled lists of plants. Some ancient cultures wrote about plants and their medical uses in books called herbals. In ancient Egypt, herbs are mentioned in Egyptian medical papyri, depicted in tomb illustrations, or on rare occasions found in medical jars containing trace amounts of herbs. In ancient Egypt, the Ebers papyrus dates from about 1550 BC, and covers more than 700 compounds, mainly of plant origin. The earliest known Greek herbals came from Theophrastus of Eresos who, in the 4th century BC, wrote in Greek *Historia Plantarum*, from Diocles of Carystus who wrote during the 3rd century BC, and from Crateuas who wrote in the 1st century BC. Only a few fragments of these works have survived intact, but from what remains, scholars noted overlap with the Egyptian herbals. Seeds likely used for herbalism were found in archaeological sites of Bronze Age China dating from the Shang dynasty (c. 1600–1046 BC). Over a hundred of the 224 compounds mentioned in the *Huangdi Neijing*, an early Chinese medical text, are herbs. Herbs were also commonly used in the traditional medicine of ancient India, where the principal treatment for diseases was diet. *De Materia Medica*, originally written in Greek by Pedanius Dioscorides (c. 40–90 AD) of Anazarbus, Cilicia, a physician and botanist, is one example of herbal writing used over centuries until the 1600s.

### MODERN HERBAL MEDICINE

The World Health Organization (WHO) estimates that 80 percent of the population of some Asian and African countries presently use herbal medicine for some aspect of primary health care.

Some prescription drugs have a basis as herbal remedies, including artemisinin, digitalis, quinine and taxanes.

### REGULATORY REVIEW

In 2015, the Australian Government's Department of Health published the results of a review of alternative therapies that sought to determine if any were suitable for being covered by health insurance; herbalism was one of 17 topics evaluated for which no clear evidence of effectiveness was found. Establishing guidelines to assess safety and efficacy of herbal products, the European Medicines Agency provided criteria in 2017 for evaluating and grading the quality of clinical research in preparing monographs about herbal products. In the United States, the National Center for Complementary and Integrative Health of the National Institutes of Health funds clinical trials on herbal compounds, provides fact sheets evaluating the safety, potential effectiveness and side effects of many plant sources, and maintains a registry of clinical research conducted on herbal products.

According to Cancer Research UK as of 2015, "there is currently no strong evidence from studies in people that herbal remedies can treat, prevent or cure cancer".

## PREVALENCE OF USE

The use of herbal remedies is more prevalent in people with chronic diseases, such as cancer, diabetes, asthma and end-stage kidney disease. Multiple factors such as gender, age, ethnicity, education and social class are also shown to have association with prevalence of herbal remedies use.

## HERBAL PREPARATIONS



Leaves of *Eucalyptus olida* being packed into a steam distillation unit to gather its essential oil

There are many forms in which herbs can be administered, the most common of which is a liquid consumed as a herbal tea or a (possibly diluted) plant extract.

Herbal teas, or tisanes, are the resultant liquid of extracting herbs into water, though they are made in a few different ways. Infusions are hot water extracts of herbs, such as chamomile or mint, through steeping. Decoctions are the long-term boiled extracts, usually of harder substances like roots or bark. Maceration is the cold infusion of plants with high mucilage- content, such as sage or thyme. To make macerates, plants are chopped and added to cold water. They are then left to stand for 7 to 12 hours (depending on herb used). For most macerates, 10 hours is used.

Tinctures are alcoholic extracts of herbs, which are generally stronger than herbal teas. Tinctures are usually obtained by combining pure ethanol (or a mixture of pure ethanol with water) with the herb. A completed tincture has an ethanol percentage of at least 25% (sometimes up to 90%). Non-alcoholic tinctures can be made with glycerin but it is believed to be less absorbed by the body than alcohol based tinctures and has a shorter shelf life. Herbal wine and elixirs are alcoholic extract of herbs, usually with an ethanol percentage of 12–38%. Extracts include liquid extracts, dry extracts, and nebulisates. Liquid extracts are liquids with a lower ethanol percentage than tinctures. They are usually made by vacuum distilling tinctures.

Dry extracts are extracts of plant material that are evaporated into a dry mass. They can then be further refined to a capsule or tablet.

The exact composition of an herbal product is influenced by the method of extraction. A tea will be rich in polar components because water is a polar solvent. Oil on the other hand is a non-polar solvent and it will absorb non-polar compounds. Alcohol lies somewhere in between.



A herb shop in the souk of Marrakesh, Morocco

Many herbs are applied topically to the skin in a variety of forms. Essential oil extracts can be applied to the skin, usually diluted in a carrier oil. Many essential oils can burn the skin or are simply too high dose used straight; diluting them in olive oil or another food grade oil such as almond oil can allow these to be used safely as a topical. Salves, oils, balms, creams and lotions are other forms of topical delivery mechanisms. Most topical applications are oil extractions of herbs. Taking a food grade oil and soaking herbs in it for anywhere from weeks to months allows certain phytochemicals to be extracted into the oil. This oil can then be made into salves, creams, lotions, or simply used as an oil for topical application. Many massage oils, antibacterial salves, and wound healing compounds are made this way.

Inhalation, as in aromatherapy, can be used as a treatment.

#### SAFETY



*Datura stramonium* has been used in Ayurveda for various treatments, but contains alkaloids, such as atropine and scopolamine, which may cause severe toxicity.

Consumption of herbs may cause adverse effects. Furthermore, "adulteration, inappropriate formulation, or lack of understanding of plant and drug interactions have led to adverse reactions that are sometimes

## History of all Medicine

life threatening or lethal." Proper double-blind clinical trials are needed to determine the safety and efficacy of each plant before medical use.

Although many consumers believe that herbal medicines are safe because they are natural, herbal medicines and synthetic drugs may interact, causing toxicity to the consumer. Herbal remedies can also be dangerously contaminated, and herbal medicines without established efficacy, may unknowingly be used to replace prescription medicines.

Standardization of purity and dosage is not mandated in the United States, but even products made to the same specification may differ as a result of biochemical variations within a species of plant. Plants have chemical defense mechanisms against predators that can have adverse or lethal effects on humans. Examples of highly toxic herbs include poison hemlock and nightshade. They are not marketed to the public as herbs, because the risks are well known, partly due to a long and colorful history in Europe, associated with "sorcery", "magic" and intrigue. Although not frequent, adverse reactions have been reported for herbs in widespread use. On occasion serious untoward outcomes have been linked to herb consumption. A case of major potassium depletion has been attributed to chronic licorice ingestion, and consequently professional herbalists avoid the use of licorice where they recognize that this may be a risk. Black cohosh has been implicated in a case of liver failure. Few studies are available on the safety of herbs for pregnant women, and one study found that use of complementary and alternative medicines are associated with a 30% lower ongoing pregnancy and live birth rate during fertility treatment.

Examples of herbal treatments with likely cause-effect relationships with adverse events include aconite, which is often a legally restricted herb, ayurvedic remedies, broom, chaparral, Chinese herb mixtures, comfrey, herbs containing certain flavonoids, germander, guar gum, liquorice root, and pennyroyal. Examples of herbs that may have long-term adverse effects include ginseng, which is unpopular among herbalists for this reason, the endangered herb goldenseal, milk thistle, senna, against which herbalists generally advise and rarely use, aloe vera juice, buckthorn bark and berry, cascara sagrada bark, saw palmetto, valerian, kava, which is banned in the European Union, St. John's wort, khat, betel nut, the restricted herb ephedra, and guarana.

There is also concern with respect to the numerous well-established interactions of herbs and drugs. In consultation with a physician, usage of herbal remedies should be clarified, as some herbal remedies have the potential to cause adverse drug interactions when used in combination with various prescription and over-the-counter pharmaceuticals, just as a patient should inform a herbalist of their consumption of orthodox prescription and other medication.

For example, dangerously low blood pressure may result from the combination of an herbal remedy that lowers blood pressure together with prescription medicine that has the same effect. Some herbs may amplify the effects of anticoagulants. Certain herbs as well as common fruit interfere with cytochrome P450, an enzyme critical to much drug metabolism.

In a 2018 study, FDA identified active pharmaceutical additives in over 700 of analyzed dietary supplements sold as "herbal", "natural" or "traditional". The undisclosed additives included "unapproved antidepressants and designer steroids", as well as prescription drugs, such as sildenafil or sibutramine.

### LABELING ACCURACY

A 2013 study found that one-third of herbal supplements sampled contained no trace of the herb listed on the label. The study found products adulterated with contaminants or fillers not listed on the label,

## History of all Medicine

including potential allergens such as soy, wheat, or black walnut. One bottle labeled as St. John's wort was found to actually contain Alexandrian senna, a laxative.

Researchers at the University of Adelaide found in 2014 that almost 20 percent of herbal remedies surveyed were not registered with the Therapeutic Goods Administration, despite this being a condition for their sale. They also found that nearly 60 percent of products surveyed had ingredients that did not match what was on the label. Out of 121 products, only 15 had ingredients that matched their TGA listing and packaging.

In 2015, the New York Attorney General issued cease and desist letters to four major U.S. retailers (GNC, Target, Walgreens, and Walmart) who were accused of selling herbal supplements that were mislabeled and potentially dangerous. Twenty-four products were tested by DNA barcoding as part of the investigation, with all but five containing DNA that did not match the product labels.

### PRACTITIONERS OF HERBALISM



A herbalist gathers the flower heads of *Arnica montana*

In some countries, formalized training and minimum education standards exist for herbalists, although these are not necessarily uniform within or between countries. In Australia, for example, the self-regulated status of the profession (as of 2009) resulted in variable standards of training, and numerous loosely-formed associations setting different educational standards. One 2009 review concluded that regulation of herbalists in Australia was needed to reduce the risk of interaction of herbal medicines with prescription drugs, to implement clinical guidelines and prescription of herbal products, and to assure self-regulation for protection of public health and safety. In the United Kingdom, the training of herbalists is done by state-funded universities offering Bachelor of Science degrees in herbal medicine. In the United States, according to the American Herbalist Guild, "there is currently no licensing or certification for herbalists in any state that precludes the rights of anyone to use, dispense, or recommend herbs." However, there are U.S. federal restrictions for marketing herbs as cures for medical conditions, or essentially practicing as an unlicensed physician.

### UNITED STATES HERBALISM FRAUD

Over the years 2017–21, the U.S. Food and Drug Administration (FDA) issued warning letters to numerous herbalism companies for illegally marketing products under "conditions that cause them to be drugs under section 201(g)(1) of the Act [21 U.S.C. § 321(g)(1)], because they are intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease and/or intended to affect the structure or any function of the body" when no such evidence existed. During the COVID-19 pandemic, the FDA and U.S. Federal Trade Commission issued warnings to several hundred American companies for promoting false claims that herbal products could prevent or treat COVID-19 disease.

### GOVERNMENT REGULATIONS

The World Health Organization (WHO), the specialized agency of the United Nations (UN) that is concerned with international public health, published Quality control methods for medicinal plant



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materials in 1998 to support WHO Member States in establishing quality standards and specifications for herbal materials, within the overall context of quality assurance and control of herbal medicines.

In the European Union (EU), herbal medicines are regulated under the Committee on Herbal Medicinal Products.

In the United States, herbal remedies are regulated dietary supplements by the Food and Drug Administration (FDA) under current good manufacturing practice (cGMP) policy for dietary supplements. Manufacturers of products falling into this category are not required to prove the safety or efficacy of their product so long as they do not make 'medical' claims or imply uses other than as a 'dietary supplement', though the FDA may withdraw a product from sale should it prove harmful.

Canadian regulations are described by the Natural and Non-prescription Health Products Directorate which requires an eight-digit Natural Product Number or Homeopathic Medicine Number on the label of licensed herbal medicines or dietary supplements.

Some herbs, such as cannabis and coca, are outright banned in most countries though coca is legal in most of the South American countries where it is grown. The Cannabis plant is used as an herbal medicine, and as such is legal in some parts of the world. Since 2004, the sales of ephedra as a dietary supplement is prohibited in the United States by the FDA, and subject to Schedule III restrictions in the United Kingdom.

### SCIENTIFIC CRITICISM

Herbalism has been criticized as a potential "minefield" of unreliable product quality, safety hazards, and potential for misleading health advice. Globally, there are no standards across various herbal products to authenticate their contents, safety or efficacy, and there is generally an absence of high-quality scientific research on product composition or effectiveness for anti-disease activity. Presumed claims of therapeutic benefit from herbal products, without rigorous evidence of efficacy and safety, receive skeptical views by scientists.

Unethical practices by some herbalists and manufacturers, which may include false advertising about health benefits on product labels or literature, and contamination or use of fillers during product preparation, may erode consumer confidence about services and products.

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**Paraherbalis<sup>m</sup>**



An example of a herbal medicine resource: the bark of the cinchona tree contains quinine, which today is a widely prescribed treatment for malaria. The unpurified bark is still used by some who can not afford to purchase more expensive antimalarial drugs.

Paraherbalism is the pseudoscientific use of extracts of plant or animal origin as supposed medicines or health-promoting agents. Phytotherapy differs from plant-derived medicines in standard pharmacology because it does not isolate and standardize the compounds from a given plant believed to be biologically active. It relies on the false belief that preserving the complexity of substances from a given plant with less processing is safer and potentially more effective, for which there is no evidence either condition applies.

Phytochemical researcher Varro Eugene Tyler described paraherbalism as "faulty or inferior herbalism based on pseudoscience", using scientific terminology but lacking scientific evidence for safety and efficacy. Tyler listed ten fallacies that distinguished herbalism from paraherbalism, including claims that there is a conspiracy to suppress safe and effective herbs, herbs can not cause harm, that whole herbs are more effective than molecules isolated from the plants, herbs are superior to drugs, the doctrine of signatures (the belief that the shape of the plant indicates its function) is valid, dilution of substances increases their potency (a doctrine of the pseudoscience of homeopathy), astrological alignments are significant, animal testing is not appropriate to indicate human effects, anecdotal evidence is an effective means of proving a substance works and herbs were created by God to cure disease. Tyler suggests that none of these beliefs have any basis in fact.

## TRADITIONAL SYSTEMS



Ready to drink macerated medicinal liquor with goji berry, tokay gecko, and ginseng, for sale at a traditional medicine market in Xi'an, China.

## AFRICA

Up to 80% of the population in Africa uses traditional medicine as primary health care.

## AMERICAS

Native Americans used about 2,500 of the approximately 20,000 plant species that are native to North America.

In Andean healing practices, the use of Entheogens, in particular the San Pedro cactus (*Echinopsis pachanoi*) is still a vital component, and has been around for millennia.

## CHINA

Some researchers trained in both Western and traditional Chinese medicine have attempted to deconstruct ancient medical texts in the light of modern science. In 1972, Tu Youyou, a pharmaceutical chemist, extracted the anti-malarial drug artemisinin from sweet wormwood, a traditional Chinese treatment for intermittent fevers.

## INDIA



A platter of herbal medicines at Goa, India

In India, Ayurvedic medicine has quite complex formulas with 30 or more ingredients, including a sizable number of ingredients that have undergone "alchemical processing", chosen to balance dosha. In Ladakh, Lahul-Spiti and Tibet, the Tibetan Medical System is prevalent, also called the 'Amichi Medical System'. Over 337 species of medicinal plants have been documented by C.P. Kala. Those are used by Amchis, the practitioners of this medical system. The Indian book, Vedas, mentions treatment of diseases with plants.

#### INDONESIA



Different types of Indonesian jamu herbal medicines held in bottles

In Indonesia, especially among the Javanese, the jamu traditional herbal medicine may have originated in the Mataram Kingdom era, some 1300 years ago. The bas-reliefs on Borobudur depict the image of people grinding herbs with stone mortar and pestle, a drink seller, an herbalist, and masseuse treating people. The Madhawapura inscription from Majapahit period mentioned a specific profession of herbs mixer and combiner (herbalist), called Acaraki. The book from Mataram dated from circa 1700 contains 3,000 entries of jamu herbal recipes, while Javanese classical literature Serat Centhini (1814) describes some jamu herbal concoction recipes.

Though possibly influenced by Indian Ayurveda systems, the Indonesia archipelago holds numerous indigenous plants not found in India, including plants similar to those in Australia beyond the Wallace Line. Jamu practices may vary from region to region, and are often not recorded, especially in remote areas of the country. Although primarily herbal, some Jamu materials are acquired from animals, such as honey, royal jelly, milk and Ayam Kampung eggs.

### BELIEFS

Herbalists tend to use extracts from parts of plants, such as the roots or leaves, believing that plants are subject to environmental pressures and therefore develop resistance to threats such as radiation, reactive oxygen species and microbial attack to survive, providing defensive phytochemicals of use in herbalism.

### USE OF PLANTS BY ANIMALS

Indigenous healers often claim to have learned by observing that sick animals change their food preferences to nibble at bitter herbs they would normally reject. Field biologists have provided corroborating evidence based on observation of diverse species, such as chickens, sheep, butterflies, and chimpanzees. The habit of changing diet has been shown to be a physical means of purging intestinal parasites. Sick animals tend to forage plants rich in secondary metabolites, such as tannins and alkaloids.

## 2.4 MEDICINAL PLANTS

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Medicinal plants, also called medicinal herbs, have been discovered and used in traditional medicine practices since prehistoric times. Plants synthesize hundreds of chemical compounds for functions including defense against insects, fungi, diseases, and herbivorous mammals. Numerous phytochemicals with potential or established biological activity have been identified. However, since a single plant contains widely diverse phytochemicals, the effects of using a whole plant as medicine are uncertain. Further, the phytochemical content and pharmacological actions, if any, of many plants having medicinal potential remain unassessed by rigorous scientific research to define efficacy and safety.



The bark of willow trees contains salicylic acid, the active metabolite of aspirin, and has been used for millennia to relieve pain and reduce fever.



### Medicinal plants

The earliest historical records of herbs are found from the Sumerian civilization, where hundreds of medicinal plants including opium are listed on clay tablets, c. 3000 BC. The Ebers Papyrus from ancient Egypt, c. 1550 BC, describes over 850 plant medicines. The Greek physician Dioscorides, who worked in the Roman army, documented over 1000 recipes for medicines using over 600 medicinal plants in *De materia medica*, c. 60 AD; this formed the basis of pharmacopoeias for some 1500 years. Drug research sometimes makes use of ethnobotany to search for pharmacologically active substances, and this approach has yielded hundreds of useful compounds. These include the common drugs aspirin, digoxin, quinine, and opium. The compounds found in plants are of many kinds, but most are in four major biochemical classes: alkaloids, glycosides, polyphenols, and terpenes.

Medicinal plants are widely used in non-industrialized societies, mainly because they are readily available and cheaper than modern medicines. The annual global export value of the thousands of types of plants with medicinal properties was estimated to be US\$2.2 billion in 2012. In 2017, the potential global market for botanical extracts and medicines was estimated at several hundred billion dollars. In many countries, there is little regulation of traditional medicine, but the World Health Organization coordinates a network to encourage safe and rational usage. Medicinal plants face both general threats, such as climate change and habitat destruction, and the specific threat of over-collection to meet market demand.

### HISTORY



Dioscorides's 1st century *De materia medica*, seen here in a c. 1334 copy in Arabic, describes some 1000 drug recipes based on over 600 plants.



## History of all Medicine

### PREHISTORIC TIMES

Plants, including many now used as culinary herbs and spices, have been used as medicines, not necessarily effectively, from prehistoric times. Spices have been used partly to counter food spoilage bacteria, especially in hot climates, and especially in meat dishes which spoil more readily. Angiosperms (flowering plants) were the original source of most plant medicines.

Human settlements are often surrounded by weeds used as herbal medicines, such as nettle, dandelion and chickweed. Humans were not alone in using herbs as medicines: some animals such as non-human primates, monarch butterflies and sheep ingest medicinal plants when they are ill. Plant samples from prehistoric burial sites are among the lines of evidence that Paleolithic peoples had knowledge of herbal medicine. For instance, a 60,000-year-old Neanderthal burial site, "Shanidar IV", in northern Iraq has yielded large amounts of pollen from eight plant species, seven of which are used now as herbal remedies. Also, a mushroom was found in the personal effects of Ötzi the Iceman, whose body was frozen in the Ötztal Alps for more than 5,000 years. The mushroom was probably used against whipworm.

### ANCIENT TIMES



The Ebers Papyrus (c. 1550 BC) from Ancient Egypt describes the use of hundreds of plant medicines.

In ancient Sumeria, hundreds of medicinal plants including myrrh and opium are listed on clay tablets from around 3000 BC. The ancient Egyptian Ebers Papyrus lists over 800 plant medicines such as aloe, cannabis, castor bean, garlic, juniper, and mandrake.

From ancient times to the present, Ayurvedic medicine as documented in the Atharva Veda, the Rig Veda and the Sushruta Samhita has used hundreds of pharmacologically active herbs and spices such as turmeric, which contains curcumin. The Chinese pharmacopoeia, the Shennong Ben Cao Jing records plant medicines such as chaulmoogra for leprosy, ephedra, and hemp. This was expanded in the Tang Dynasty Yaoxing Lun. In the fourth century BC, Aristotle's pupil Theophrastus wrote the first systematic botany text, *Historia plantarum*. In around 60 AD, the Greek physician Pedanius Dioscorides, working for the Roman army, documented over 1000 recipes for medicines using over 600 medicinal plants in *De materia medica*. The book remained the authoritative reference on herbalism for over 1500 years, into the seventeenth century.

MIDDLE AGES



Illustration of a 1632 copy of Avicenna's 1025 *The Canon of Medicine*, showing a physician talking to a female patient in a garden, while servants prepare medicines.

In the Early Middle Ages, Benedictine monasteries preserved medical knowledge in Europe, translating and copying classical texts and maintaining herb gardens. Hildegard of Bingen wrote *Causae et Curae* ("Causes and Cures") on medicine. In the Islamic Golden Age, scholars translated many classical Greek texts including Dioscorides into Arabic, adding their own commentaries. Herbalism flourished in the Islamic world, particularly in Baghdad and in Al- Andalus. Among many works on medicinal plants, Abulcasis (936–1013) of Cordoba wrote *The Book of Simples*, and Ibn al-Baitar (1197–1248) recorded hundreds of medicinal herbs such as *Aconitum*, *nux vomica*, and tamarind in his *Corpus of Simples*. Avicenna included many plants in his 1025 *The Canon of Medicine*. Abu-Rayhan Biruni, Ibn Zuhr, Peter of Spain, and John of St Amand wrote further pharmacopoeias.

EARLY MODERN



An early illustrated book of medicinal plants, *The Grete Herball*, 1526

The Early Modern period saw the flourishing of illustrated herbals across Europe, starting with the 1526 *Grete Herball*. John Gerard wrote his famous *The Herball or General History of Plants* in 1597, based on Rembert Dodoens, and Nicholas Culpeper published his *The English Physician Enlarged*. Many new plant medicines arrived in Europe as products of Early Modern exploration and the resulting Columbian

## History of all Medicine

Exchange, in which livestock, crops and technologies were transferred between the Old World and the Americas in the 15th and 16th centuries. Medicinal herbs arriving in the Americas included garlic, ginger, and turmeric; coffee, tobacco and coca travelled in the other direction. In Mexico, the sixteenth century Badianus Manuscript described medicinal plants available in Central America.

### 19TH AND 20TH CENTURIES

The place of plants in medicine was radically altered in the 19th century by the application of chemical analysis. Alkaloids were isolated from a succession of medicinal plants, starting with morphine from the poppy in 1806, and soon followed by ipecacuanha and strychnos in 1817, quinine from the cinchona tree, and then many others. As chemistry progressed, additional classes of pharmacologically active substances were discovered in medicinal plants. Commercial extraction of purified alkaloids including morphine from medicinal plants began at Merck in 1826. Synthesis of a substance first discovered in a medicinal plant began with salicylic acid in 1853. Around the end of the 19th century, the mood of pharmacy turned against medicinal plants, as enzymes often modified the active ingredients when whole plants were dried, and alkaloids and glycosides purified from plant material started to be preferred. Drug discovery from plants continued to be important through the 20th century and into the 21st, with important anti-cancer drugs from yew and Madagascar periwinkle.

### CONTEXT

Medicinal plants are used with the intention of maintaining health, to be administered for a specific condition, or both, whether in modern medicine or in traditional medicine. The Food and Agriculture Organization estimated in 2002 that over 50,000 medicinal plants are used across the world. The Royal Botanic Gardens, Kew more conservatively estimated in 2016 that 17,810 plant species have a medicinal use, out of some 30,000 plants for which a use of any kind is documented.

In modern medicine, around a quarter[a] of the drugs prescribed to patients are derived from medicinal plants, and they are rigorously tested. In other systems of medicine, medicinal plants may constitute the majority of what are often informal attempted treatments, not tested scientifically. The World Health Organization estimates, without reliable data, that some 80 percent of the world's population depends mainly on traditional medicine (including but not limited to plants); perhaps some two billion people are largely reliant on medicinal plants. The use of plant-based materials including herbal or natural health products with supposed health benefits, is increasing in developed countries. This brings attendant risks of toxicity and other effects on human health, despite the safe image of herbal remedies. Herbal medicines have been in use since long before modern medicine existed; there was and often still is little or no knowledge of the pharmacological basis of their actions, if any, or of their safety. The World Health Organization formulated a policy on traditional medicine in 1991, and since then has published guidelines for them, with a series of monographs on widely used herbal medicines.

Medicinal plants may provide three main kinds of benefit: health benefits to the people who consume them as medicines; financial benefits to people who harvest, process, and distribute them for sale; and society-wide benefits, such as job opportunities, taxation income, and a healthier labour force. However, development of plants or extracts having potential medicinal uses is blunted by weak scientific evidence, poor practices in the process of drug development, and insufficient financing.



### PHYTOCHEMICAL BASIS

All plants produce chemical compounds which give them an evolutionary advantage, such as defending against herbivores or, in the example of salicylic acid, as a hormone in plant defenses. These phytochemicals have potential for use as drugs, and the content and known pharmacological activity of these substances in medicinal plants is the scientific basis for their use in modern medicine, if scientifically confirmed. For instance, daffodils (*Narcissus*) contain nine groups of alkaloids including galantamine, licensed for use against Alzheimer's disease. The alkaloids are bitter-tasting and toxic, and concentrated in the parts of the plant such as the stem most likely to be eaten by herbivores; they may also protect against parasites.

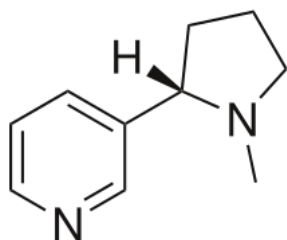
Modern knowledge of medicinal plants is being systematised in the Medicinal Plant Transcriptomics Database, which by 2011 provided a sequence reference for the transcriptome of some thirty species. The major classes of pharmacologically active phytochemicals are described below, with examples of medicinal plants that contain them.

### ALKALOIDS

Alkaloids are bitter-tasting chemicals, very widespread in nature, and often toxic, found in many medicinal plants. There are several classes with different modes of action as drugs, both recreational and pharmaceutical. Medicines of different classes include atropine, scopolamine, and hyoscyamine (all from nightshade), the traditional medicine berberine (from plants such as *Berberis* and *Mahonia*), [b] caffeine (*Coffea*), cocaine (*Coca*), ephedrine (*Ephedra*), morphine (opium poppy), nicotine (tobacco), [c] reserpine (*Rauvolfia serpentina*), quinidine and quinine (*Cinchona*), vincamine (*Vinca minor*), and vincristine (*Catharanthus roseus*).



The opium poppy *Papaver somniferum* is the source of the alkaloids morphine and codeine.



The alkaloid nicotine from tobacco binds directly to the body's Nicotinic acetylcholine receptors, accounting for its pharmacological effects.



Deadly nightshade, *Atropa belladonna*, yields tropane alkaloids including atropine, scopolamine and hyoscyamine.

## GLYCOSIDES

Antraquinone glycosides are found in medicinal plants such as rhubarb, cascara, and Alexandrian senna. Plant-based laxatives made from such plants include senna, rhubarb and Aloe.

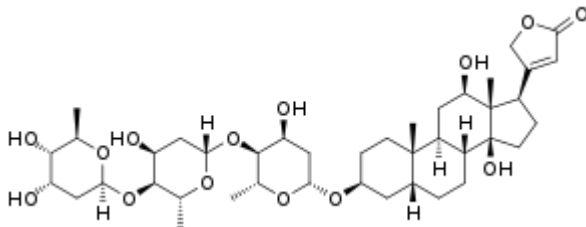
The cardiac glycosides are powerful drugs from medicinal plants including foxglove and lily of the valley. They include digoxin and digitoxin which support the beating of the heart, and act as diuretics.



*Senna alexandrina*, containing anthraquinone glycosides, has been used as a laxative for millennia.



The foxglove, *Digitalis purpurea*, contains digoxin, a cardiac glycoside. The plant was used on heart conditions long before the glycoside was identified.



Digoxin is used to treat atrial fibrillation, atrial flutter and sometimes heart failure.

## POLYPHENOLS

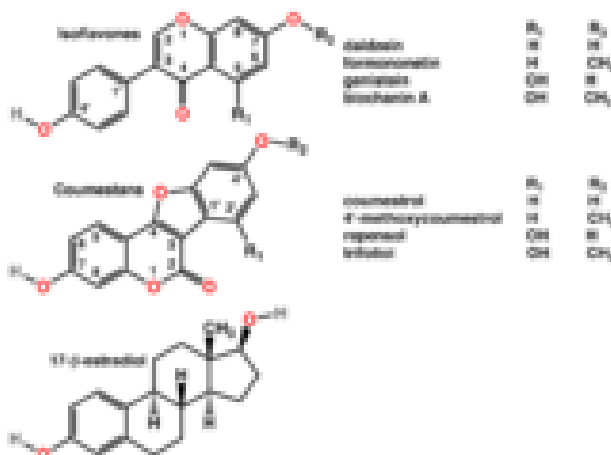
Polyphenols of several classes are widespread in plants, having diverse roles in defenses against plant diseases and predators. They include hormone-mimicking phytoestrogens and astringent tannins. Plants containing phytoestrogens have been administered for centuries for gynecological disorders, such as fertility, menstrual, and menopausal problems. Among these plants are *Pueraria mirifica*, kudzu, angelica,] fennel, and anise.

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Many polyphenolic extracts, such as from grape seeds, olives or maritime pine bark, are sold as dietary supplements and cosmetics without proof or legal health claims for beneficial health effects. In Ayurveda, the astringent rind of the pomegranate, containing polyphenols called punicalagins, is used as a medicine.



Angelica, containing phytoestrogens, has long been used for gynaecological disorders.



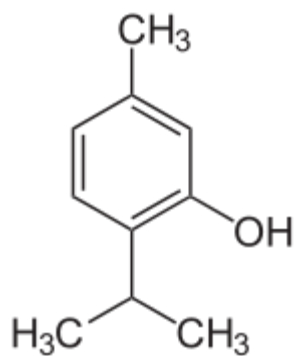
Polyphenols include phytoestrogens (top and middle), mimics of animal estrogen (bottom).

## TERPENES

Terpenes and terpenoids of many kinds are found in a variety of medicinal plants, and in resinous plants such as the conifers. They are strongly aromatic and serve to repel herbivores. Their scent makes them useful in essential oils, whether for perfumes such as rose and lavender, or for aromatherapy. Some have medicinal uses: for example, thymol is an antiseptic and was once used as a vermifuge (anti-worm medicine).



The essential oil of common thyme (*Thymus vulgaris*), contains the monoterpene thymol, an antiseptic and antifungal.



Thymol is one of many terpenes found in plants.



In practice

Licensed commercial cultivation of opium poppies, Tasmania, 2010

## CULTIVATION

Medicinal plants demand intensive management. Different species each require their own distinct conditions of cultivation. The World Health Organization recommends the use of rotation to minimise problems with pests and plant diseases. Cultivation may be traditional or may make use of conservation agriculture practices to maintain organic matter in the soil and to conserve water, for example with no-till farming systems. In many medicinal and aromatic plants, plant characteristics vary widely with soil type and cropping strategy, so care is required to obtain satisfactory yields.

## PREPARATION



A Medieval physician preparing an extract from a medicinal plant, from an Arabic Dioscorides, 1224

## History of all Medicine

Medicinal plants are often tough and fibrous, requiring some form of preparation to make them convenient to administer. According to the Institute for Traditional Medicine, common methods for the preparation of herbal medicines include decoction, powdering, and extraction with alcohol, in each case yielding a mixture of substances. Decoction involves crushing and then boiling the plant material in water to produce a liquid extract that can be taken orally or applied topically. Powdering involves drying the plant material and then crushing it to yield a powder that can be compressed into tablets. Alcohol extraction involves soaking the plant material in cold wine or distilled spirit to form a tincture.

Traditional poultices were made by boiling medicinal plants, wrapping them in a cloth, and applying the resulting parcel externally to the affected part of the body.

When modern medicine has identified a drug in a medicinal plant, commercial quantities of the drug may either be synthesised or extracted from plant material, yielding a pure chemical. Extraction can be practical when the compound in question is complex.

### USAGE



A herbalist's shop in the souk of Marrakesh, Morocco

Plant medicines are in wide use around the world. In most of the developing world, especially in rural areas, local traditional medicine, including herbalism, is the only source of health care for people, while in the developed world, alternative medicine including use of dietary supplements is marketed aggressively using the claims of traditional medicine. As of 2015, most products made from medicinal plants had not been tested for their safety and efficacy, and products that were marketed in developed economies and provided in the undeveloped world by traditional healers were of uneven quality, sometimes containing dangerous contaminants. Traditional Chinese medicine makes use of a wide variety of plants, among other materials and techniques. Researchers from Kew Gardens found 104 species used for diabetes in Central America, of which seven had been identified in at least three separate studies. The Yanomami of the Brazilian Amazon, assisted by researchers, have described 101 plant species used for traditional medicines.

Drugs derived from plants including opiates, cocaine and cannabis have both medical and recreational uses. Different countries have at various times made use of illegal drugs, partly on the basis of the risks involved in taking psychoactive drugs.

EFFECTIVENESS



The bark of the cinchona tree contains the alkaloid quinine, traditionally given for malaria.

Plant medicines have often not been tested systematically, but have come into use informally over the centuries. By 2007, clinical trials had demonstrated potentially useful activity in nearly 16% of herbal medicines; there was limited in vitro or in vivo evidence for roughly half the medicines; there was only phytochemical evidence for around 20%; 0.5% were allergenic or toxic; and some 12% had basically never been studied scientifically. Cancer Research UK caution that there is no reliable evidence for the effectiveness of herbal remedies for cancer.

A 2012 phylogenetic study built a family tree down to genus level using 20,000 species to compare the medicinal plants of three regions, Nepal, New Zealand and the Cape of South Africa. It discovered that the species used traditionally to treat the same types of condition belonged to the same groups of plants in all three regions, giving a "strong phylogenetic signal". Since many plants that yield pharmaceutical drugs belong to just these groups, and the groups were independently used in three different world regions, the results were taken to mean

- 1) that these plant groups do have potential for medicinal efficacy,
- 2) that undefined pharmacological activity is associated with use in traditional medicine, and 3) that the use of a phylogenetic groups for medicines in one region may predict their use in the other regions.

REGULATION



The practice of Ayurveda in India, such as the running of this Ayurvedic pharmacy in Rishikesh, is regulated by a government department, AYUSH.



## History of all Medicine

The World Health Organization (WHO) has been coordinating a network called the International Regulatory Cooperation for Herbal Medicines to try to improve the quality of medical products made from medicinal plants and the claims made for them. In 2015, only around 20% of countries had well-functioning regulatory agencies, while 30% had none, and around half had limited regulatory capacity. In India, where Ayurveda has been practised for centuries, herbal remedies are the responsibility of a government department, AYUSH, under the Ministry of Health & Family Welfare.

WHO has set out a strategy for traditional medicines with four objectives: to integrate them as policy into national healthcare systems; to provide knowledge and guidance on their safety, efficacy, and quality; to increase their availability and affordability; and to promote their rational, therapeutically sound usage. WHO notes in the strategy that countries are experiencing seven challenges to such implementation, namely in developing and enforcing policy; in integration; in safety and quality, especially in assessment of products and qualification of practitioners; in controlling advertising; in research and development; in education and training; and in the sharing of information.

## DRUG DISCOVERY



The anticancer drug taxol was developed after screening of the Pacific yew, *Taxus brevifolia* (foliage and fruit shown) in 1971.

The pharmaceutical industry has roots in the apothecary shops of Europe in the 1800s, where pharmacists provided local traditional medicines to customers, which included extracts like morphine, quinine, and strychnine. Therapeutically important drugs like camptothecin (from *Camptotheca acuminata*, used in traditional Chinese medicine) and taxol (from the Pacific yew, *Taxus brevifolia*) were derived from medicinal plants. The Vinca alkaloids vincristine and vinblastine, used as anti-cancer drugs, were discovered in the 1950s from the Madagascar periwinkle, *Catharanthus roseus*.

Hundreds of compounds have been identified using ethnobotany, investigating plants used by indigenous peoples for possible medical applications. Some important phytochemicals, including curcumin, epigallocatechin gallate, genistein and resveratrol are pan-assay interference compounds, meaning that

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in vitro studies of their activity often provide unreliable data. As a result, phytochemicals have frequently proven unsuitable as the lead substances in drug discovery. In the United States over the period 1999 to 2012, despite several hundred applications for new drug status, only two botanical drug candidates had sufficient evidence of medicinal value to be approved by the Food and Drug Administration.

The pharmaceutical industry has remained interested in mining traditional uses of medicinal plants in its drug discovery efforts. Of the 1073 small-molecule drugs approved in the period 1981 to 2010, over half were either directly derived from or inspired by natural substances. Among cancer treatments, of 185 small-molecule drugs approved in the period from 1981 to 2019, 65% were derived from or inspired by natural substances.

## SAFETY



The Thornapple *Datura stramonium* has been used for asthma, because it contains the alkaloid atropine, but it is also a powerful and potentially fatal hallucinogen.

Plant medicines can cause adverse effects and even death, whether by side-effects of their active substances, by adulteration or contamination, by overdose, or by inappropriate prescription. Many such effects are known, while others remain to be explored scientifically. There is no reason to presume that because a product comes from nature it must be safe: the existence of powerful natural poisons like atropine and nicotine shows this to be untrue. Further, the high standards applied to conventional medicines do not always apply to plant medicines, and dose can vary widely depending on the growth conditions of plants: older plants may be much more toxic than young ones, for instance.

Pharmacologically active plant extracts can interact with conventional drugs, both because they may provide an increased dose of similar compounds, and because some phytochemicals interfere with the body's systems that metabolise drugs in the liver including the cytochrome P450 system, making the drugs last longer in the body and have a more powerful cumulative effect. Plant medicines can be dangerous during pregnancy. Since plants may contain many different substances, plant extracts may have complex effects on the human body.



QUALITY, ADVERTISING, AND LABELLING

Herbal medicine and dietary supplement products have been criticized as not having sufficient standards or scientific evidence to confirm their contents, safety, and presumed efficacy. A 2013 study found that one-third of herbal products sampled contained no trace of the herb listed on the label, and other products were adulterated with unlisted fillers including potential allergens.

THREATS

Where medicinal plants are harvested from the wild rather than cultivated, they are subject to both general and specific threats. General threats include climate change and habitat loss to development and agriculture. A specific threat is over-collection to meet rising demand for medicines. A case in point was the pressure on wild populations of the Pacific yew soon after news of taxol's effectiveness became public. The threat from over-collection could be addressed by cultivation of some medicinal plants, or by a system of certification to make wild harvesting sustainable. A report in 2020 by the Royal Botanic Gardens, Kew identifies 723 medicinal plants as being at risk of extinction, caused partly by over-collection.

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**2.5 Origin of Traditional Medicine <sup>n</sup>**

The origin and history of traditional medicine in Health Care Delivery as far as humanity is concerned is as old as the history of man himself. The Book of Beginnings recorded God as the manufacturer and originator of herbal medicine. And God Said, let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth and it was so. And the earth brought forth grass, and herb yielding seed after his kind and the tree yield fruit, whose seed was in itself after his kind and God saw that it was good. (Genesis 1:10-11)

Before the creation of man, the Holy Book recorded that the Creator did not permit rain to fall upon the earth because there has not been created the man that will utilize the herbs that the earth will produce. After creating man, God made him the Estate Manager and Caretaker of after planting a botanical Garden in Eden. He told man that some of the fruits and herbs are good for food while others can be poisonous and are capable of causing death (Gen 2:5.7.8.9.15,16,17).

Attesting to the above assertion, Ekeopara in his book, African Traditional Religion, An Introduction, averred: It is quite probable that man as soon as he has reached the stage of reasoning found out through trial and error that plants can be used as food, that some might be poisonous and may even lead to death when eaten while some had medicinal value and power. The entire essence of traditional medicine revolves around the use of natural herbs in the bodily, spiritual, emotional and psychological healing of the total man. God is the source of nature and the manufacturer of the herbs. Therefore, God is the source of traditional or herbal medicine. King David in Psalm 104:14 stated thus: "He causes the grass to grow for the cattle and herbs for the service of man.

Onunwa, observed that healing is a part of the whole complex religious attempt by man to bring the physical and spiritual aspects of the universe as well as man who lives in it into the desired consistent harmony. The idea of "wholeness" is therefore not alien to the African mind. Healing becomes a cardinal religious practice because African cosmology demands that life in the world must be kept free from problem especially ill-health and obstacles that may hinder the fulfilment of desired goals. In the traditional African world view, health and healing are connected just in the same way they are with the fundamental theme of life. Herbs were the first medicines used by pre historic man. They are, therefore,

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part of every cultural tradition and have helped the development and growth of herbal medicine in Nigeria.

Still on the history of traditional medicine, Ekeopara noted that: Before the advent of western medicine our fore-bearers depended largely on traditional medicine and healing methods for the treatment of ailments and the cure of various types of diseases.

Mhame states that: Since the early 1970, the World Health Organization (WHO) has reportedly advocated for the recognition of Traditional Health Practitioners (THPs) as Primary Health Care Provider and for the integration of traditional medicine into the National Health System. Several calls have been made on Federal Government of Nigeria to take responsibility for the health of their people and to formulate national policies, regulations and standard, as part of comprehensive national health programs to ensure appropriate, safe and effective use of traditional medicine.

Traditional medicine and its practitioners were officially recognized by the Alma Ata declaration in 1978 as an important resource for achieving the targeted goal of rendering good health care services for all by the year 2000. Since then, member States and the World Health Organization governing bodies have adopted a number of resolutions and declaration on traditional medicine. Notable among the resolutions are on “Promoting the Role of Traditional Medicine in Health Systems: A Strategy for the African Region”. This resolution was adopted by WHO Regional Committee for Africa in Ouagadougou, Burkina Faso, on August 31, 2000 and the declaration of the Decade of African Traditional Medicine (2000-2010) by the Heads of State and Government in Lusaka, Zambia in July 2001. It was also resolved that a day be observed annually as African Traditional Medicine Day all over Africa and other parts of the world including Nigeria. That day is 31st day of August. The year 2010 marked a Decade since the institution of African Traditional Medicine Day. African Traditional Medicine Day was commemorated in 2003 in South Africa in conjunction with the 53 session of WHO Regional Committee for “African Traditional Medicine, our Culture, and Our Future” which Nigeria also attended. This singular act has created enabling environment for training and collaboration between practitioners of traditional medicine and conventional medicine for networking and information exchange.

### TYPES OF TRADITIONAL HEALERS

The traditional healer, as defined by the WHO (1976), is a person who is recognized by the community in which he lives as competent to provide health care by using vegetable, animal and mineral substances and certain other methods based on the social, cultural and religious background, as well as on the knowledge, attributes and beliefs that are prevalent in the community, regarding physical, mental and social well-being and the causation of disease and disability the following are the different types of healers in traditional African society:

- Traditional Herbalists: Herbalists use mainly herbs, that is, medicinal plants or parts of such plants-whole root, stem, leaves, stem bark or root bark, flowers, fruits, seeds, but sometimes animal parts, small whole animal — snails, snakes, chameleons, tortoises, lizards, etc: inorganic residues -alum, camphor, salt, etc and insects, bees, black ants etc. is such herbal preparations may be offered in the form of (i) powder, which could be swallowed or taken with pap (cold or hot) or any drink, (ii) powder, rubbed into cuts or incisions made on an part of the body with a sharp knife, (iii) preparation, soaked for some time in water or local gin, decanted as required before drinking; the materials could also be boiled- in water, cooled and strained (iv) preparation pounded with native soap and used for bathing; such ‘medicated soaps’ are commonly used for skin diseases, (v) pastes, pomades or ointments, in a medium of palm oil or shea butter, or (vi) soup which is consumed by the patient. The herbalist cures mainly with plants which he

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gathers fresh. When seasonal plants have to be used, these plants are collected when available and are preserved usually by drying to eliminate moisture.

- Traditional Birth Attendants (TBAs): The World Health Organization defines a traditional birth attendant (TBA) as a person who assists the mother at childbirth and who initially acquired her skills delivering babies by herself or by working with other birth attendants. In the northern parts of the country, TBAs are of the female sex only, whereas in some other parts both males and females are involved. TBAs occupy a prominent position in Nigeria today as between 60-85 per cent of births delivered in the country and especially in the rural communities are by the TBAs.

They know how to diagnose pregnancy, confirm it and determine the position of the growing foetus. They have been seen to provide pre-natal and postnatal care and so combine successfully the duties of the modern-day mid-wife. Highly experienced TBAs have been recognized to assist in obstetric and Paediatrics care, as they manage simple maternal and childhood illnesses. As a result of their exposure and experience, and more particularly the TBA's concept of human reproduction, as exemplified by pregnancy and childbirth being normal biological functions of human life linked holistically to cultural/social practices, TBAs have been trained to assist in orthodox' medicine practices at the primary health care level.

With their extra hands, a greater coverage of primary health care leading to improved maternal or child health and the lowering of maternal and child mortality and morbidity, have been achieved. TBAs are usually old and experienced women who see their assignments primarily as contributing their skill for the good of the community. With experienced TBAs, child delivery by Caesarean section is not common since it is hardly necessary to seek surgical help during child birth.

3. Traditional Surgeons: The various forms of surgery recognised in traditional medical care include: (i) the cutting of tribal marks: traditional surgeons usually cut tribal marks into the cheeks, bellies, etc. and charred herbal products are usually rubbed into these bleeding marks to effect healing, (ii) male and female circumcision (Clitoridectomy): traditional surgeons carry out these simple surgical operations with special knives and scissors: blood-letting operations and wounds that result from these operations are usually treated with snail body fluid or pastes prepared from plants.

These practices are, however, fast dying out in urban areas; (iii) removal of whitlow: diseased toes or fingers are usually cut open and treated. Piercing of ear lobes: particularly in the youth to allow the fixing of ear rings. Extraction of tooth: infected teeth or teeth with holes, that bring pain to the mouth are removed and treated with herbal medicines prepared in local gin.

4. Traditional Medicinal Ingredient Dealers: These dealers, more often women, are involved in buying and selling of plants, animals and insects, and minerals used in making herbal preparations. Some of them, who indulge in preparing herbal concoctions or decoctions for the management or cure of febrile conditions in children or some other diseases of women and children, may qualify to be referred to as traditional healers.

5. Traditional Psychiatrists: The traditional psychiatrist specializes mainly in the treatment of lunatics and those with mental disorders. Lunatics are usually restrained from going violent by chaining them with iron or by clamping them down with wooden shackles. People with mental disorders who are violent, particularly those that are demon possessed, are usually called or beaten to submission and then given herbal hypnotics or highly sedative herbal potions to calm them, in order to bring them to a state of mental, emotional and psychological calmness as well as tranquility. Treatment and rehabilitation of people with mental disorders usually take long periods.

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Unlike the bone setter, the traditional psychiatrist and the traditional birth attendant whose duties are well defined and specialized, the herbalist is the general practitioner in traditional medicine. He is expected to be knowledgeable in all the various aspects of healing and in the functioning of the various organs of the body. Much is expected of him, as by his wealth of experience and knowledge he is expected to determine the nature of the patient's illness, treat him and also predict the course of his treatment. In a typical traditional setting, he combines the role of the present day doctor with that of the pharmacist and the nurse.

6. Practitioners of Therapeutic Spiritism: These practitioners include diviners or fortune tellers, who may be seers, alfas and priests, and use supernatural or mysterious forces, incantations, may prescribe rituals associated with the community's religious worship and adopt all sorts of inexplicable things to treat various diseases. The practitioners are usually consulted for diagnosis of diseases, their causes and treatment. With their ability to deal with the unseen, and the supernatural, they are usually held in high esteem in the community. They are believed to have extra-sensory perception and can see beyond the ordinary man. They can receive telepathic messages, can consult oracles, spirit guides etc. and perform well where other traditional healers and orthodox doctors fail. Their activities include, making prayers, citing and singing of incantations, making invocations and preparing sacrificial materials to appease unknown gods. It is believed that diseases which are caused by supernatural forces will be readily diagnosed and treated by these practitioners. This, in itself stems from the belief that certain medical ingredients — unusually large trees that are believed to house spirits, astronomic herbs, grave-yard plants like the physic nut, protective plants such as the wild colocynth or Sodom apple or even some reproductive herbs like the sausage tree or the tree of life itself— have spiritual powers and can be effectively utilized by these practitioners for the good of all.

The instructions which these practitioners use include magic stones which are usually thrown to the ground. Sounds so produced are read and interpreted. Some take replies of messages in a pool or glass of water. Others depend on the throwing of cowries, coins, kola-nut seeds, divining rods, keys or sticks, etc. Divination has come of age, its various functions linked with religion, creation myths, cosmology et cetera.

### REASONS FOR GROWING PATRONAGE FOR TRADITIONAL MEDICINE

Health is the most precious of all things and it is the foundation of all happiness. Traditional medicine has developed in various communities in Nigeria in response to the health needs of the people. Many communities have since creation, developed various traditional systems using locally- available resources for the alleviation of their health problem. As once noted some 13 years ago, traditional medicine is as old as the hills in Nigeria. The development of traditional medicine in Nigeria has led to the emergence of various categories of healers, the various healing methods, strategies and medicines or remedies now known. The British colonial masters brought in orthodox medicine and, today, both systems of medicine exist in the country; both have the primary objective to cure, manage or prevent diseases and maintain good health.

It is important to stress the relevance of traditional medicine to the majority of Nigerians. Most Nigerians, especially those living in rural communities don't have access to orthodox medicine and it is estimated that about 75 per cent of the populace still prefer to solve their health problems consulting traditional healers. Where such access exists, the rising cost of imported medications and other commodities used for medicines have posed a big problem. Besides, many rural communities have great faith in traditional medicine, particularly the inexplicable aspects as they believe that it is the wisdom of their fore-fathers which also recognizes their socio-cultural and religious background, which orthodox medicine seems to neglect. Recent reports show that more people in the world embrace traditional medicine.

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To Ann Angbazo, several people have somewhat lost confidence in the efficacy of orthodox medicine. Analysts attribute the people's loss of confidence in orthodox medicine to factors such as drug counterfeiting and drug reactions, as well as the affordability and accessibility of the traditional healthcare delivery. They also observe that traditional medicine has been used to cure various life-threatening ailments in all parts of the world at lower costs, even before the discovery of some medications. The general acceptance of traditional medicine is even attested to by the World Health Organization (WHO).

### SOME DISEASES AND THEIR TRADITIONAL HERBAL CURES

There is abundant justification for the use of herbs by the various traditional healers identified. Disease conditions identified in traditional medicine include:

- (1) Cardiovascular disease hypertension, stroke etc. for which the antihypertensive herbs. the African Rauwolfia and the Negro coffee have been used to cure.
- (2) Diseases of the nervous system-convulsions, insomnia etc. for which the parrot's beak and the African Rauwolfia also offer a good remedy.
- (3) Diseases of the alimentary system-diarrhoea, dysentery etc. for which basil is useful.
- (4) Diseases of the endocrine system-diabetes etc. for which the leaves of the common roused periwinkle or mormodica are valuable.
- (5) Diseases of the respiratory system - asthma, cough etc. for which the lemon grass is of value.
- (6) Diseases of the genital-urinary system, gonorrhoea, haematuria, etc. for which the bush banana is useful.
- (7) Diseases of the skin-wounds, dermatomycosis etc. for which the craw-craw plant is very useful.
- (8) Diseases associated with the ear, nose and throat ache, sinusitis etc. for which the resurrection plant is usually recommended and
- (9) Diseases caused by microbes, viruses, insects etc. - infections, malaria etc. for which garlic, clove, the African mahogany etc. have been found useful.

Numerous other diseases or complaints of a special nature such as hernia, snake bite, atiliritis, gout etc. have been treated using herbs alone or in admixture with animal parts and minerals. Today, plant medicines include vincristine and vinblastine isolated from the rose periinkle and used to treat childhood leukaemia and Hodgkin's disease, reserpine extracted from the African or Indian Rauwolfia and used in tranquillisers, diogenin extracted from the am and used in the treatment of rheumatism and to produce oral contraceptives and the shea butter hich showed nasal decongestant activity etc.

Non-plant medicines include the bee venom which is used in the treatment of arthritis and the cixet cat exudates which have shown anticonvulsant effects. Plant extracts and chemicals with muscle relaxant properties have been used by the TBAs to assist in child deli\ cries. All these facts point to the values of medicinal plants and their importance in traditional medicine in present day Nigeria.

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## 2.6 Contributions of Traditional Medicine to Healthcare Development<sup>j</sup>

It is an incontrovertible fact that traditional medicine has recorded meaningful and notable contributions which cannot be dismissed with a wave of the hand in Health Care Delivery Services not only in Nigeria alone but in many countries of Africa at large. Busia noted that:

Globally there is now a general recognition that traditional medicines, the medicines once described as primitive could be mankind's saving grace and therefore, within the past three decades, the changing view of herbs in particular as traditional medicine has moved from that of "witches brew" to major medicine.

It is estimated that out of a global population of 6.3 billion people in the world, about 4 billion people patronize the use of plants to meet their primary health care needs. It is also discovered that approximately about half the people living in urban cities in various states of Nigeria regularly make use of what is regarded as Complementary and Alternative Medicine. This increase in the demand and availability of services for Complementary Medicine has outpaced the developmental policy of the Federal Governments of Nigeria and the health sector.

- Remarkable Feats: In Nigeria, traditional medicine has been the main source of health care for the vast majority of people. It is currently estimated that between 70 and 80% -Africans use traditional medicine for the management of both communicable and non communicable diseases such as cancer, malaria, HIV/AIDS, diabetes, Hypertension and tuberculosis. It is also noted that a high percentage of the rural populace patronize traditional midwifery for their maternal and neonatal health problems. Traditional Birth Attendants (TBA5) assists in majority of birth delivery of pregnant women in most Nigerian villages and communities.

Other areas where traditional medicine has contributed to the improvement of Health Care Delivery System includes the recent HIV/AIDS menace where Dr. Abalaka, discovered curative herbs for the dreaded disease which many patients have been reported treated on private consultation. The disagreement he had with the Nigerian Medical Association has hindered the wider scope of beneficiaries of his discovery. Herbs are also used in quick healing of open injuries, stopping of bleeding, miscarriages, toothache, extraction of bullets from gun shots, etcetera.

Primary Source of Modern Medicine: Kasilo, notes that "traditional Medicine has demonstrated great potential of therapeutic benefits in its contribution to modern medicine. An estimate of more than 30% of modern medicine is directly or indirectly sourced from traditional herbs such as analgesics (aspirin, Belladonna) anticancer medicines (Vincristine and Vinblastine) anti-malaria (quinine, artemisinin); Anti-hypertensive agents (reserpine) and decongestants (ephedrine). As part of the contributions of traditional medicine in Health Care Delivery System in Nigeria, Ekeopara notes that:

...to make a barren woman productive, a special concoction specially prepared to cleanse the reproductive organs is administered to the woman three times daily for a period of three days. Rituals might accompany such administrations if it is believed that there is a spiritual agency involved in the barrenness.

This connotes that traditional medicine has a lot to still contribute today in treating barrenness among women.

Manpower Coverage: In most Nigerian villages and communities, Traditional Health Practitioners (TI-IPs) generally are far more in number than doctors. In Nigeria and our neighbouring country, Ghana for example, statistics have shown that there are 25,000 and 10,000 patients for every medical doctor where as there are 200 and 100 patients respectively for every traditional Health practitioner. In view of the

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acute shortage of medical doctors in the country, it becomes an incontrovertible fact that Traditional Health Practitioners through traditional medicines have contributed immensely to the raising of manpower for healthcare coverage in Nigeria.

- **Reduction of Child Mortality:** A study carried out by WHO showed that in Ghana, Mali and Nigeria the first line of treatment for 60% of children with high fever resulting from malaria is the use of herbal medicines. Going further in affirming the contributions of Traditional Medicine in Health Care Delivery, Obinna, making an overview of Traditional Medicine in Nigeria and other ECO WAS member States notes that at the 2009 African traditional medicine Day held in Lagos, the Lagos State Governor, Babatunde Fashola unequivocally opined that:

The pivotal role of traditional medicine in health care delivery in Africa and its potential to contribute to the attainment of the health-related provisions of the Millennium Development Goals (MDGs) stressing that the reduction of child mortality, improving of maternal health and combating HIV/AIDS, malaria, tuberculosis, leprosy, child malnutrition, among to how far we are able to harness the hidden potential of our traditional medicine.

Commenting on the contributions of traditional medicine in Health Care Delivery System in Nigeria; Ekeopara commended:

...The Roman Catholic Church in Nigeria whose monks in Delta State, Nigeria, are devoting a lot of energy in research, in traditional medicine and healing. Their efforts have resulted in the production of various types of traditional medicine that are being patronized by many in Nigeria, for the cure of different ailments. These monks have resolved to find a cure for the dreaded human decimator and killer — HIV/AIDS. This effort should be encouraged and funded by the government and donor agencies for the overall development of traditional medicine and healing in Africa.

Onunwa, in his book *Studies in Igbo Traditional Religion* averred that in recent times, most of the practitioners of traditional healing have started to improve on their techniques, which includes the use of modern clinic system and introduction of some forms of new medication as an additional aid to the use of herbs and roots. In some of the traditional healing homes, the liquids extracted from leaves are stored in clean bottles, decently labeled and displayed on the shelves for patients to see and buy. He went further to state that: A lot of new things are happening in the traditional healing practices in recent times. A recent breakthrough claimed by one middle aged native doctor from Mbandia in the South Igbo area is yet to be validated by modern research. The man, Dr. Njoku Nwigwe, did not only claim to have discovered how African herbs and roots could be used to cure stomach ulcers, pile and parasites in the human body without patients undergoing any surgical operation but also claimed to have made the discoveries known to the Chief Pharmacist in the Imo State Ministry of Health Owerri, Nigeria. The ministry is yet to confirm the validity of this claim.

If this is true it is a plus to traditional medicine.

### DIFFERENT TRADITIONAL HEALTH CARE SERVICES

As part of its contribution to the development of Health Care Delivery Systems in Nigeria, traditional medicine has various Traditional Health Care Services through which it meets up with the health needs and challenges of the people. Busia observes that, in African traditional medicine, the curative, training, primitive and rehabilitative services are referred to as clinical services. These traditional health care services are provided through tradition and culture prescribed under a particular philosophy. He went

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further to note that, the traditional norms, taboos and culture which are the bedrock of clinical practice of traditional medicine form the major reason for the acceptability of traditional health practitioners in their various communities of service.

The philosophical clinical care embedded in these guiding traditions, culture and taboos have contributed in no small measure in making traditional medicine acceptable and highly demanded by majority of the populace. These various health care services are:

**Protective Services:** A major part of African Traditional Medicine is for protective and preventive healthcare services. This guarantees spiritual and physical immunity from attack of physical sickness or spiritual forces. To this end Gelfand avers that: Roots, leaves or parts of animals or birds boiled in water or pulverized in fire from the basic ingredients of (traditional) medicine..., represent the major forces of nature. The vapour and smoke produced in boiling and pulverizing the medicines symbolize the air. In applying them to the human body, the link between nature and humanity is established in a very intense way and it generates power to protect and heal. The linkage is also implied in the use of charms and amulets which are medicines that protect.

This implies that traditional medicine has to do with nature healing.

- **Curative Services:** Most of the herbal medicines are also used to render curative services for various ailments afflicting humankind. This is quite pivotal to the impact of traditional medicine in any given community.
- **Destructive Services:** There is element of evil in every good. There is also element of poison in every food. Traditional medicine even though it is used to render good services can as well be used to achieve evil motives. "There are medicines for good fortune, love, success, security of person and property... and there are also medicines against sorcery and witchcraft". However, Magesa adds that, "significantly, all medicines contain all that ought to be used for the benefit of humanity, but can also be put to detrimental use by immoral individuals".
- **General Health Services:** Kasilo, states that, general health services are services provided to clients by non-specialized health care providers. The general traditional health practitioner under general services can handle normal conditions like malaria, stomach upset, respiratory problems, rheumatism, arthritis, sexual dysfunctions, anemia and parasitic infections.
- **Mental Health Services:** Traditional Medicine-men or Herbalists have proven to be very resourceful in rendering effective services to people with mental cases. They most often make use of divination to unravel the mental and psychological problems of their patients. Divination plays a key role in the treatment of neurosis and helps in re-tracing a patients' condition from its metaphysical past and influences its interplay with the present and future.
- **Midwifery Services:** Midwifery is a health care profession in which providers give prenatal care to expecting mothers, attend to the birth of their infants and provide post-partum care to the mother and her infant. Traditional Midwives are autonomous practitioners who are specialists in a low-risk pregnancy, childbirth and the post-partum stage. They help women to have healthy pregnancy and natural birth experience. They are trained to handle delivery situations that are also out of the norms.



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In the African traditional setting, traditional midwives handle delivery cases intelligently. In the past 30 years, concerted efforts have been made in Nigeria to improve the skills and practices of traditional midwives, often referred to as Traditional Birth Attendants (TBAs). For the traditional midwives to be able to provide optimal care an enabling environment has to be provided and their collaboration with Orthodox nurses and doctors in health services strengthened.

- **Bone Setting Services:** A bone setter is a practitioner of joint manipulation. Before the advent of Chiropractors, Osteopaths and physical therapist and even establishment of orthopaedic hospitals, traditional bone setters were the main providers of this type of treatment. Bone setters do reduce joint dislocations and re-set bone fractures. Many traditional bone setters make use of splints, bandages, plasters and clutches in the practice. They have been credited with success in treating very bad cases which were initially mismanaged in some orthopaedic hospitals. There are cases where orthopaedic surgeons had wanted to cut off a broken limb but when the relatives of the patients transferred them to the traditional bone setters, what was described as hopeless previously became treated by the traditional healers without amputation. Some physiotherapists have confessed that they on several occasions refer some cases to the traditional bone setters.

- **Training and Promotional Services:** The traditional medicine-men or herbalists engage themselves not only in ministering healing to the sick but also in rendering training services to young apprentices. Apprenticeship is a system or practice whereby training is given to a new generation of intending practitioners in order for them to acquire some skills to help in serving their communities. Training and promotional aspects of African traditional medicine services help to inculcate good characters in the practitioners which make them to be responsible. Accommodating, hardworking, good listeners as well as develop confidence in themselves, their traditions and cultural heritage.

- **Rehabilitative Services:** Traditionally, there is no system of skills development for disabled or physically challenged people in the Traditional African Community which would lead to their public or self employment. Each family or community in the spirit of “being your brother’s keeper rather than brother’s killer”, helps in the rehabilitation of their own disabled persons. This social communal assistance which is called “Ubuntu philosophy” gives the disabled a sense of belonging creating an accommodating way of living through tradition, culture, norms and taboos. Every disabled person therefore is accepted and recognized as part of the family or community and is supported to lead a functional and fulfilled life in spite of his apparent disability. With this kind of communal social support every physically challenged person discovers ability in his disability. This brings about mental, emotional and psychological healing to the physically challenged person.

## METHODS OF TRADITIONAL HEALING

There are various methodological processes involved in the administration of traditional medicine in Nigeria through which the goal of restoration of human health is achieved. They are namely:

- **Knowledge of Herbs:** The major method in the administration of traditional healing via local herbs is through a good knowledge of herbs and roots and the right application of the same to the patients who need them. Onunwa notes that treatment most times commences with simple herbs and antidotes which may be administered for one day or two. He further stated that the art of healing has been traditionally associated with the thorough knowledge of the use of herbs and roots and the appropriate rituals to perform at the appropriate time. Kasilo noted that the traditional knowledge of herbs has played a significant role in the healthcare systems in Nigeria and other countries of the African Region for centuries.

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Traditional medicines are presently used by nearly 80% of the population. Owing to the global resurgence in the use of natural products and the advent of the biotechnological industry, traditional knowledge is increasingly becoming a source of modern drug development and biotechnological inventions. Despite the important role of traditional knowledge, traditional communities are unable to protect their knowledge through the existing intellectual property system owing to the failure of the knowledge to satisfy the requirements for intellectual property protection. Parrinder, in his book *West African Religion*, observed that, "West African doctors have a wide knowledge of the properties of many roots, barks, leaves, and herbs. They are called 'observers' of plants in Fon and workers in roots in Furi".

It is also noted that:

The traditional medicine men are not only knowledgeable in the variety of roots and herbs that have therapeutic values, but also understand the psychology of their people's values. Their knowledge of the healing powers in roots and leaves is amazing.

- **Divination:** When the condition of the patient is not improved after the application of simple treatments, the method of divination is applied whereby a diviner could be invited for spiritual guidance as to ascertain the remote and esoteric cause of the protracted ailment. The diviner may also recommend the type of medicine to be applied for quick cure. Such recommendations may also involve rituals.

- **Ritual Washing:** Another method of traditional healing is through ritual cleansing. This is carried out by the traditional healer commonly called medicine-man on the patient. This is done purposely to appease the deities and ancestors and restore a good and cordial relationship between the patient and the deities so that their goodwill will cause any medicine applied in making him to recover to be effective. To Onunwa, the hospital is believed to be good for certain diseases whose treatment must however, be validated by some ritual offerings at home. This is based on the people's world view. In spite of the contributions of modern medicine, some traditional Igbo men still believe that healing is incomplete if some necessary rituals are not performed. They do not completely despise the achievements of Western medicine, but believe that there are some ailments which the hospitals cannot cure.

iv. **Diagnosis vaetiology:** Common ailments or problems are easily recognised and treated successfully, based on the symptomatology of the disease. If the illness persists, recourse is made to the practitioner of occultism/the diviner who' in his efforts to discover the real cause of the disease, may consult various spirits including his oracle, pre scribe appropriate rituals and make sacrifices to solicit the right answer. This is because they believe that diseases can be caused by sorcery, ghosts, breach of taboo, spirit intrusion and acts of the Supreme Being. It has also been found that public opinion and rumours may help the diviner to trace the cause of a disease. Diagnosis may also be achieved by visual, examination of eyes, skin, urine, faeces etc.; taste, for example, of urine for sugar in the diabetic, use of ants to detect sugar in the urine of the diabetic, palpation that is through the sense of touch using palms, fingers or the analysis of a patient's dreams. Proper diagnosis is needed in the treatment of psychosomatic and psychiatric cases just as in the eases of bone fractures and other traumatic injuries. Generally, proper diagnosis is the key to most traditional treatments.

v. **Symptom Analysis:** The patient describes the symptoms as much as practicable. The healer also watches out for these as well as analyses them and from the careful observations make his prescriptions. For the various diseases, symptoms that are usually watched out for include behavioural changes; fever or abnormal rise in body temperature; jaundiced state, yellow colour in the eyes, urine, palm and fingers suggesting possible liver problems; seizures as often experienced in convulsions, diarrhoea in cases of

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poisoning; frequent stooling and vomiting; bleeding which may be from the nose, mouth, gums, teeth, from private parts, anus; blood in the urine; coughing and vomiting blood; breathing difficulty; sneezing; swelling which may be minor and localised; general weakness of the body; and development of rashes and even pain. Experienced herbalists can readily differentiate constant or intermittent pains from sharp or dull ones and link them with specific diseases. Signs: These are usually observed by experienced healers. Modern-day healers are being encouraged to use stethoscopes and other simple instruments to determine signs.

vi. Treatment: The herbalist treats with medicines made up of plants, animals and minerals. He may also use any of the therapeutic systems described earlier such as fasting and dieting massage, therapeutic spiritism et cetera.

### CHALLENGES FACING TRADITIONAL MEDICINE

There are myriads of serious challenges militating against the progress and development of Traditional Medical practice in Nigeria. Although a lot of progress has been made in implementing the regional strategy on promoting the role of traditional medicine in Health Care System, the Nigerian state has continued to face some challenges that hamper the institutionalization of traditional medicine into our National Health Care Systems. These challenges include:

- Poor Organizational Arrangement: There is limited Organizational arrangement for the institutionalization of traditional medicine such as:
- Poor allocation of financial resources for implementation of traditional medicine activities
- Delay in the establishment of mechanisms for the official recognition of traditional health practitioners.
- Lack of national policies in the country
- Limited national strategic plans for policy implementation
- Lack of mechanisms of collaboration between practitioners of conventional and traditional medicine.
- Limited Research Data: There is also a challenge of limited research data on the safety, efficacy and quality of traditional medicines and documentation of traditional medicine practices.
- Oral Tradition/Documentation: The oral nature of the knowledge of traditional medicinal herbs transmitted in various forms from one generation to another without proper documentation poses a serious challenge in the preservation of such knowledge.
- Non Inclusion in School Curriculum: Majority of the States and Local Government

Councils are yet to include some aspects of traditional medicine in the curricula of Health Science Students and other institutions of higher learning.

- Lack of National Policy: Majority of countries are yet to develop National Policies on the conservation of medicinal plants and get engaged in large-scale cultivation of medicinal plants in botanical gardens.

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- **Quality Control:** There is the challenge of ensuring the safety and efficacy of herbal medicines, the quality of the source of raw materials, cultivation and harvesting, field collection, transport and storage, correct identification of species of medicinal plants.
- **Effective Monitoring:** Adverse events arising from consumption of herbal medicines calls for effective monitoring. The issue of misidentification, adulteration, wrong labeling, contamination with toxic substances, over dosage, misuse of herbal medicines H both health-care providers and consumers and the concomitant use of herbal medicine at the same time with other orthodox medicines.
- **Lack of Knowledge:** There is challenge of lack of knowledge of herbal medicine by Health Care regulatory authorities and agencies.
- **Conservation/Preservation:** Ernest Rukangira (38), observed that African medicinal plant resources may be doomed to extinction by overexploitation resulting from excessive commercialization, habitat destruction and other natural and man-made destructive influence unless serious conservation measures are taken to ensure their continued availability. This can be done through establishment of medicinal plant garden and farms.

### THE WAY FORWARD

If all the healing and curative treasures divinely embedded in our medicinal plant by the Mother Nature (the Supreme Being) will be adequately maximized in improving the health services being rendered to our people, definite and decisive actions need to be taken. These include:

- **Research:** Research in traditional medicine and development need to be included in the national health research agenda.
- **Curriculum:** Traditional Medicine should be included in the curricula of our primary, secondary and tertiary institutions.
- **Collaboration:** There should be a forum and enabling environment provided for effective collaboration between Orthodox Medical and Traditional Medicinal Practitioners. The gulf existing between them which give room for jealousies and destructive criticisms should be narrowed.
- **Protection:** Mechanisms for the protection of intellectual property rights and indigenous herbal knowledge should be developed.
- **Training:** Establishment of regular training programmes or National Institute for Traditional or Alternative Medicine, for traditional medicine practitioners should be encouraged.
- **Budget:** Countries should be encouraged to create a budgetary allocation for traditional medicine in their National Health Budget and include the expenditure of traditional medicinal care in National Health Accounts.
- **Legislation:** Legislative framework and national policy for the protection of the knowledge of medicinal plants as well as its preservation from wanton destruction through reckless bush burning and tree-cutting should be put in place.

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- Documentation: Government should establish units or departments for formal documentation of the details of the working of medicinal plants from the existing oral tradition in order to guard against its extinction or possible adulteration.
- Packaging & Marketing: The Federal Government and the Federal Ministry of Health should establish governmental agencies that will take care of both the packaging and the effective marketing of the traditional herbals productions both within and outside the country. A Department of Traditional/Alternative medicine should be created in all Health Ministries at all levels of government.

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### 2.7 Traditional medicine <sup>c</sup>

Traditional medicine (also known as indigenous or folk medicine) comprises medical aspects of traditional knowledge that developed over generations within the folk beliefs of various societies, before the era of modern medicine. The World Health Organization (WHO) defines traditional medicine as "the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness". Traditional medicine is often contrasted with scientific medicine.



Traditional medicine in a market in Antananarivo, Madagascar



Botánicas such as this one in Jamaica Plain, Boston, cater to the Latino community and sell folk medicine alongside statues of saints, candles decorated with prayers, lucky bamboo, and other items.

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In some Asian and African countries, up to 80% of the population relies on traditional medicine for their primary health care needs. When adopted outside its traditional culture, traditional medicine is often considered a form of alternative medicine. Practices known as traditional medicines include traditional European medicine, traditional Chinese medicine, traditional Korean medicine, traditional African medicine, Ayurveda, Siddha medicine, Unani, ancient Iranian medicine, traditional Iranian medicine, medieval Islamic medicine, Muti, and Ifá. Scientific disciplines that study traditional medicine include herbalism, ethnomedicine, ethnobotany, and medical anthropology.

The WHO notes, however, that "inappropriate use of traditional medicines or practices can have negative or dangerous effects" and that "further research is needed to ascertain the efficacy and safety" of such practices and medicinal plants used by traditional medicine systems. As a result, the WHO has implemented a nine-year strategy to "support Member States in developing proactive policies and implementing action plans that will strengthen the role traditional medicine plays in keeping populations healthy."

### USAGE AND HISTORY

#### CLASSICAL HISTORY

In the written record, the study of herbs dates back 5,000 years to the ancient Sumerians, who described well-established medicinal uses for plants. In Ancient Egyptian medicine, the Ebers papyrus from c. 1552 BC records a list of folk remedies and magical medical practices. The Old Testament also mentions herb use and cultivation in regards to Kashrut.

Many herbs and minerals used in Ayurveda were described by ancient Indian herbalists such as Charaka and Sushruta during the 1st millennium BC. The first Chinese herbal book was the Shennong Bencao Jing, compiled during the Han Dynasty but dating back to a much earlier date, which was later augmented as the Yaoxing Lun (Treatise on the Nature of Medicinal Herbs) during the Tang Dynasty. Early recognised Greek compilers of existing and current herbal knowledge include Pythagoras and his followers, Hippocrates, Aristotle, Theophrastus, Dioscorides and Galen.

Roman sources included Pliny the Elder's Natural History and Celsus's De Medicina. Pedanius Dioscorides drew on and corrected earlier authors for his De Materia Medica, adding much new material; the work was translated into several languages, and Turkish, Arabic and Hebrew names were added to it over the centuries. Latin manuscripts of De Materia Medica were combined with a Latin herbal by Apuleius Platonius (Herbarium Apuleii Platonici) and were incorporated into the Anglo-Saxon codex Cotton Vitellius C.III. These early Greek and Roman compilations became the backbone of European medical theory and were translated by the Persian Avicenna (Ibn Sīnā, 980–1037), the Persian Rhazes (Rāzi, 865–925) and the Jewish Maimonides.

Some fossils have been used in traditional medicine since antiquity.

#### MEDIEVAL AND LATER

Arabic indigenous medicine developed from the conflict between the magic-based medicine of the Bedouins and the Arabic translations of the Hellenic and Ayurvedic medical traditions. Spanish medicine was influenced by the Arabs from 711 to 1492. Islamic physicians and Muslim botanists such as al-Dinawari and Ibn al-Baitar significantly expanded on the earlier knowledge of materia medica. The most famous Persian medical treatise was Avicenna's The Canon of Medicine, which was an early pharmacopoeia and introduced clinical trials. The Canon was translated into Latin in the 12th century and

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remained a medical authority in Europe until the 17th century. The Unani system of traditional medicine is also based on the Canon.

Translations of the early Roman-Greek compilations were made into German by Hieronymus Bock whose herbal, published in 1546, was called *Kreuter Buch*. The book was translated into Dutch as *Pemptades* by Rembert Dodoens (1517–1585), and from Dutch into English by Carolus Clusius, (1526–1609), published by Henry Lyte in 1578 as *A Nievve Herball*. This became John Gerard's (1545–1612) *Herball or General Historie of Plantes*. Each new work was a compilation of existing texts with new additions.

Women's folk knowledge existed in undocumented parallel with these texts. Forty-four drugs, diluents, flavouring agents and emollients mentioned by Dioscorides are still listed in the official pharmacopoeias of Europe. The Puritans took Gerard's work to the United States where it influenced American Indigenous medicine.

Francisco Hernández, physician to Philip II of Spain spent the years 1571–1577 gathering information in Mexico and then wrote *Rerum Medicarum Novae Hispaniae Thesaurus*, many versions of which have been published including one by Francisco Ximénez. Both Hernandez and Ximenez fitted Aztec ethnomedicinal information into the European concepts of disease such as "warm", "cold", and "moist", but it is not clear that the Aztecs used these categories.

Juan de Esteyneffer's *Florilegio medicinal de todas las enfermedades* compiled European texts and added 35 Mexican plants.

Martín de la Cruz wrote an herbal in Nahuatl which was translated into Latin by Juan Badiano as *Libellus de Medicinalibus Indorum Herbis* or *Codex Barberini*, Latin 241 and given to King Carlos V of Spain in 1552. It was apparently written in haste and influenced by the European occupation of the previous 30 years. Fray Bernardino de Sahagún's used ethnographic methods to compile his codices that then became the *Historia General de las Cosas de Nueva España*, published in 1793. Castore Durante published his *Herbario Nuovo* in 1585 describing medicinal plants from Europe and the East and West Indies. It was translated into German in 1609 and Italian editions were published for the next century.

## COLONIAL AMERICA

In 17th and 18th-century America, traditional folk healers, frequently women, used herbal remedies, cupping and leeching. Native American traditional herbal medicine introduced cures for malaria, dysentery, scurvy, non-venereal syphilis, and goiter problems. Many of these herbal and folk remedies continued on through the 19th and into the 20th century, with some plant medicines forming the basis for modern pharmacology.

## MODERN USAGE

The prevalence of folk medicine in certain areas of the world varies according to cultural norms. Some modern medicine is based on plant phytochemicals that had been used in folk medicine. Researchers state that many of the alternative treatments are "statistically indistinguishable from placebo treatments".

## KNOWLEDGE TRANSMISSION AND CREATION

Indigenous medicine is generally transmitted orally through a community, family and individuals until "collected". Within a given culture, elements of indigenous medicine knowledge may be diffusely known by many, or may be gathered and applied by those in a specific role of healer such as a shaman or midwife. Three factors legitimize the role of the healer – their own beliefs, the success of their actions and the

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beliefs of the community. When the claims of indigenous medicine become rejected by a culture, generally three types of adherents still use it – those born and socialized in it who become permanent believers, temporary believers who turn to it in crisis times, and those who only believe in specific aspects, not in all of it.

### DEFINITION AND TERMINOLOGY

Traditional medicine may sometimes be considered as distinct from folk medicine, and the considered to include formalized aspects of folk medicine. Under this definition folk medicine are longstanding remedies passed on and practiced by lay people. Folk medicine consists of the healing practices and ideas of body physiology and health preservation known to some in a culture, transmitted informally as general knowledge, and practiced or applied by anyone in the culture having prior experience.

### FOLK MEDICINE



Curandera performing a limpieza in Cuenca, Ecuador

Many countries have practices described as folk medicine which may coexist with formalized, science-based, and institutionalized systems of medical practice represented by conventional medicine. Examples of folk medicine traditions are traditional Chinese medicine, Iranian traditional medicine, traditional Korean medicine, Arabic indigenous medicine, Uyghur traditional medicine, Japanese Kampō medicine, traditional Aboriginal bush medicine, Native Hawaiian Lā'au lapa'au, and Georgian folk medicine, among others.

### AUSTRALIAN BUSH MEDICINE

Generally, bush medicine used by Aboriginal and Torres Strait Islander people in Australia is made from plant materials, such as bark, leaves and seeds, although animal products may be used as well. A major component of traditional medicine is herbal medicine, which is the use of natural plant substances to treat or prevent illness.

### NATIVE AMERICAN MEDICINE

American Native and Alaska Native medicine are traditional forms of healing that have been around for thousands of years. There are many ethnobotany plants involved in traditional medicine for Native Americans and some are still used today. When it comes to Native American traditional medicine, the ideas surrounding health and illness within the culture are virtually inseparable from the ideas of religion and spirituality. Healers within indigenous communities go by many names ranging from medicine man or woman to herbalist or even shaman and are considered spiritual or religious leaders within their respective tribes. When it comes to healing, tribal healers would look at a plant's characteristics to determine its efficacy for the treatment of an illness. Specific plant characteristics such as plant shape,



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smell, color, and taste could aid in determining how the plant could be used as a remedy. The Meskwaki tribe found they could use the juice from *Arum maculatum* for snakebites. This was inferred from the milky appearance of the juice from the plant which is said to resemble snake venom, and the plant's shape resembled the head of a snake. Native Americans used foxglove herb as a treatment for an illness they referred to as dropsy or edema, which is fluid buildup typically in the lower legs, and its common cause is heart failure. In modern medicine, foxglove extract is still used under the name *digitalis*, and its purpose is to moderate the heart rate. Native Americans were successful with some medical practices, such as treating fevers, gastrointestinal conditions, skin rashes, setting bones, as well as birthing babies, and aiding mothers in healing. A study conducted within an IHS hospital that allows Navajo healers to visit patients found that the hospital had an 80 percent success rate in getting comatose patients back to consciousness, which is higher than the rate of present-day biomedical management hospitals. The tribe Anthemideae used the plant family Asteraceae for orthopedic aids and pulmonary aids, specifically the plant's *Achillea* and *Artemisia*. A study conducted amongst 14 different tribes within North America found that Asteraceae was the most widely used plant family for its medicinal properties.

## NATTUVAIDYAM

Nattuvaidyam was a set of indigenous medical practices that existed in India before the advent of allopathic or western medicine. These practices had different sets of principles and ideas of the body, health and disease. There were overlaps and borrowing of ideas, medicinal compounds used and techniques within these practices. Some of these practices had written texts in vernacular languages like Malayalam, Tamil, Telugu, etc. while others were handed down orally through various mnemonic devices. Ayurveda was one kind of nattuvaidyam practised in south India. The others were kalarichikitsa (related to bone setting and musculature), marmachikitsa (vital spot massaging), ottamoolivaidyam (single dose medicine or single time medication), chintamanivaidyam and so on. When the medical system was revamped in twentieth century India, many of the practices and techniques specific to some of these diverse nattuvaidyam were included in Ayurveda.

## HOME REMEDIES

A home remedy (sometimes also referred to as a granny cure) is a treatment to cure a disease or ailment that employs certain spices, herbs, vegetables, or other common items. Home remedies may or may not have medicinal properties that treat or cure the disease or ailment in question, as they are typically passed along by laypersons (which has been facilitated in recent years by the Internet). Many are merely used as a result of tradition or habit or because they are effective in inducing the placebo effect.

One of the more popular examples of a home remedy is the use of chicken soup to treat respiratory infections such as a cold or mild flu. Other examples of home remedies include duct tape to help with setting broken bones; duct tape or superglue to treat plantar warts; and Kogel mogel to treat sore throat. In earlier times, mothers were entrusted with all but serious remedies. Historic cookbooks are frequently full of remedies for dyspepsia, fevers, and female complaints. Components of the aloe vera plant are used to treat skin disorders. Many European liqueurs or digestifs were originally sold as medicinal remedies. In Chinese folk medicine, medicinal congees (long-cooked rice soups with herbs), foods, and soups are part of treatment practices.

CRITICISM

SAFETY CONCERNS

Although 130 countries have regulations on folk medicines, there are risks associated with the use of them (i.e. zoonosis, mainly as some traditional medicines still use animal-based substances). It is often assumed that because supposed medicines are natural that they are safe, but numerous precautions are associated with using herbal remedies.

USE OF ENDANGERED SPECIES



Sometimes traditional medicines include parts of endangered species, such as the slow loris in Southeast Asia.

Endangered animals, such as the slow loris, are sometimes killed to make traditional medicines.

Shark fins have also been used in traditional medicine, and although their effectiveness has not been proven, it is hurting shark populations and their ecosystem.

The illegal ivory trade can partially be traced back to buyers of traditional Chinese medicine. Demand for ivory is a huge factor in the poaching of endangered species such as rhinos and elephants.

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**2.8 TRADITIONAL AFRICAN MEDICINE**



Traditional African medicine is a range of traditional medicine disciplines involving indigenous herbalism and African spirituality, typically including diviners, midwives, and herbalists. Practitioners of traditional

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African medicine claim to be able to cure a variety of diverse conditions including cancer, psychiatric disorders, high blood pressure, cholera, most venereal diseases, epilepsy, asthma, eczema, fever, anxiety, depression, benign prostatic hyperplasia, urinary tract infections, gout, and healing of wounds and burns and even Ebola.

Diagnosis is reached through spiritual means and a treatment is prescribed, usually consisting of a herbal remedy that is considered to have not only healing abilities but also symbolic and spiritual significance. Traditional African medicine, with its belief that illness is not derived from chance occurrences, but through spiritual or social imbalance, differs greatly from modern scientific medicine, which is technically and analytically based. In the 21st century, modern pharmaceuticals and medical procedures remain inaccessible to large numbers of African people due to their relatively high cost and concentration of health facilities in urban centres.

Traditional medicine was the dominant medical system for millions of people in Africa prior the arrival of the Europeans, who introduced western-based medicine, which was a noticeable turning point in the history of this tradition and culture. Herbal medicines in Africa are generally not adequately researched, and are weakly regulated There is a lack of the detailed documentation of the traditional knowledge, which is generally transferred orally. Serious adverse effects can result from mis-identification or misuse of healing plants.

The geographical reach of this article is Sub-Saharan Africa. Though, of course neighbouring medical traditions influenced traditional African medicine.

## HISTORY

### COLONIAL ERA

Modern science has considered methods of traditional knowledge as primitive and under colonial rule some traditional medical practices were outlawed. During this time, attempts were also made to control the sale of herbal medicines. For example, after Mozambique gained independence in 1975, attempts to control traditional medicine went as far as sending diviner-healers to re-education camps as colonialism and Christianity spread through Africa, colonialists built general hospitals and Christian missionaries built private ones, with the hopes of making headway against widespread diseases. However, little was done to investigate the legitimacy of the traditional medical practices, despite the obvious role that the traditional healers played in the basic health needs of their communities; the colonial authorities along with doctors and health practitioners continued to shun their contributions. It was also believed that during times of conflict people were more likely to resort to supernatural explanations and would seek treatment involving the supernatural.

### MODERN PERIOD



Nurse at Koidu Hospital in Sierra Leone consulting with patients

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For various reasons, in the late 20th century the traditional systems of medical care in developing countries underwent a major revival. These countries also realized that modern health care systems and the technologies that they are dependent on are not locally manufactured and maintained thus making them expensive and rendering the population dependent on supply-chains that might be erratic or politicised. Due to this, interest in integrating traditional African medicine into the continent's national health care systems has increased and the use of traditional medicinal plants is being encouraged in some countries. An African healer embraced this concept by starting a 48-bed hospital, the first of its kind, in Kwa-Mhlanga, South Africa, which combines traditional African methods with other alternative medical practices such as homeopathy, iridology, and traditional Asian medicine.

### DIAGNOSTICS

The medical diagnoses and chosen methods of treatment in traditional African medicine rely heavily on spiritual aspects, often based on the belief that psycho-spiritual aspects should be addressed before the medical aspects. There is the belief among the practitioners of traditional healing that the ability to diagnose and treat illnesses are a gift from God. Rather than looking for the medical or physical reasons behind an illness (or a spell of bad luck), traditional healers attempt to determine the root cause underlying it, which is believed to stem from a lack of balance between the patient and their social environment or the spiritual world. In other words, supernatural causes, not natural causes, are attributed to illnesses. According to the type of imbalance the individual is experiencing, an appropriate healing plant will be used, which is valued for its symbolic and spiritual significance as well as for its medicinal effect.

When a person falls ill, a traditional practitioner uses incantations to make a diagnosis. The incantations are thought to give the air of mystical and cosmic connections. Divination is typically used if the illness is not easily identified, otherwise, the sickness may be quickly diagnosed and a remedy prescribed. Sometimes the practitioner will advise the patient to consult a diviner who can give a diagnosis and recommend a treatment. It is believed that contact with the spirit world through divination often requires not only medication, but sacrifices.

### TREATMENTS

Traditional practitioners use a wide variety of treatments ranging from standard medical treatments to the pseudoscientific and "magical". Treatments may include fasting, dieting, herbal therapies, bathing, massage, and surgical procedures. Examples of the pseudoscientific treatments include:

The use of "bleed-cupping" (also called "wet cupping"), followed by herbal ointment and herbal drugs to treat Migraines, coughs, abscesses, and pleurisy.

Some cultures rub hot herbal ointment across the patient's eyelids to treat headaches.

A steaming mixture of herbs is both consumed and inhaled in the treatment of Malaria. Fevers are often treated using a steam bath.

Vomiting induced by emetics is used to treat alcoholism.

The fat of a boa constrictor is used to treat gout and rheumatism, and is thought to relieve chest pain when applied topically.

Animals are also sometimes used to transfer the illness to afterward or for the manufacture of medicines for zootherapy. For example, the bones of baboons are used to treat arthritis.

The terpenoids of the blister beetle (*Mylabris* sp.) are rubbed into the skin as a treatment for skin diseases.

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Consensus between traders of the components of the medication used by practitioners of traditional African medicine regarding what should be used to treat different illnesses varies considerably, even within a small area such as the Faraday Street market in Johannesburg, South Africa. However, approximately 60%-80% of the people in Africa rely on traditional remedies to treat themselves for various diseases. A 2018 systematic review estimated that close to 60% of the general population in sub-Saharan Africa regularly use traditional and complementary medicine products for themselves and to treat their animals for various diseases. Ebola survivors in Sierra Leone have recently been reported to use traditional medicine alone or together with conventional medicine.

### MEDICINAL PLANTS



Prunus africana with stripped bark

There are many plants in Africa that can be used for medicinal purposes and more than 4000 are used for this purpose in the tropical regions of Africa. Medicinal plants are used in the treatments of many diseases and illnesses, the uses and effects of which are of growing interest to Western societies. Not only are plants used and chosen for their healing abilities, but they also often have symbolic and spiritual significance. For example, leaves, seeds, and twigs that are white, black and red are seen as especially symbolic or magical and are believed to possess special properties.



Preparing and drying out freshly dug traditional medicines (muti)

One example of a medicinal plant is Pygeum (*Prunus africana*), which has been used as a treatment for mild benign prostatic hyperplasia in Europe since the 1970s. Although used extensively in Africa, there is insufficient evidence for its effectiveness in treating fever, inflammation, kidney disease, malaria, stomach aches and other conditions. In traditional African practice, the bark is made into tea, whereas elsewhere in the world it is found in powders, tinctures, and pills.

A 2007 study investigated the effectiveness of 16 plants, growing in South Africa's KwaZulu- Natal region, in lowering blood pressure "by acting as an ACE inhibitor." Of the 16 plants, only one (*Tulbaghia violacea*) showed promise. It then was tested on rats and "demonstrated hypotensive activity", i.e. reduction of blood pressure. The plants included in the study were:

1. *Amaranthus dubius*, a flowering plant, also known as spleen amaranth
2. *Amaranthus hybridus*, commonly known as smooth pig-weed or slim amaranth
3. *Amaranthus spinosus*, also known as spiny amaranth
4. *Asystasia gangetica*, an ornamental ground cover known as Chinese violet.
5. *Centella asiatica*, a small herbaceous annual plant commonly referred to as Asiatic pennywort
6. *Ceratotheca triloba*, a tall annual plant that flowers in summer sometimes referred to as poppy sue
7. *Chenopodium album*, also called lamb's quarters, this is a weedy annual plant
8. *Emex australis*, commonly known as southern three corner jack
9. *Galinsoga parviflora*, commonly referred to as gallant soldier
10. *Justicia flava*, also known as yellow justicia
11. *Momordica balsamina*, also known as the balsam apple
12. *Oxygonum sinuatum*, an invasive weed with no common name
13. *Physalis viscosa*, known as starhair ground cherry
14. *Senna occidentalis*, a very leafy tropical shrub, also called septic weed

15. *Solanum nodiflorum*, also known as white nightshade

16. *Tulbaghia violacea*, a bulbous plant with hairless leaves often referred to as society or wild garlic.

A 2008 literature survey was made to assess the botanical knowledge and uses within traditional medicine in Southern Africa for the genus *Aloe* within the family *Asphodeloideae*. Most common medical uses were for the treatment of "infections, internal parasites, digestive ailments and injuries." Socially the plants are used as ingredients in tobacco snuff. A 2014 literature survey found that at least 12 palm species in sub-Saharan Africa are used in various ritual practices, including the use of palm oil in healing mixtures.

In 2016 an *in vitro* study of the essential oil from *Erigeron floribundus*, used as a medicinal plant in Cameroon, demonstrated good activity against *Staphylococcus aureus*, "cytotoxicity on colon carcinoma cells" and "ferric reducing antioxidant power." Among the constituents of the essential oil are spathulenol and limonene.

As a result of a study conducted from 2011 to 2016, a traditional medicine from the tropical *Olon* tree, and another species of genus *Zanthoxylum*, was found to have synergistic compounds that kill both mosquitoes and their plasmodium parasites.

A 2000 study of thirty-three species of plants, found in the Eastern Cape province of South Africa, that are considered weeds, alien invaders or problem plants were investigated for their uses in traditional medicine. The plants included:



*Anredera cordifolia* leaves

*Anredera cordifolia* (iDlula). Swollen feet from poor circulation and/or liver and kidney problems are treated with a leaf poultice, while the sap is used to treat a rash caused by contact with dirty water.



*Cannabis Sativa* plant

*Araucaria bidwillii* (iNdiyandiyi). Grated bark mixed with water is consumed to treat amenorrhea caused by congenital problems, tuberculosis and malnutrition.

*Bidens pilosa* (uMhlabangubo). The water from the boiled roots is consumed to treat infertility in women. Bathing in water in which the leaves have been soaked is believed to protect one from evil spirits (imoya emdaka), ill feeling, jealousy or animosity. Also used to treat diarrhoea, colic, rheumatism, syphilis, earache, constipation, intestinal worms, Malaria, ring worm, jaundice and coughs.





Carduus tenuiflorus plant

*Cannabis sativa* (iNtsango). Various parts of the plant are used to treat asthma, bronchitis, headache, epilepsy, pains, colds, influenza, labour pains, hypertension, diabetes, malaria, blackwater fever, blood-poisoning, anthrax, dysentery, tetanus, menstrual cramps and rabies.

*Carduus tenuiflorus* (uMhlakavuthwa). The patient is given an emetic and instructed to vomit onto the plant. The belief is that the plant will "suck out the cause of the illness."



*Datura stramonium* plant

*Datura stramonium* (uQhwangu-qhwangu). The leaves are used to treat pain and swelling (including after a circumcision), boils and abscesses, measles, asthma and headaches, tetanus, foot ailments and respiratory conditions.



*Emex australis* plant

*Emex australis* (iNkunzane). A decoction of the root is used to treat constipation, biliousness and other stomach complaints and to stimulate appetite.

*Galenia secunda* (uMvenyathi). The roots are mixed with *Emex australis*, boiled and used to treat kidney pains in adults and colic in babies.





Lantana camara plant

Lantana camara (iQunube). The roots are boiled and the liquid consumed for lower back or abdominal pain, or used as an enema to treat gonococcal infections and urinary tract infections. It is also used to treat coughs, colds, jaundice, rheumatism and as a contraceptive.

Opuntia ficus-indica (iTolofiya). A poultice of the cooked leaves is used to treat sores between toes and the fingers caused by fungal infections. The belief is that these sores are caused by "dirty blood" (igazi elimdaka).



Rumex sagittatus plant

Rumex sagittatus (iBhathatha). A cold water infusion of the roots are used as a body wash as it is believed to cleanse the body of misfortunes and evil.



Schinus molle plant

Schinus molle (iPepile or Peperboom). Fever and influenza are treated by consuming a leaf decoction or steaming. A combination of leaves and bark is used to treat wounds.

Araujia sericifera (iQuwa). It is used to treat amafufunyana, which is described by Ngubane as an extreme form of depression coupled with psychotic symptoms such as delusions, hysteria, violent outburst and suicide ideations. The roots are mixed with other medications to treat it.

Argemone mexicana (iKhakhakhakha). This root decoction is mixed with the roots of the rubus pinnatus (iqunube) and is administered through the use of an enema to cure kidney pain.

Spirituality



Bedik diviner outside Iwol, southeast Senegal (West Africa). He makes predictions base on the color of the organs of sacrificed chickens.

Some healers may employ the use of charms, incantations, and the casting of spells in their treatments. For example, there is the belief among the Ibos of Nigeria that medicine men can implant something into a person from a distance to inflict sickness on them, in a process referred to asegba ogwu. To remove the malignant object, the intervention of a second medicine man is typically required, who then removes it by making an incision in the patient. A form of sympathetic magic is also used, in which a model is made of the victim and it is believed that actions performed on the model are transferred to the victim, in a manner similar to the familiar voodoo doll. Superstitious beliefs regarding spirits are also exploited and people are convinced that "spirits of deceased relatives trouble the living and cause illness." In these instances, "medicine men prescribe remedies, often in the form of propitiatory sacrifice, in order to put them to rest so that they will no longer trouble the living, especially children."

According to Onwuanibe, Africans hold a religious world view which includes divine or spiritual intervention in medical practice. For example, the !Kung people of the Kalahari Desert believe that the great God Hishe created all things and, therefore, controls all sickness and death. Hishe presents himself to these medicine men in dreams and hallucinations, giving them curative power and this god is generous enough to give this power to the medicine men, they are expected to practice healing freely. The !Kung medicine men effect a treatment by performing a tribal dance.

TRADITIONAL MEDICINAL PRACTITIONERS



Inyanga/Sangoma from Johannesburg, South Africa



Successful Cesarean section performed by indigenous healers in Kahura, Uganda. As observed by R. W. Felkin in 1879.

Many traditional medicinal practitioners are people without formal education, who have rather received knowledge of medicinal plants and their effects on the human body from their forebears and by observation. Traditional practitioners and their practices vary but common features among them are a personal involvement in the healing process; protection of the therapeutic knowledge by keeping it a secret; and being rewarded for their services.

In a manner similar to orthodox medicinal practice, the practitioners of traditional medicine specialize in particular areas of their profession. Some, such as the inyangas of Eswatini are experts in herbalism, whilst others, such as the South African sangomas, are experts in spiritual healing as diviners, and others specialize in a combination of both forms of practice. There are also traditional bone setters and birth attendants. Herbalists are becoming more and more popular in Africa with an emerging herb trading market in Durban that is said to attract between 700,000 and 900,000 traders per year from South Africa, Zimbabwe, and Mozambique. Smaller trade markets exist in virtually every community. Their knowledge of herbs has been invaluable in African communities and they among the few who could gather them in most societies. Midwives also make extensive use of indigenous plants to aid childbirth. African healers commonly "describe and explain illness in terms of social interaction and act on the belief that religion permeates every aspect of human existence."

#### PAYMENTS

Traditional healers, like any other profession, are rewarded for their services. In African societies, the payment for a treatment depends on its efficacy. They do not request payment until after the treatment is given. This is another reason many prefer traditional healers to western doctors who require payment before the patient has assessed the effectiveness of the treatment. The payment methods have changed over time, with many practitioners now asking for monetary payment, especially in urban settings, rather than their receiving good in exchange, as happened formerly. There are also a growing number of fraudulent practitioners who only interested in making money, especially in urban areas.

#### LEARNING THE TRADE

Some healers learn the trade through personal experience while being treated as a patient who decide to become healers upon recovery. Others become traditional practitioners through a "spiritual calling" and, therefore, their diagnoses and treatments are decided through belief in supernatural intervention. Another route is to receive the knowledge and skills passed down informally from a close family member such as a father or uncle, or even a mother or aunt in the case of midwives. Apprenticeship to an established practitioner, who formally teaches the trade over a long period of time and is paid for their tutoring, is another route to becoming a healer.

### IMPORTANCE

In Africa, traditional healers and remedies made from indigenous plants play a crucial role in the health of millions since as many as 85% of African routinely use these services for primary health care in Sub-Saharan Africa. The relative ratios of traditional practitioners and university trained doctors in relation to the whole population in African countries underscores this importance. Across Sub-Saharan Africa, from Ghana to Eswatini there are, on average almost, 100 traditional practitioners for every university trained doctor. This equates to one traditional healer for every 200 people in the Southern African region, which is a much greater doctor-to- patient ratio than is found in North America. In many parts of Africa there are few practitioners trained in modern medicine and traditional healers are a large and influential group in primary health care and an integral part of the African culture. Without them, many people would go untreated.

Medications and treatments that Western pharmaceutical companies manufacture are far too costly and not available widely enough for most Africans. Many rural African communities are not able to afford the high price of pharmaceuticals and can not readily obtain them even if they were affordable; therefore, healers are their only means of medical help. Because this form of medicine is "the most affordable and accessible system of health care for the majority of the African rural population," the African Union declared 2001 to 2010 to be the Decade for African Traditional Medicine with the goal of making "safe, efficacious, quality, and affordable traditional medicines available to the vast majority of the people."

Excessive use of plants is an ecological risk, as this may lead to their extinction.

### TRADITIONAL AFRICAN MEDICINE IN RELATION TO WOMEN

Women in Sub-Saharan rural African communities are almost entirely responsible for domestic work in their households. These women are often at higher risk for disease and poverty than their male counterparts and have less control over their daily lives than them. A literature survey from 2001 found that these women defined 'good health' as the ability to perform domestic duties and the state of being disease free. Furthermore, the study found that they attributed poor health to supernatural, evil forces, that illness is seen as a form of punishment from spirits. In another study, which explored the HIV/AIDS epidemic in Ghana, women identified HIV/AIDS with reprobate behaviour, such as "prostitution, promiscuity, and extramarital relationships", or traveling to areas outside the community.

These women endure arduous conditions and a traditional healer plays an instrumental role in their daily lives. The traditional healer provides health care to the rural communities and represents him/herself as an honorable cultural leader and educator. An advantage of the traditional healer in rural areas is that they are conveniently located within the community. Modern medicine is normally not as accessible in rural areas because it is much more costly. Older rural women particularly tend to utilize traditional healers in their communities. Younger women and the urbanized have been found to be renouncing the use of traditional healers.

A 2001 study of rural Ethiopian women where HIV was present found that they rejected the presence of HIV in rural villages and claimed it was an urban illness, despite the presence of HIV in the rural communities. However, these women also claimed that their communities did not advocate for prevention, but rather treated an illness once it was present.

TRADITIONAL AFRICAN HEALERS AND THE HIV/AIDS EPIDEMIC ROLE

For HIV/AIDS victims, traditional healers provided a local, familiar, and accessible option compared to biomedical personnel who were usually overbooked and located farther away. Traditional healers were seen as having an authoritative role in physical, psychological, and spiritual aspects of health. In the early 1980s in southwestern Uganda, it was reported that many locals infected with the disease ("Slim") after showing symptoms of diarrhoea and weight- loss would consult traditional healers due to their belief in the connection between the disease and witchcraft.

CRITICISM

During the HIV/AIDS epidemic traditional healers' methods were criticised by practitioners of modern medicine, and in particular the use of certain herbal treatments for HIV/AIDS. According to Edward Mills, herbal remedies are used as a therapy for HIV-symptoms such as "dermatological disorders, nausea, depression, insomnia, and weakness." While some of these remedies have been beneficial, the herbal treatments hypoxis and sutherlandia "may put the patients at risk for antiretroviral treatment failure, viral resistance, or drug toxicity" since they interact with antiretroviral treatments and prevent the expression of CYP3A4 and P-glycoprotein. This results in the inhibition of drug metabolism and transport. Peltzer et al. also found that an important issue with herbal medicines used in traditional medicine is that when a patient decides to see a doctor in addition to a traditional healer, they do not always mention that he or she is taking an herbal medicine. Herbal medicines can interact with the modern medicine prescribed by the doctor to treat HIV and negatively impact the patient. Peltzer et al. mentions that a "IGM-1 seem to be effective in symptom improvement, but generally no significant effect on antiviral or immunity enhancement among reviewed herbs was seen" for the treatment of HIV. Since HIV is such a volatile disease, it is imperative to try to boost the patient's immunity, not just relieve symptoms.

The ethical issue, as presented by modern medicine, is the complete lack of clinical trials to test any traditional African medicine before practicing with it on the public. Modern medicine in the United States is subject to The Nuremberg Code and the related Declaration of Helsinki which are the basis for the Code of Federal Regulations issued by the United States Department of Health and Human Services, to oblige humane behavior in experimenting on the public for the good of society. Since traditional African healers do not have to adhere to the Nuremberg code, there is a potential danger to society when healers do not practice medicine humanely.

Traditional healers have also been under scrutiny during the HIV/AIDS epidemic for unsanitary medical practices. The "re-use of medical instruments and lack of hygienic habits such as hand washing" have contributed to the spread of infectious diseases by traditional healers. A study of traditional healers in Nigeria found that 60% of the population was at risk because of the contamination spread by tradition healers.

Women experience the most fatal impact from the HIV/AIDS epidemic. When industrial development required the labor of men from rural communities, the men often left those communities and while away at the migratory camps many of these men would have sex with prostitutes, become infected with HIV and return home with it. Furthermore, since traditional medicine does not have an early detection method, infectious diseases are often spread unknowingly, allowing the 3.1 million people infected with HIV in sub-Saharan Africa to grow exponentially to 25.4 million in 2004. The patriarchal culture that defines traditional marriages in rural areas, places female sexuality under male control and decrees that women are not permitted to discuss and practice safe sex with their partners, which results in a higher risk for HIV exposure for women in rural areas.

### MODERN MEDICINE

Sub-Saharan countries have found ways to unite modern medicine with traditional medicine due to the urgency of the HIV/AIDS epidemic. In South Africa, the Kundalia Foundation has provided funding to train traditional healers on HIV/AIDS. The training included prevention, safe sex, and knowledge about the virus.

### RELATIONSHIP WITH MODERN MEDICINE

Traditional African medicine served the people in Africa prior to the establishment of science-based medicine, but with the arrival of Europeans this changed. Although modern scientific medicine is successful in developed countries, it doesn't have the same positive impact in many of the underdeveloped African countries. Though science-based practices can make an impact in health care practices, in certain areas such as in the spread of various diseases, it cannot integrate wholly into the culture and society. This makes the traditional African practitioners a vital part of their health care system. There are many reasons why the modern medical system has not been as effective in Africa as it has in more developed parts of the world. Hospitals and medical facilities are difficult for many Africans to get to. With vast areas of land and poor road and transportation systems, many native Africans have to travel immense distances on foot to reach help. Once they arrive they are often required to wait in line for up to 8 hours, especially in urban areas, as the lack of clinics and resources cause over-crowding. Patients are often not told the cause of their illness or much information about it all, so they have no way to prevent or prepare for it. The technology used is usually of poor quality, which impairs the quality of treatment. Modern medicine can also be too expensive for the average African to afford, making it difficult for them to receive proper care. Finally, modern medicine removes native Africans from the culture and tradition and forces them into a setting that they are not comfortable with, away from their family and traditions which are of utmost importance to them. They do not get the proper spiritual healing that their culture seeks and traditional ideology requires.

However, there has been more interest expressed recently in the effects of some of the medicinal plants of Africa. "The pharmaceutical industry has come to consider traditional medicine as a source for identification of bio-active agents that can be used in the preparation of medicine." Pharmaceutical industries are looking into the medicinal effects of the most commonly and widely used plants to use in drugs. In comparing the techniques of African healers and Western techniques, T. Adeoze Lambo, a Nigerian psychiatrist, stated in 1979, "At about three years ago, we made an evaluation, a programme of their work, and compared this with our own, and we discovered that actually they were scoring almost sixty percent success in their treatment of neurosis. And we were scoring forty percent-in fact, less than forty percent."

### EFFECTIVENESS

Herbal medicines in Africa are generally not adequately researched, and are weakly regulated. There is a lack of the detailed documentation of the traditional knowledge, which is generally transferred orally. A literature survey in 2014, indicated that several African medicinal plants contain bioactive anti-trypanosomal compounds that could be used for the treatment of African trypanosomiasis ("Sleeping sickness") but no clinical studies had been conducted on them. A 2008 literature survey found that only a small proportion of ethnoveterinary medicine plants in South Africa had been researched for biological activity. A literature survey conducted in 2013 identified several compounds (mostly glucosides, sterols and sterolins) contained in the *Hypoxis* species, (known locally as inkomfe or African potato) that had been isolated and tested with "promising prospects reported in some studies". South African sangomas

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have been long and vocal advocates of a local traditional plant called unwele or kankerbos (*Sutherlandia frutescens*) claiming it assists in the treatment of HIV/AIDS, cancer and tuberculosis. A review of preclinical data on *Sutherlandia frutescens* show no toxicity and justify controlled clinical studies. However, when used in conjunction with antiretroviral treatments, the herbal treatments hypoxis and *sutherlandia* “may put the patients at risk for antiretroviral treatment failure, viral resistance, or drug toxicity” since they interact with antiretroviral treatments and prevent the expression of CYP3A4 and P-glycoprotein.

There have been attempts to assess some traditional medicines through clinical trials, although none have so far reached phase III.

### SAFETY

A small proportion of ethnoveterinary medicine plants in South Africa have been researched for toxic effects. The possible adverse effects of South African traditional medicines are not well documented; there has been limited research into mutagenic properties and heavy metal contamination. Serious adverse effects, even death, can result from misidentification or misuse of healing plants. For example, various aloe plants are widely used in traditional African medicine, but some varieties, such as *Aloe globuligemma*, are toxic and can cause death. The potential for traditional African medicine and pharmacokinetic interactions is unknown, especially interactions between traditional treatments and antiretroviral drugs for HIV/AIDS. Herbal treatments are frequently used in Africa as a primary treatment for HIV/AIDS and for HIV-related issues. Collaboration with traditional healers has been recommended to determine what herbal treatments are used for HIV and to educate people supplying alternative treatments against unsafe practices. Given the demands of the local population on the use of traditional African medicine, it has been proposed that South African medical schools should inform medical students about traditional, supplementary and alternative medicine and the possible conflicts and interactions with modern medicine. Use of traditional African medicines as antivirals instead of using specific antiretroviral drugs, is especially a risk with HIV.

Cultural expectations play an important role in treatment as a 1985 study amongst the Mende people of Sierra Leone showed that treatment decisions were made "largely on traditional notions of the efficacy of a medicine of a particular color, consistency, taste, size and reputed success in treating analogous illnesses". This led to the inappropriate use of many modern medicines by the Mende.

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## **2.9 Traditional and Modern Medicine: Harmonizing the Two Approaches<sup>i</sup>**

### Summary

#### 1. Traditional medicine

##### 2.1 Background and characteristics

##### 2.2 Changes in trends of usage

##### 2.3 Consumers, government and other stakeholders

#### 3. Traditional and modern medicine

##### 3.1 Integration of traditional medicine with modern medicine

##### 3.2 The need for harmonization of traditional and modern medicine

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4. Evidence and traditional medicine
  - 4.1 Acquisition of traditional medical knowledge
  - 4.2. Evidence–based health care practice
5. Evidence of practice of traditional medicine
  - 5.1 Basic science research in acupuncture
  - 5.2 Clinical research on acupuncture
  - 5.3 Basic science research in herbal medicine
  - 5.4 Clinical research in herbal medicine
6. Harmonizing traditional and modern medicine: Conclusions and recommendations
  - 6.1 Towards harmonization of traditional and modern medicine
  - 6.2 Operational recommendations

### SUMMARY

The major aims of the meeting held in Beijing China, from 22 to 26 November 1999 were to evaluate the contemporary role of traditional medicine in maintaining health, to develop a scientific approach to policy–making in traditional medicine, and, ultimately, to assess how traditional medicine can be harmonized with modern medicine. The meeting also provided a forum for identifying research requirements in traditional medicine.

The meeting was attended by 24 temporary advisers, three consultants, one secretariat staff from the WHO Regional Office for the Western Pacific, and 19 observers.

Participants presented review papers on past research, barriers to the acceptance of traditional medicine, research methodology and evidence–based medicine. Participants were divided into sub–groups to deal with acupuncture, herbal medicine and socio–economic aspects relevant to harmonization.

In the course of these discussions, the meeting concluded that there were challenges to the harmonization of traditional and modern medicine. Better access to information, facilitating appropriate clinical trials, improving rigour in clinical trials, improving education and collaboration of practitioners and researchers, and respecting traditional practices in research, were all identified as important steps towards achieving harmonization.

The group concluded that WHO should continue to encourage governments to adopt policies to promote rational and safe use of traditional medicine. WHO and its Member States should support the harmonization and appropriate integration of traditional medicine with modern medicine.

The group believed that evidence–based research could be an essential step towards the harmonization. In addition to detailed recommendations on steps for harmonizing the two approaches, the meeting also provided the following recommendations:

- (1) WHO should continue to encourage governments to adopt policies to promote rational and safe use of traditional medicine.



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- (2) WHO and its Member States should support the harmonization and appropriate integration of traditional medicine with modern medicine.
- (3) Findings of well–designed and well–performed research should be disseminated as widely as possible. This should include the preparation and dissemination in English and native languages of rigorous systematic reviews based on the research literature from various countries.
- (4) WHO should develop appropriate mechanisms to improve dissemination of information on research activities. It should assist in updating the available databases on traditional medicine, preparing a document illustrative of the evidence–based approach to clinical research in traditional medicine, and forming networks.
- (5) WHO should continue to co-ordinate critical data analysis on traditional remedies.
- (6) Relevant governments and professional agencies should ensure appropriate adverse event reporting and recording mechanisms are in place.
- (7) WHO should support training in research methodologies as well as in traditional medicine.
- (8) WHO and its Member States should advocate, support and encourage conducting of high quality research.
- (9) Research that establishes the value of traditional medicine in promoting health and wellness beyond treating diseases should be encouraged.
- (10) Clinical trials of widely used and established traditional remedies should be encouraged and undertaken prior to obtaining the results of extensive ‘pre–clinical’ basic research.

## 1. INTRODUCTION

Traditional medicine is the ancient and culture–bound medical practice which existed in human societies before the application of modern science to health. The practice of traditional medicine varies widely, in keeping with the societal and cultural heritage of different countries. Every human community responds to the challenge of maintaining health and treating diseases by developing a medical system. Thus, traditional medicine has been practiced to some degree in all cultures.

After the introduction of modern medicine into the Region, traditional medicine was usually rejected by the formal medical service system. Recently, however, attitudes towards traditional medicine have changed. Traditional medicine is now widely used in the Region and practiced side by side with modern medicine in most countries. Many traditional remedies and therapies have transcended their original culture and become “complementary/alternative” medicine in other countries.

Modern medicine developed very quickly and made major contributions to disease control in the past century. Interestingly, despite a rapid growth in knowledge and techniques in modern medicine, the end of the last century also saw a dramatically increased interest in traditional medicine. The increasing public demand for its use has led to considerable interest among policy–makers, health administrators and medical doctors on the possibilities of bringing traditional and modern medicine together.

The practice of traditional medicine is mainly based on conventional use and personal experience. The value of traditional medicine (as well as many modern medical treatments) has not been fully tested by using modern scientific means. Extensive accounts of use and experiences from generation to generation

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provide some evidence of the effectiveness of traditional medicine. However, scientific research is needed to provide additional evidence of its safety and effectiveness.

To evaluate the role of traditional medicine in maintaining health, to develop a scientific approach to policy-making in traditional medicine, and, ultimately, to focus on how traditional medicine can be harmonized with modern medicine, WHO Regional Office for the Western Pacific organized the consultation meeting on how to harmonize the two approaches, from 22 to 26 November 1999 in Beijing, People's Republic of China.

### 1.1 Objectives of the meeting

The objectives of the meeting were to:

- (1) review the outcome of recent scientific research on traditional medicine and to confirm its value in maintaining health;
- (2) identify the scientific basis for evaluating the efficacy of traditional medicine;
- (3) discuss how to promote a dialogue of understanding between traditional and modern medicine;
- (4) identify research requirements and research priorities for better understanding of the value of traditional medicine in the Region; and
- (5) propose sound research methodologies for objective.

### 1.2 Participants

The consultation group on the harmonization of traditional and modern medicine was composed of 24 temporary advisers, 3 consultants, 1 secretariat staff from the WHO Regional Office for the Western Pacific and 19 observers.

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## 3.0 Alternative Medicine <sup>c</sup>

Alternative medicine is any practice that aims to achieve the healing effects of medicine, but which lacks biological plausibility and is untested, untestable or proven ineffective. Complementary medicine (CM), complementary and alternative medicine (CAM), integrated medicine or integrative medicine (IM), and holistic medicine are among many rebrandings that describe various ways alternative medicine is combined with mainstream medicine. Alternative therapies share in common that they reside outside of medical science and instead rely on pseudoscience. Traditional practices become "alternative" when used outside their original settings without proper scientific explanation and evidence. Frequently used derogatory terms for the alternative are new-age or pseudo, with little distinction from quackery.

AM, complementary and alternative medicine (CAM), complementary medicine, heterodox medicine, integrative medicine (IM), complementary and integrative medicine (CIM), new-age medicine, pseudomedicine, unconventional medicine, unorthodox medicine, altmed

Claims

Alternatives to reality-based medical treatments

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Some alternative practices are based on theories that contradict the science of how the human body works; others resort to the supernatural or superstitious to explain their effect. In others, the practice is plausibly effective but has too many side effects. Alternative medicine is distinct from scientific medicine, which employs the scientific method to test plausible therapies by way of responsible and ethical clinical trials, producing evidence of either effect or of no effect. Research into alternative therapies often fails to follow proper research protocols (such as placebo-controlled trials, blind experiments and calculation of prior probability), providing invalid results.

Much of the perceived effect of an alternative practice arises from a belief that it will be effective (the placebo effect), or from the treated condition resolving on its own (the natural course of disease). This is further exacerbated by the tendency to turn to alternative therapies upon the failure of medicine, at which point the condition will be at its worst and most likely to spontaneously improve. In the absence of this bias, especially for diseases that are not expected to get better by themselves such as cancer or HIV infection, multiple studies have shown significantly worse outcomes if patients turn to alternative therapies. While this may be because these patients avoid effective treatment, some alternative therapies are actively harmful (e.g. cyanide poisoning from amygdalin, or the intentional ingestion of hydrogen peroxide) or actively interfere with effective treatments.

The alternative sector is a highly profitable industry with a strong lobby, and faces far less regulation over the use and marketing of unproven treatments. Its marketing often advertises the treatments as being "natural" or "holistic", in comparison to those offered by medical science. Billions of dollars have been spent studying alternative medicine, with few or no positive results. Some of the successful practices are only considered alternative under very specific definitions, such as those which include all physical activity under the umbrella of "alternative medicine".

### DEFINITIONS AND TERMINOLOGY

The terms alternative medicine, complementary medicine, integrative medicine, holistic medicine, natural medicine, unorthodox medicine, fringe medicine, unconventional medicine, and new age medicine are used interchangeably as having the same meaning and are almost synonymous in most contexts. Terminology has shifted over time, reflecting the preferred branding of practitioners. For example, the United States National Institutes of Health department studying alternative medicine, currently named the National Center for Complementary and Integrative Health (NCCIH), was established as the Office of Alternative Medicine (OAM) and was renamed the National Center for Complementary and Alternative Medicine (NCCAM) before obtaining its current name. Therapies are often framed as "natural" or "holistic", implicitly and intentionally suggesting that conventional medicine is "artificial" and "narrow in scope".



Marcia Angell: "There cannot be two kinds of medicine – conventional and alternative".

The meaning of the term "alternative" in the expression "alternative medicine", is not that it is an effective alternative to medical science, although some alternative medicine promoters may use the loose terminology to give the appearance of effectiveness. Loose terminology may also be used to suggest meaning that a dichotomy exists when it does not, e.g., the use of the expressions "Western medicine" and "Eastern medicine" to suggest that the difference is a cultural difference between the Asiatic east and the European west, rather than that the difference is between evidence-based medicine and treatments that do not work.

#### ALTERNATIVE MEDICINE

Alternative medicine is defined loosely as a set of products, practices, and theories that are believed or perceived by their users to have the healing effects of medicine, but whose effectiveness has not been established using scientific methods, or whose theory and practice is not part of biomedicine, or whose theories or practices are directly contradicted by scientific evidence or scientific principles used in biomedicine.

"Biomedicine" or "medicine" is that part of medical science that applies principles of biology, physiology, molecular biology, biophysics, and other natural sciences to clinical practice, using scientific methods to establish the effectiveness of that practice. Unlike medicine, an alternative product or practice does not originate from using scientific methods, but may instead be based on hearsay, religion, tradition, superstition, belief in supernatural energies, pseudoscience, errors in reasoning, propaganda, fraud, or other unscientific sources.

Some other definitions seek to specify alternative medicine in terms of its social and political marginality to mainstream healthcare. This can refer to the lack of support that alternative therapies receive from medical scientists regarding access to research funding, sympathetic coverage in the medical press, or inclusion in the standard medical curriculum. For example, a widely used definition devised by the US NCCIH calls it "a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine". However, these descriptive definitions are inadequate in the present-day when some conventional doctors offer alternative medical treatments and introductory courses or modules can be offered as part of standard undergraduate medical training; alternative medicine is taught in more than half of US medical schools and US health insurers are increasingly willing to provide reimbursement for alternative therapies.

## COMPLEMENTARY OR INTEGRATIVE MEDICINE

Complementary medicine (CM) or integrative medicine (IM) is when alternative medicine is used together with mainstream functional medical treatment in a belief that it improves the effect of treatments. For example, acupuncture (piercing the body with needles to influence the flow of a supernatural energy) might be believed to increase the effectiveness or "complement" science-based medicine when used at the same time. Instead, significant drug interactions caused by alternative therapies may make treatments less effective, notably in cancer therapy. Besides the usual issues with alternative medicine, integrative medicine has been described as an attempt to bring pseudoscience into academic science-based medicine, leading to the pejorative term "quackademic medicine". Due to its many names, the field has been criticized for intense rebranding of what are essentially the same practices.

CAM is an abbreviation of the phrase complementary and alternative medicine. The 2019 World Health Organization (WHO) Global Report on Traditional and Complementary Medicine states that the terms complementary and alternative medicine "refer to a broad set of health care practices that are not part of that country's own traditional or conventional medicine and are not fully integrated into the dominant health care system. They are used interchangeably with traditional medicine in some countries."

The Integrative Medicine Exam by the American Board of Physician Specialties includes the following subjects: Manual Therapies, Biofield Therapies, Acupuncture, Movement Therapies, Expressive Arts, Traditional Chinese Medicine, Ayurveda, Indigenous Medical Systems, Homeopathic Medicine, Naturopathic Medicine, Osteopathic Medicine, Chiropractic, and Functional Medicine.

## OTHER TERMS

Traditional medicine refers to the pre-scientific practices of a certain culture, in contrast to what is typically practiced in cultures where medical science dominates. The 2019 WHO report defines traditional medicine as "the sum total of the knowledge, skill and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness."

Holistic medicine is another rebranding of alternative medicine. In this case, the words balance and holism are often used alongside complementary or integrative, claiming to take into account a "whole" person, in contrast to the supposed reductionism of medicine.

## CHALLENGES IN DEFINING ALTERNATIVE MEDICINE

Prominent members of the science and biomedical science community say that it is not meaningful to define an alternative medicine that is separate from a conventional medicine because the expressions "conventional medicine", "alternative medicine", "complementary medicine", "integrative medicine", and "holistic medicine" do not refer to any medicine at all. Others say that alternative medicine cannot be precisely defined because of the diversity of theories and practices it includes, and because the boundaries between alternative and conventional medicine overlap, are porous, and change. Healthcare practices categorized as alternative may differ in their historical origin, theoretical basis, diagnostic technique, therapeutic practice and in their relationship to the medical mainstream. Under a definition of alternative medicine as "non-mainstream", treatments considered alternative in one location may be considered conventional in another.

Critics say the expression is deceptive because it implies there is an effective alternative to science-based medicine, and that complementary is deceptive because it implies that the treatment increases the effectiveness of (complements) science-based medicine, while alternative medicines that have been

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tested nearly always have no measurable positive effect compared to a placebo. John Diamond wrote that "there is really no such thing as alternative medicine, just medicine that works and medicine that doesn't", a notion later echoed by Paul Offit: "The truth is there's no such thing as conventional or alternative or complementary or integrative or holistic medicine. There's only medicine that works and medicine that doesn't. And the best way to sort it out is by carefully evaluating scientific studies—not by visiting Internet chat rooms, reading magazine articles, or talking to friends."

### TYPES

Alternative medicine consists of a wide range of health care practices, products, and therapies. The shared feature is a claim to heal that is not based on the scientific method. Alternative medicine practices are diverse in their foundations and methodologies. Alternative medicine practices may be classified by their cultural origins or by the types of beliefs upon which they are based. Methods may incorporate or be based on traditional medicinal practices of a particular culture, folk knowledge, superstition, spiritual beliefs, belief in supernatural energies (antiscience), pseudoscience, errors in reasoning, propaganda, fraud, new or different concepts of health and disease, and any bases other than being proven by scientific methods. Different cultures may have their own unique traditional or belief based practices developed recently or over thousands of years, and specific practices or entire systems of practices.

### UNSCIENTIFIC BELIEF SYSTEMS

Alternative medicine, such as using naturopathy or homeopathy in place of conventional medicine, is based on belief systems not grounded in science.

|                    | <b>Proposed mechanism</b>   | <b>Issues</b>  |
|--------------------|---|--|
| <b>Naturopathy</b> | Naturopathic medicine is based on a belief that the body heals itself using a supernatural <b>vital energy</b> that | In conflict with the paradigm of <b>evidence-based medicine</b> . Many naturopaths have opposed <b>vaccination</b> , and "scientific evidence does not support claims that naturopathic medicine can cure <b>cancer</b> or any other disease". |
| <b>Homeopathy</b>  | A belief that a substance that causes the symptoms of a disease in healthy people cures similar symptoms in         | Developed before knowledge of <b>atoms</b> and <b>molecules</b> , or of basic chemistry, which shows that repeated dilution as practiced in homeopathy produces only water, and that homeopathy is not   |



"They told me if I took 1000 pills at night I should be quite another thing in the morning", an early 19th-century satire on Morison's Vegetable Pills, an alternative medicine supplement.

#### TRADITIONAL ETHNIC SYSTEMS



Ready-to-drink traditional Chinese medicine mixture

Alternative medical systems may be based on traditional medicine practices, such as traditional Chinese medicine (TCM), Ayurveda in India, or practices of other cultures around the world.

Some useful applications of traditional medicines have been researched and accepted within ordinary medicine, however the underlying belief systems are seldom scientific and are not accepted.

Traditional medicine is considered alternative when it is used outside its home region; or when it is used together with or instead of known functional treatment; or when it can be reasonably expected that the patient or practitioner knows or should know that it will not work – such as knowing that the practice is based on superstition.

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|                              | Claims   | Issues   |
|------------------------------|--|--|
| Traditional Chinese medicine | Traditional practices and beliefs from China, together with modifications made by the Communist party make up TCM. Common practices include herbal medicine, <b>acupuncture</b> (insertion of needles in the body at specified points), massage (Tui na), exercise (qigong), and dietary   | The practices are based on belief in a supernatural energy called <b>qi</b> , considerations of <b>Chinese astrology</b> and <b>Chinese numerology</b> , traditional use of herbs and other substances found in China, a belief that the tongue contains a map of the body that reflects changes in the body, and an incorrect model of the anatomy and physiology of internal   |
| Ayurveda                     | Traditional medicine of India. Ayurveda believes in the existence of three elemental substances, the <b>doshas</b> (called Vata, Pitta and Kapha), and states that a balance of the doshas results in health, while imbalance results in disease. Such disease-inducing imbalances can be adjusted and balanced using traditional herbs, minerals and heavy metals. Ayurveda stresses the use of plant-based medicines and treatments, with some animal products, and added minerals, including <b>sulfur, arsenic, lead</b> and <b>copper sulfate</b> . | Safety concerns have been raised about Ayurveda, with two U.S. studies finding about 20 percent of Ayurvedic Indian-manufactured <b>patent medicines</b> contained toxic levels of heavy metals such as <b>lead, mercury</b> and <b>arsenic</b> . A 2015 study of users in the United States also found elevated blood lead levels in 40 percent of those tested. Other concerns include the use of herbs containing toxic compounds and the lack of quality control in Ayurvedic facilities. Incidents of <b>heavy metal poisoning</b> have been attributed to the use of these compounds in the United |

SUPERNATURAL ENERGIES

Bases of belief may include belief in existence of supernatural energies undetected by the science of physics, as in biofields, or in belief in properties of the energies of physics that are inconsistent with the laws of physics, as in energy medicine.



History of all Medicine

|  | Claims   | Issues  |
|--|--|---|
| Biofield therapy                           | Intended to influence energy fields that, it is purported, surround and penetrate the body.  | Advocates of <a href="#">scientific skepticism</a> such as <a href="#">Carl Sagan</a> have described the lack of empirical evidence to support the existence of the putative energy fields on which these   |
| <a href="#">Bioelectromagnetic therapy</a> | Use verifiable electromagnetic fields, such as pulsed fields, alternating-current, or direct-current fields in an unconventional manner.   | Asserts that magnets can be used to defy the laws of <a href="#">physics</a> to influence health and disease.   |
| <a href="#">Chiropractic</a>               | <a href="#">Spinal manipulation</a> aims to treat " <a href="#">vertebral subluxations</a> " which are claimed to put pressure on nerves.  | Chiropractic was developed in the belief that manipulating the spine affects the flow of a supernatural <a href="#">vital energy</a> and thereby affects health and disease. Vertebral subluxation is a pseudoscientific concept and has not been proven to |
| Reiki                                      | Practitioners place their palms on the patient near <a href="#">Chakras</a> that they believe are centers of supernatural energies in the belief that these supernatural energies can transfer from the practitioner's palms to heal the | Lacks credible scientific evidence.   |



Acupuncture involves insertion of needles in the body.

#### HERBAL REMEDIES AND OTHER SUBSTANCES

Substance based practices use substances found in nature such as herbs, foods, non-vitamin supplements and megavitamins, animal and fungal products, and minerals, including use of these products in traditional medical practices that may also incorporate other methods. Examples include healing claims for non-vitamin supplements, fish oil, Omega-3 fatty acid, glucosamine, echinacea, flaxseed oil, and ginseng. Herbal medicine, or phytotherapy, includes not just the use of plant products, but may also include the use of animal and mineral products. It is among the most commercially successful branches of alternative medicine, and includes the tablets, powders and elixirs that are sold as "nutritional supplements" Only a very small percentage of these have been shown to have any efficacy, and there is little regulation as to standards and safety of their contents.



A chiropractor "adjusting" the spine

History of all Medicine

|                         | Claims  | Issue  |
|-------------------------|---|--|
| Christian faith healing | There is a divine or spiritual intervention in healing. | Lack of evidence for effectiveness. Unwanted outcomes, such as death and disability, "have occurred when faith healing was elected instead of medical care for serious injuries or illnesses". A 2001 double-blind study of 799 discharged coronary surgery patients found that "intercessory prayer had no significant effect on medical outcomes after hospitalization in a coronary care unit." |

NCCIH classification

A US agency, National Center on Complementary and Integrative Health (NCCIH), has created a classification system for branches of complementary and alternative medicine that divides them into five major groups. These groups have some overlap, and distinguish two types of energy medicine: veritable which involves scientifically observable energy (including magnet therapy, colorpuncture and light therapy) and putative, which invokes physically undetectable or unverifiable energy. None of these energies have any evidence to support that they affect the body in any positive or health promoting way.

1. Whole medical systems: Cut across more than one of the other groups; examples include traditional Chinese medicine, naturopathy, homeopathy, and ayurveda.
2. Mind-body interventions: Explore the interconnection between the mind, body, and spirit, under the premise that they affect "bodily functions and symptoms". A connection between mind and body is conventional medical fact, and this classification does not include therapies with proven function such as cognitive behavioral therapy.
3. "Biology"-based practices: Use substances found in nature such as herbs, foods, vitamins, and other natural substances. (Note that as used here, "biology" does not refer to the science of biology, but is a usage newly coined by NCCIH in the primary source used for this article. "Biology-based" as coined by NCCIH may refer to chemicals from a nonbiological source, such as use of the poison lead in traditional Chinese medicine, and to other nonbiological substances.)
4. Manipulative and body-based practices: feature manipulation or movement of body parts, such as is done in bodywork, chiropractic, and osteopathic manipulation.
5. Energy medicine: is a domain that deals with putative and verifiable energy fields:

Biofield therapies are intended to influence energy fields that are purported to surround and penetrate the body. The existence of such energy fields have been disproven.

Bioelectromagnetic-based therapies use verifiable electromagnetic fields, such as pulsed fields, alternating-current, or direct-current fields in a non-scientific manner.

HISTORY

The history of alternative medicine may refer to the history of a group of diverse medical practices that were collectively promoted as "alternative medicine" beginning in the 1970s, to the collection of individual histories of members of that group, or to the history of western medical practices that were

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labeled "irregular practices" by the western medical establishment. It includes the histories of complementary medicine and of integrative medicine. Before the 1970s, western practitioners that were not part of the increasingly science-based medical establishment were referred to "irregular practitioners", and were dismissed by the medical establishment as unscientific and as practicing quackery. Until the 1970s, irregular practice became increasingly marginalized as quackery and fraud, as western medicine increasingly incorporated scientific methods and discoveries, and had a corresponding increase in success of its treatments. In the 1970s, irregular practices were grouped with traditional practices of nonwestern cultures and with other unproven or disproven practices that were not part of biomedicine, with the entire group collectively marketed and promoted under the single expression "alternative medicine".

Use of alternative medicine in the west began to rise following the counterculture movement of the 1960s, as part of the rising new age movement of the 1970s. This was due to misleading mass marketing of "alternative medicine" being an effective "alternative" to biomedicine, changing social attitudes about not using chemicals and challenging the establishment and authority of any kind, sensitivity to giving equal measure to beliefs and practices of other cultures (cultural relativism), and growing frustration and desperation by patients about limitations and side effects of science-based medicine. At the same time, in 1975, the American Medical Association, which played the central role in fighting quackery in the United States, abolished its quackery committee and closed down its Department of Investigation.<sup>xxi</sup> By the early to mid 1970s the expression "alternative medicine" came into widespread use, and the expression became mass marketed as a collection of "natural" and effective treatment "alternatives" to science-based biomedicine. By 1983, mass marketing of "alternative medicine" was so pervasive that the British Medical Journal (BMJ) pointed to "an apparently endless stream of books, articles, and radio and television programmes urge on the public the virtues of (alternative medicine) treatments ranging from meditation to drilling a hole in the skull to let in more oxygen".

An analysis of trends in the criticism of complementary and alternative medicine (CAM) in five prestigious American medical journals during the period of reorganization within medicine (1965–1999) was reported as showing that the medical profession had responded to the growth of CAM in three phases, and that in each phase, changes in the medical marketplace had influenced the type of response in the journals. Changes included relaxed medical licensing, the development of managed care, rising consumerism, and the establishment of the USA Office of Alternative Medicine (later National Center for Complementary and Alternative Medicine, currently National Center for Complementary and Integrative Health).

## MEDICAL EDUCATION

Mainly as a result of reforms following the Flexner Report of 1910 medical education in established medical schools in the US has generally not included alternative medicine as a teaching topic. Typically, their teaching is based on current practice and scientific knowledge about: anatomy, physiology, histology, embryology, neuroanatomy, pathology, pharmacology, microbiology and immunology. Medical schools' teaching includes such topics as doctor-patient communication, ethics, the art of medicine, and engaging in complex clinical reasoning (medical decision-making). Writing in 2002, Snyderman and Weil remarked that by the early twentieth century the Flexner model had helped to create the 20th-century academic health center, in which education, research, and practice were inseparable.

While this had much improved medical practice by defining with increasing certainty the pathophysiological basis of disease, a single-minded focus on the pathophysiological had diverted much of mainstream American medicine from clinical conditions that were not well understood in mechanistic terms, and were not effectively treated by conventional therapies.

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By 2001 some form of CAM training was being offered by at least 75 out of 125 medical schools in the US. Exceptionally, the School of Medicine of the University of Maryland, Baltimore, includes a research institute for integrative medicine (a member entity of the Cochrane Collaboration). Medical schools are responsible for conferring medical degrees, but a physician typically may not legally practice medicine until licensed by the local government authority. Licensed physicians in the US who have attended one of the established medical schools there have usually graduated Doctor of Medicine (MD). All states require that applicants for MD licensure be graduates of an approved medical school and complete the United States Medical Licensing Exam (USMLE).

### EFFICACY

There is a general scientific consensus that alternative therapies lack the requisite scientific validation, and their effectiveness is either unproved or disproved. Many of the claims regarding the efficacy of alternative medicines are controversial, since research on them is frequently of low quality and methodologically flawed. Selective publication bias, marked differences in product quality and standardisation, and some companies making unsubstantiated claims call into question the claims of efficacy of isolated examples where there is evidence for alternative therapies.

The Scientific Review of Alternative Medicine points to confusions in the general population – a person may attribute symptomatic relief to an otherwise-ineffective therapy just because they are taking something (the placebo effect); the natural recovery from or the cyclical nature of an illness (the regression fallacy) gets misattributed to an alternative medicine being taken; a person not diagnosed with science-based medicine may never originally have had a true illness diagnosed as an alternative disease category.

Edzard Ernst characterized the evidence for many alternative techniques as weak, nonexistent, or negative and in 2011 published his estimate that about 7.4% were based on "sound evidence", although he believes that may be an overestimate. Ernst has concluded that 95% of the alternative therapies he and his team studied, including acupuncture, herbal medicine, homeopathy, and reflexology, are "statistically indistinguishable from placebo treatments", but he also believes there is something that conventional doctors can usefully learn from the chiropractors and homeopath: this is the therapeutic value of the placebo effect, one of the strangest phenomena in medicine.

In 2003, a project funded by the CDC identified 208 condition-treatment pairs, of which 58% had been studied by at least one randomized controlled trial (RCT), and 23% had been assessed with a meta-analysis. According to a 2005 book by a US Institute of Medicine panel, the number of RCTs focused on CAM has risen dramatically.

As of 2005, the Cochrane Library had 145 CAM-related Cochrane systematic reviews and 340 non-Cochrane systematic reviews. An analysis of the conclusions of only the 145 Cochrane reviews was done by two readers. In 83% of the cases, the readers agreed. In the 17% in which they disagreed, a third reader agreed with one of the initial readers to set a rating. These studies found that, for CAM, 38.4% concluded positive effect or possibly positive (12.4%), 4.8% concluded no effect, 0.7% concluded harmful effect, and 56.6% concluded insufficient evidence. An assessment of conventional treatments found that 41.3% concluded positive or possibly positive effect, 20% concluded no effect, 8.1% concluded net harmful effects, and 21.3% concluded insufficient evidence. However, the CAM review used the more developed 2004 Cochrane database, while the conventional review used the initial 1998 Cochrane database.

Alternative therapies do not "complement" (improve the effect of, or mitigate the side effects of) functional medical treatment. Significant drug interactions caused by alternative therapies may instead

negatively impact functional treatment by making prescription drugs less effective, such as interference by herbal preparations with warfarin.

In the same way as for conventional therapies, drugs, and interventions, it can be difficult to test the efficacy of alternative medicine in clinical trials. In instances where an established, effective, treatment for a condition is already available, the Helsinki Declaration states that withholding such treatment is unethical in most circumstances. Use of standard-of-care treatment in addition to an alternative technique being tested may produce confounded or difficult-to-interpret results.

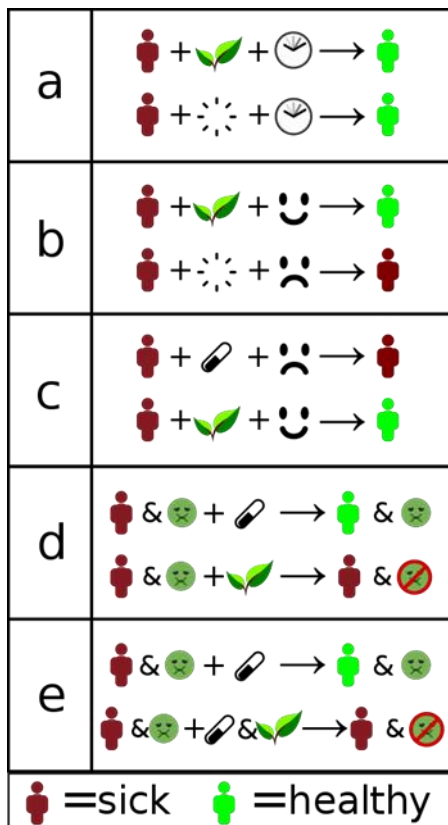
Cancer researcher Andrew J. Vickers has stated:

Contrary to much popular and scientific writing, many alternative cancer treatments have been investigated in good-quality clinical trials, and they have been shown to be ineffective. The label "unproven" is inappropriate for such therapies; it is time to assert that many alternative cancer therapies have been "disproven".

PERCEIVED MECHANISM OF EFFECT

Anything classified as alternative medicine by definition does not have a healing or medical effect. However, there are different mechanisms through which it can be perceived to "work". The common denominator of these mechanisms is that effects are mis-attributed to the alternative treatment.

How alternative therapies "work":



- a) Misinterpreted natural course – the individual gets better without treatment.
- b) Placebo effect or false treatment effect – an individual receives "alternative therapy" and is convinced it will help. The conviction makes them more likely to get better.
- c) Nocebo effect – an individual is convinced that standard treatment will not work, and that alternative therapies will work. This decreases the likelihood standard treatment will work, while the placebo effect of the "alternative" remains.
- d) No adverse effects – Standard treatment is replaced with "alternative" treatment, getting rid of adverse effects, but also of improvement.
- e) Interference – Standard treatment is "complemented" with something that interferes with its effect. This can both cause worse effect, but also decreased (or even increased) side effects, which may be interpreted as "helping". Researchers, such as epidemiologists, clinical statisticians and pharmacologists, use clinical trials to reveal such effects, allowing physicians to offer a therapeutic solution best known to work. "Alternative treatments" often refuse to use trials or make it deliberately hard to do so.

### Placebo effect

A placebo is a treatment with no intended therapeutic value. An example of a placebo is an inert pill, but it can include more dramatic interventions like sham surgery. The placebo effect is the concept that patients will perceive an improvement after being treated with an inert treatment. The opposite of the placebo effect is the nocebo effect, when patients who expect a treatment to be harmful will perceive harmful effects after taking it.

Placebos do not have a physical effect on diseases or improve overall outcomes, but patients may report improvements in subjective outcomes such as pain and nausea. A 1955 study suggested that a substantial part of a medicine's impact was due to the placebo effect. However, reassessments found the study to have flawed methodology. This and other modern reviews suggest that other factors like natural recovery and reporting bias should also be considered.

All of these are reasons why alternative therapies may be credited for improving a patient's condition even though the objective effect is non-existent, or even harmful. David Gorski argues that alternative treatments should be treated as a placebo, rather than as medicine. Almost none have performed significantly better than a placebo in clinical trials. Furthermore, distrust of conventional medicine may lead to patients experiencing the nocebo effect when taking effective medication.

### REGRESSION TO THE MEAN

A patient who receives an inert treatment may report improvements afterwards that it did not cause. Assuming it was the cause without evidence is an example of the regression fallacy. This may be due to a natural recovery from the illness, or a fluctuation in the symptoms of a long-term condition. The concept of regression toward the mean implies that an extreme result is more likely to be followed by a less extreme result.

### OTHER FACTORS

There are also reasons why a placebo treatment group may outperform a "no-treatment" group in a test which are not related to a patient's experience. These include patients reporting more favourable results than they really felt due to politeness or "experimental subordination", observer bias, and misleading wording of questions. In their 2010 systematic review of studies into placebos, Asbjørn Hróbjartsson and Peter C. Gøtzsche write that "even if there were no true effect of placebo, one would expect to record differences between placebo and no-treatment groups due to bias associated with lack of blinding." Alternative therapies may also be credited for perceived improvement through decreased use or effect of medical treatment, and therefore either decreased side effects or nocebo effects towards standard treatment.

### USE AND REGULATION

#### APPEAL

Practitioners of complementary medicine usually discuss and advise patients as to available alternative therapies. Patients often express interest in mind-body complementary therapies because they offer a non-drug approach to treating some health conditions.

In addition to the social-cultural underpinnings of the popularity of alternative medicine, there are several psychological issues that are critical to its growth, notably psychological effects, such as the will to believe,

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cognitive biases that help maintain self-esteem and promote harmonious social functioning, and the post hoc, ergo propter hoc fallacy.

### MARKETING



Edzard Ernst, an authority on scientific study of alternative therapies and diagnoses, and the first university professor of Complementary and Alternative Medicine. Here in 2012, promoting his book *Trick or Treatment* co-written with Simon Singh.

Alternative medicine is a profitable industry with large media advertising expenditures. Accordingly, alternative practices are often portrayed positively and compared favorably to "big pharma".

The popularity of complementary & alternative medicine (CAM) may be related to other factors that Edzard Ernst mentioned in an interview in *The Independent*:

Why is it so popular, then? Ernst blames the providers, customers and the doctors whose neglect, he says, has created the opening into which alternative therapists have stepped. "People are told lies. There are 40 million websites and 39.9 million tell lies, sometimes outrageous lies. They mislead cancer patients, who are encouraged not only to pay their last penny but to be treated with something that shortens their lives."

At the same time, people are gullible. It needs gullibility for the industry to succeed. It doesn't make me popular with the public, but it's the truth.

Paul Offit proposed that "alternative medicine becomes quackery" in four ways: by recommending against conventional therapies that are helpful, promoting potentially harmful therapies without adequate warning, draining patients' bank accounts, or by promoting "magical thinking." Promoting alternative medicine has been called dangerous and unethical.



Friendly and colorful images of herbal treatments may look less threatening or dangerous when compared to conventional medicine. This is an intentional marketing strategy.



### SOCIAL FACTORS

Authors have speculated on the socio-cultural and psychological reasons for the appeal of alternative medicines among the minority using them in lieu of conventional medicine. There are several socio-cultural reasons for the interest in these treatments centered on the low level of scientific literacy among the public at large and a concomitant increase in antiscientific attitudes and new age mysticism. Related to this are vigorous marketing of extravagant claims by the alternative medical community combined with inadequate media scrutiny and attacks on critics. Alternative medicine is criticized for taking advantage of the least fortunate members of society.

There is also an increase in conspiracy theories toward conventional medicine and pharmaceutical companies, mistrust of traditional authority figures, such as the physician, and a dislike of the current delivery methods of scientific biomedicine, all of which have led patients to seek out alternative medicine to treat a variety of ailments. Many patients lack access to contemporary medicine, due to a lack of private or public health insurance, which leads them to seek out lower-cost alternative medicine. Medical doctors are also aggressively marketing alternative medicine to profit from this market.

Patients can be averse to the painful, unpleasant, and sometimes-dangerous side effects of biomedical treatments. Treatments for severe diseases such as cancer and HIV infection have well-known, significant side-effects. Even low-risk medications such as antibiotics can have potential to cause life-threatening anaphylactic reactions in a very few individuals. Many medications may cause minor but bothersome symptoms such as cough or upset stomach. In all of these cases, patients may be seeking out alternative therapies to avoid the adverse effects of conventional treatments.

### PREVALENCE OF USE

According to recent research, the increasing popularity of the CAM needs to be explained by moral convictions or lifestyle choices rather than by economic reasoning.

In developing nations, access to essential medicines is severely restricted by lack of resources and poverty. Traditional remedies, often closely resembling or forming the basis for alternative remedies, may comprise primary healthcare or be integrated into the healthcare system. In Africa, traditional medicine is used for 80% of primary healthcare, and in developing nations as a whole over one-third of the population lack access to essential medicines.

In Latin America, inequities against BIPOC communities keep them tied to their traditional practices and therefore, it is often these communities that constitute the majority of users of alternative medicine. Racist attitudes towards certain communities disable them from accessing more urbanized modes of care. In a study that assessed access to care in rural communities of Latin America, it was found that discrimination is a huge barrier to the ability of citizens to access care; more specifically, women of Indigenous and African descent, and lower-income families were especially hurt. Such exclusion exacerbates the inequities that minorities in Latin America already face. Consistently excluded from many systems of westernized care for socioeconomic and other reasons, low-income communities of color often turn to traditional medicine for care as it has proved reliable to them across generations.

Some have proposed adopting a prize system to reward medical research. However, public funding for research exists. In the US increasing the funding for research on alternative medicine is the purpose of the US National Center for Complementary and Alternative Medicine (NCCAM). NCCAM has spent more than US\$2.5 billion on such research since 1992 and this research has not demonstrated the efficacy of

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alternative therapies. The NCCAM's sister organization in the NIC Office of Cancer Complementary and Alternative Medicine gives grants of around \$105 million every year. Testing alternative medicine that has no scientific basis has been called a waste of scarce research resources.

That alternative medicine has been on the rise "in countries where Western science and scientific method generally are accepted as the major foundations for healthcare, and 'evidence- based' practice is the dominant paradigm" was described as an "enigma" in the Medical Journal of Australia. A 15-year systematic review published in 2022 on the global acceptance and use of CAM among medical specialists found the overall acceptance of CAM at 52% and the overall use at 45%.

### IN THE UNITED STATES

In the United States, the 1974 Child Abuse Prevention and Treatment Act (CAPTA) required that for states to receive federal money, they had to grant religious exemptions to child neglect and abuse laws regarding religion-based healing practices. Thirty-one states have child-abuse religious exemptions.

The use of alternative medicine in the US has increased, with a 50 percent increase in expenditures and a 25 percent increase in the use of alternative therapies between 1990 and 1997 in America. According to a national survey conducted in 2002, "36 percent of U.S. adults aged 18 years and over use some form of complementary and alternative medicine." Americans spend many billions on the therapies annually. Most Americans used CAM to treat and/or prevent musculoskeletal conditions or other conditions associated with chronic or recurring pain. In America, women were more likely than men to use CAM, with the biggest difference in use of mind-body therapies including prayer specifically for health reasons". In 2008, more than 37% of American hospitals offered alternative therapies, up from 27 percent in 2005, and 25% in 2004. More than 70% of the hospitals offering CAM were in urban areas.

A survey of Americans found that 88 percent thought that "there are some good ways of treating sickness that medical science does not recognize". Use of magnets was the most common tool in energy medicine in America, and among users of it, 58 percent described it as at least "sort of scientific", when it is not at all scientific. In 2002, at least 60 percent of US medical schools have at least some class time spent teaching alternative therapies. "Therapeutic touch" was taught at more than 100 colleges and universities in 75 countries before the practice was debunked by a nine-year-old child for a school science project.

### PREVALENCE OF USE OF SPECIFIC THERAPIES

The most common CAM therapies used in the US in 2002 were prayer (45%), herbalism (19%), breathing meditation (12%), meditation (8%), chiropractic medicine (8%), yoga (5–6%), body work (5%), diet-based therapy (4%), progressive relaxation (3%), mega-vitamin therapy (3%) and Visualization (2%)

In Britain, the most often used alternative therapies were Alexander technique, aromatherapy, Bach and other flower remedies, body work therapies including massage, Counseling stress therapies, hypnotherapy, meditation, reflexology, Shiatsu, Ayurvedic medicine, nutritional medicine, and Yoga. Ayurvedic medicine remedies are mainly plant based with some use of animal materials. Safety concerns include the use of herbs containing toxic compounds and the lack of quality control in Ayurvedic facilities.

According to the National Health Service (England), the most commonly used complementary and alternative medicines (CAM) supported by the NHS in the UK are: acupuncture, aromatherapy, chiropractic, homeopathy, massage, osteopathy and clinical hypnotherapy.

IN PALLIATIVE CARE

Complementary therapies are often used in palliative care or by practitioners attempting to manage chronic pain in patients. Integrative medicine is considered more acceptable in the interdisciplinary approach used in palliative care than in other areas of medicine. "From its early experiences of care for the dying, palliative care took for granted the necessity of placing patient values and lifestyle habits at the core of any design and delivery of quality care at the end of life. If the patient desired complementary therapies, and as long as such treatments provided additional support and did not endanger the patient, they were considered acceptable. The non-pharmacologic interventions of complementary medicine can employ mind-body interventions designed to "reduce pain and concomitant mood disturbance and increase quality of life."

REGULATION



Health campaign flyers, as in this example from the Food and Drug Administration, warn the public about unsafe products.

The alternative medicine lobby has successfully pushed for alternative therapies to be subject to far less regulation than conventional medicine. Some professions of complementary/traditional/alternative medicine, such as chiropractic, have achieved full regulation in North America and other parts of the world and are regulated in a manner similar to that governing science-based medicine. In contrast, other approaches may be partially recognized and others have no regulation at all. In some cases, promotion of alternative therapies is allowed when there is demonstrably no effect, only a tradition of use. Despite laws making it illegal to market or promote alternative therapies for use in cancer treatment, many practitioners promote them.

Regulation and licensing of alternative medicine ranges widely from country to country, and state to state. In Austria and Germany complementary and alternative medicine is mainly in the hands of doctors with MDs, and half or more of the American alternative practitioners are licensed MDs. In Germany herbs are tightly regulated: half are prescribed by doctors and covered by health insurance.

Government bodies in the US and elsewhere have published information or guidance about alternative medicine. The U.S. Food and Drug Administration (FDA), has issued online warnings for consumers about

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medication health fraud. This includes a section on Alternative Medicine Fraud, such as a warning that Ayurvedic products generally have not been approved by the FDA before marketing.

### RISKS AND PROBLEMS

#### NEGATIVE OUTCOMES

According to the Institute of Medicine, use of alternative medical techniques may result in several types of harm:

"Economic harm, which results in monetary loss but presents no health hazard;"

"Indirect harm, which results in a delay of appropriate treatment, or in unreasonable expectations that discourage patients and their families from accepting and dealing effectively with their medical conditions;"

"Direct harm, which results in adverse patient outcome."

#### INTERACTIONS WITH CONVENTIONAL PHARMACEUTICALS

Forms of alternative medicine that are biologically active can be dangerous even when used in conjunction with conventional medicine. Examples include immuno-augmentation therapy, shark cartilage, bioresonance therapy, oxygen and ozone therapies, and insulin potentiation therapy. Some herbal remedies can cause dangerous interactions with chemotherapy drugs, radiation therapy, or anesthetics during surgery, among other problems. An example of these dangers was reported by Associate Professor Alastair MacLennan of Adelaide University, Australia regarding a patient who almost bled to death on the operating table after neglecting to mention that she had been taking "natural" potions to "build up her strength" before the operation, including a powerful anticoagulant that nearly caused her death.

To ABC Online, MacLennan also gives another possible mechanism:

And lastly there's the cynicism and disappointment and depression that some patients get from going on from one alternative medicine to the next, and they find after three months the placebo effect wears off, and they're disappointed and they move on to the next one, and they're disappointed and disillusioned, and that can create depression and make the eventual treatment of the patient with anything effective difficult, because you may not get compliance, because they've seen the failure so often in the past.

#### SIDE-EFFECTS

Conventional treatments are subjected to testing for undesired side-effects, whereas alternative therapies, in general, are not subjected to such testing at all. Any treatment – whether conventional or alternative – that has a biological or psychological effect on a patient may also have potential to possess dangerous biological or psychological side-effects. Attempts to refute this fact with regard to alternative therapies sometimes use the appeal to nature fallacy, i.e., "That which is natural cannot be harmful." Specific groups of patients such as patients with impaired hepatic or renal function are more susceptible to side effects of alternative remedies.

An exception to the normal thinking regarding side-effects is Homeopathy. Since 1938, the U.S. Food and Drug Administration (FDA) has regulated homeopathic products in "several significantly different ways from other drugs." Homeopathic preparations, termed "remedies", are extremely dilute, often far beyond the point where a single molecule of the original active (and possibly toxic) ingredient is likely to remain. They are, thus, considered safe on that count, but "their products are exempt from good manufacturing

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practice requirements related to expiration dating and from finished product testing for identity and strength", and their alcohol concentration may be much higher than allowed in conventional drugs.

### TREATMENT DELAY

Alternative medicine may discourage people from getting the best possible treatment. Those having experienced or perceived success with one alternative therapy for a minor ailment may be convinced of its efficacy and persuaded to extrapolate that success to some other alternative therapy for a more serious, possibly life-threatening illness. For this reason, critics argue that therapies that rely on the placebo effect to define success are very dangerous. According to mental health journalist Scott Lilienfeld in 2002, "unvalidated or scientifically unsupported mental health practices can lead individuals to forgo effective treatments" and refers to this as opportunity cost. Individuals who spend large amounts of time and money on ineffective treatments may be left with precious little of either, and may forfeit the opportunity to obtain treatments that could be more helpful. In short, even innocuous treatments can indirectly produce negative outcomes. Between 2001 and 2003, four children died in Australia because their parents chose ineffective naturopathic, homeopathic, or other alternative medicines and diets rather than conventional therapies.

### Unconventional cancer "cures"

There have always been "many therapies offered outside of conventional cancer treatment centers and based on theories not found in biomedicine. These alternative cancer cures have often been described as 'unproven,' suggesting that appropriate clinical trials have not been conducted and that the therapeutic value of the treatment is unknown." However, "many alternative cancer treatments have been investigated in good-quality clinical trials, and they have been shown to be ineffective.... The label 'unproven' is inappropriate for such therapies; it is time to assert that many alternative cancer therapies have been 'disproven'."

Edzard Ernst has stated:

any alternative cancer cure is bogus by definition. There will never be an alternative cancer cure. Why? Because if something looked halfway promising, then mainstream oncology would scrutinize it, and if there is anything to it, it would become mainstream almost automatically and very quickly. All curative "alternative cancer cures" are based on false claims, are bogus, and, I would say, even criminal.

### REJECTION OF SCIENCE

There is no alternative medicine. There is only scientifically proven, evidence-based medicine supported by solid data or unproven medicine, for which scientific evidence is lacking.

— P.B. Fontanarosa, Journal of the American Medical Association

(1998)

Complementary and alternative medicine (CAM) is not as well researched as conventional medicine, which undergoes intense research before release to the public. Practitioners of science-based medicine also discard practices and treatments when they are shown ineffective, while alternative practitioners do not. Funding for research is also sparse making it difficult to do further research for effectiveness of CAM.

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Most funding for CAM is funded by government agencies. Proposed research for CAM are rejected by most private funding agencies because the results of research are not reliable. The research for CAM has to meet certain standards from research ethics committees, which most CAM researchers find almost impossible to meet. Even with the little research done on it, CAM has not been proven to be effective. Studies that have been done will be cited by CAM practitioners in an attempt to claim a basis in science. These studies tend to have a variety of problems, such as small samples, various biases, poor research design, lack of controls, negative results, etc. Even those with positive results can be better explained as resulting in false positives due to bias and noisy data.

Alternative medicine may lead to a false understanding of the body and of the process of science. Steven Novella, a neurologist at Yale School of Medicine, wrote that government-funded studies of integrating alternative medicine techniques into the mainstream are "used to lend an appearance of legitimacy to treatments that are not legitimate." Marcia Angell considered that critics felt that healthcare practices should be classified based solely on scientific evidence, and if a treatment had been rigorously tested and found safe and effective, science-based medicine will adopt it regardless of whether it was considered "alternative" to begin with. It is possible for a method to change categories (proven vs. unproven), based on increased knowledge of its effectiveness or lack thereof. Prominent supporters of this position are George D. Lundberg, former editor of the *Journal of the American Medical Association (JAMA)* and the journal's interim editor-in-chief Phil Fontanarosa.

Writing in 1999 in *CA: A Cancer Journal for Clinicians* Barrie R. Cassileth mentioned a 1997 letter to the US Senate Subcommittee on Public Health and Safety, which had deplored the lack of critical thinking and scientific rigor in OAM-supported research, had been signed by four Nobel Laureates and other prominent scientists. (This was supported by the National Institutes of Health (NIH).)

In March 2009, a staff writer for the *Washington Post* reported that the impending national discussion about broadening access to health care, improving medical practice and saving money was giving a group of scientists an opening to propose shutting down the National Center for Complementary and Alternative Medicine. They quoted one of these scientists, Steven Salzberg, a genome researcher and computational biologist at the University of Maryland, as saying "One of our concerns is that NIH is funding pseudoscience." They noted that the vast majority of studies were based on undamental misunderstandings of physiology and disease, and had shown little or no effect.

Writers such as Carl Sagan, a noted astrophysicist, advocate of scientific skepticism and the author of *The Demon-Haunted World: Science as a Candle in the Dark* (1996), have lambasted the lack of empirical evidence to support the existence of the putative energy fields on which these therapies are predicated.

Sampson has also pointed out that CAM tolerated contradiction without thorough reason and experiment. Barrett has pointed out that there is a policy at the NIH of never saying something does not work, only that a different version or dose might give different results. Barrett also expressed concern that, just because some "alternatives" have merit, there is the impression that the rest deserve equal consideration and respect even though most are worthless, since they are all classified under the one heading of alternative medicine.

Some critics of alternative medicine are focused upon health fraud, misinformation, and quackery as public health problems, notably Wallace Sampson and Paul Kurtz founders of *Scientific Review of Alternative Medicine* and Stephen Barrett, co-founder of *The National Council Against Health Fraud* and webmaster of *Quackwatch*. Grounds for opposing alternative medicine include that:

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It is usually based on religion, tradition, superstition, belief in supernatural energies, pseudoscience, errors in reasoning, propaganda, or fraud.

Alternative therapies typically lack any scientific validation, and their effectiveness is either unproved or disproved.

Treatments are not part of the conventional, science-based healthcare system.

Research on alternative medicine is frequently of low quality and methodologically flawed.

Where alternative therapies have replaced conventional science-based medicine, even with the safest alternative medicines, failure to use or delay in using conventional science-based medicine has caused deaths.

Methods may incorporate or base themselves on traditional medicine, folk knowledge, spiritual beliefs, ignorance or misunderstanding of scientific principles, errors in reasoning, or newly conceived approaches claiming to heal.

Many alternative medical treatments are not patentable, which may lead to less research funding from the private sector. In addition, in most countries, alternative therapies (in contrast to pharmaceuticals) can be marketed without any proof of efficacy – also a disincentive for manufacturers to fund scientific research.

English evolutionary biologist Richard Dawkins, in his 2003 book *A Devil's Chaplain*, defined alternative medicine as a "set of practices that cannot be tested, refuse to be tested, or consistently fail tests." Dawkins argued that if a technique is demonstrated effective in properly performed trials then it ceases to be alternative and simply becomes medicine.

CAM is also often less regulated than conventional medicine. There are ethical concerns about whether people who perform CAM have the proper knowledge to treat patients. CAM is often done by non-physicians who do not operate with the same medical licensing laws which govern conventional medicine, and it is often described as an issue of non-maleficence.

According to two writers, Wallace Sampson and K. Butler, marketing is part of the training required in alternative medicine, and propaganda methods in alternative medicine have been traced back to those used by Hitler and Goebels in their promotion of pseudoscience in medicine.

In November 2011 Edzard Ernst stated that the "level of misinformation about alternative medicine has now reached the point where it has become dangerous and unethical. So far, alternative medicine has remained an ethics-free zone. It is time to change this."

## CONFLICTS OF INTEREST

Some commentators have said that special consideration must be given to the issue of conflicts of interest in alternative medicine. Edzard Ernst has said that most researchers into alternative medicine are at risk of "unidirectional bias" because of a generally uncritical belief in their chosen subject. Ernst cites as evidence the phenomenon whereby 100% of a sample of acupuncture trials originating in China had positive conclusions. David Gorski contrasts evidence-based medicine, in which researchers try to disprove hypotheses, with what he says is the frequent practice in pseudoscience-based research, of striving to confirm pre-existing notions. Harriet Hall writes that there is a contrast between the circumstances of alternative medicine practitioners and disinterested scientists: in the case of acupuncture, for example, an acupuncturist would have "a great deal to lose" if acupuncture were

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rejected by research; but the disinterested skeptic would not lose anything if its effects were confirmed; rather their change of mind would enhance their skeptical credentials.

### USE OF HEALTH AND RESEARCH RESOURCES

Research into alternative therapies has been criticized for "diverting research time, money, and other resources from more fruitful lines of investigation in order to pursue a theory that has no basis in biology." Research methods expert and author of *Snake Oil Science*, R. Barker Bausell, has stated that "it's become politically correct to investigate nonsense." A commonly cited statistic is that the US National Institute of Health had spent \$2.5 billion on investigating alternative therapies prior to 2009, with none being found to be effective.

### GALLERY



Christian laying on of hands, prayer intervention, and faith healing



Indian Ayurvedic medicine includes a belief that the spiritual balance of mind influences disease.



Medicinal herbs in a traditional Spanish market



Traditional medicines in Madagascar



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Assorted dried plant and animal parts used in traditional Chinese medicine



Shaman healer in Sonora, Mexico.



Phytotherapy (herbal medicine): an engraving of magnolia glauca in Jacob Bigelow's American Medical Botany

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### 3.1 Health in Nigeria <sup>w</sup>

In Nigeria, there has been a major progress in the improvement of health since 1950. Although lower respiratory infections, neonatal disorders and HIV/AIDS have ranked the topmost causes of deaths in Nigeria, in the case of other diseases such as, PID, polio, malaria and tuberculosis, progress has been achieved. Among other threats to health are malnutrition, pollution and road traffic accidents. In 2020, Nigeria had one of the highest cases of COVID-19 in Africa.



A hospital in Abuja, Nigeria's capital

The Human Rights Measurement Initiative finds that Nigeria is fulfilling 48.2% of what it should be fulfilling for the right to health based on its level of income. When looking at the right to health with respect to children, Nigeria achieves 66.6% of what is expected based on its current income. In regards to the right to health amongst the adult population, the country achieves only 61.7% of what is expected based on

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the nation's level of income. Nigeria falls into the "very bad" category when evaluating the right to reproductive health because the nation is fulfilling only 16.3% of what the nation is expected to achieve based on the resources (income) it has available.

#### LIFE EXPECTANCY AND UNDER-5 MORTALITY RATE

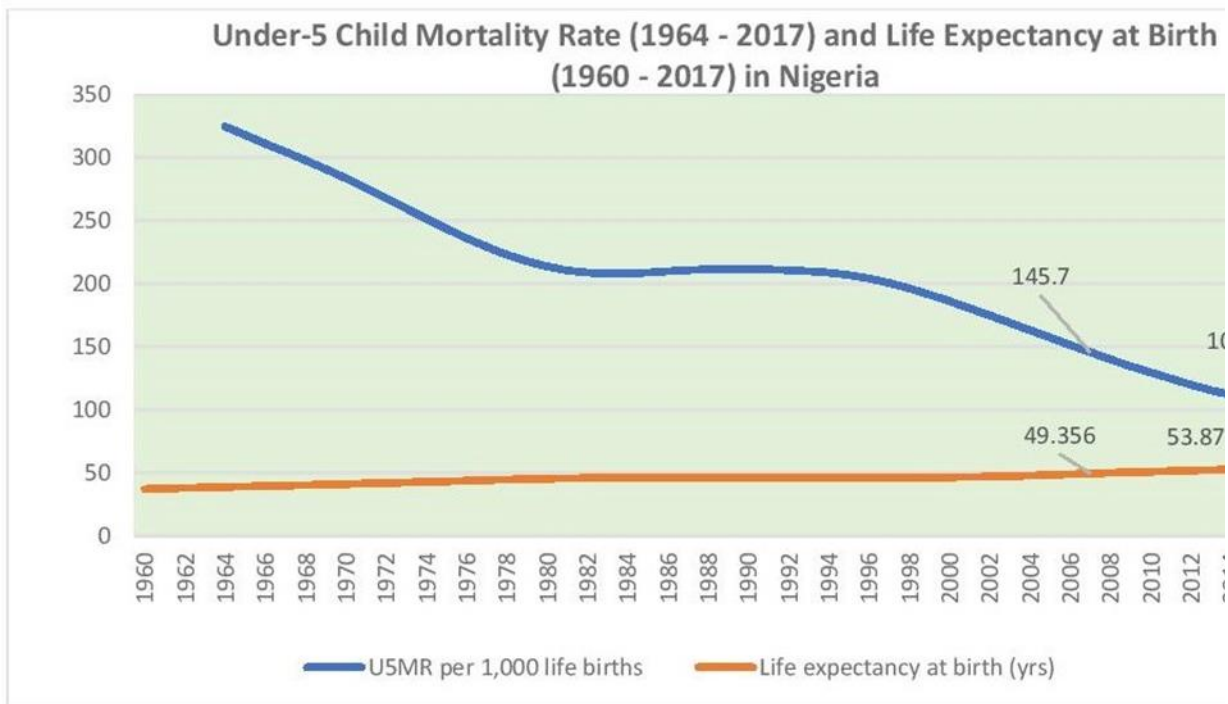
Life expectancy at birth in Nigeria increased from 49.4 in 2007 to approximately 54 in 2017. In a decade (2007–2017), U5MR per 1000 live births drastically reduced from 145.7 to 100.2. In comparison with some other reference countries (Ghana, Malawi, Rwanda, Sudan, Norway, the United States, China and Australia), as shown in the second Table below, Nigeria with a population of about 195 million has performed poorly. The country has not done better when compared with the world average and the World Bank regions namely: East Asia & Pacific Northwest, Europe & Central Asia, Latin America & the Caribbean, Middle East & North Africa, South Asia, and Sub-Saharan Africa.

#### Top 10 causes of most deaths in Nigeria

| <b>Cause of death</b>          | <b>IHME rank<br/>2007</b> | <b>IHME rank<br/>2017</b> | <b>Percentage change (2017–<br/>2017)</b> |
|--------------------------------|---------------------------|---------------------------|---|
| Malaria                        | 1                         | 4                         | -35.8                                     |
| Diahrrehal disease             | 2                         | 5                         | -39.5                                     |
| HIV/AIDS                       | 3                         | 3                         | -25.7                                     |
| Lower respiratory<br>infection | 4                         | 1                         | -10.7                                     |
| Neonatal disorders             | 5                         | 2                         | -1.5                                      |
| Tuberculosis                   | 6                         | 6                         | -15.2                                     |
| Meningitis                     | 7                         | 7                         | -2.0                                      |
| Cirrhosis                      | 8                         | 10                        | 1.3                                       |
| Ischemic heart disease         | 9                         | 8                         | 24.5                                      |
| Stroke                         | 10                        | 9                         | 15.0                                      |

Source: Institute for Health Metric and Evaluation (IHME)

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Source: Under-5 Mortality Rate (per 1,000 live births) and Life expectancy at birth (years). Estimates developed by the UN Inter-agency Group for Child Mortality Estimation (UNICEF, WHO, World Bank, UN DESA Population Division)

Comparison of health situations in Nigeria with some reference countries, regions and the world

|  | Countries/Regions | Life expectancy at birth (2007) | Life expectancy at birth (2017) | U5MR per 1000 live births (2017) | U5MR per 1000 live births (2007) | Estimated population (2018) |
|--|-------------------|---------------------------------|---------------------------------|----------------------------------|----------------------------------|-----------------------------|
|  | Nigeria           | 49                              | 54                              | 146                              | 100                              | 195 million+                |
|  | Ghana (Western)   | 60                              | 63                              | 82                               | 49                               | 29 million+                 |
|  | Malawi (Southern) | 53                              | 64                              | 103                              | 55                               | 18 million+                 |
|  | Rwanda (Eastern)  | 59                              | 67                              | 88                               | 38                               | 13 million+                 |
|  | Sudan (Northern)  | 61                              | 67                              | 84                               | 63                               | 41 million+                 |

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|                                      |                            |    |    |    |    |               |
|--------------------------------------|----------------------------|----|----|----|----|---------------|
| <b>Reference countries</b>           | Norway                     | 80 | 83 | 4  | 3  | 5 million+    |
|                                      | United States              | 78 | 79 | 8  | 7  | 327 million+  |
|                                      | China                      | 75 | 76 | 20 | 9  | 1.393 billion |
|                                      | Australia                  | 81 | 82 | 5  | 4  | 24 million    |
| <b>Reference regions &amp; world</b> | East Asia & Pacific        | 74 | 76 | 26 | 16 | 2.328 billion |
|                                      | Europe & Central           | 75 | 78 | 15 | 9  | 918 million+  |
|                                      | Latin America &            | 73 | 76 | 24 | 18 | 641 million+  |
|                                      | Middle East & North Africa | 72 | 74 | 31 | 23 | 448 million+  |
|                                      | South Asia                 | 66 | 69 | 71 | 45 | 1.814 billion |

Source: United Nations Population Division. World Population Prospects: 2017 Revision. The World Bank Group

MATERNAL MORTALITY



Successful emergency Caesarean section done in Nigeria.

Maternal mortality rate in Nigeria is above 800 per 100,000 live births. In 2013, the rate in Nigeria was 560 deaths per 100,000 live births; whereas in 1980, it was 516 deaths 100,000 per live births. This may be as a result of poor health facilities, lack of access to quality health care, malnutrition due to poverty, herder-farmer conflicts, female genital mutilations, abortions, and displacements due to Boko Haram terrorism in the North East of Nigeria. In Nigeria the lifetime risk of death for pregnant women is 1 in 22. Nigeria's abortion laws make it one of the most restrictive countries regarding abortion.

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A study published in 2019 investigated the competency of emergency obstetric care among health providers and found it lower than average. Another study shows decrease in maternal mortality in the southern part of the country while it's still on the increase in North due to low level of education.

Maternal mortality affects the socioeconomic development of the country negatively. By 2030, if Nigeria is to reduce maternal mortality ratio to less than 70 per 100,000 live births (SDG goal 3 – target 1), all hands must be on deck to achieve it. People can start by promoting and protecting their own health and the health of those around them, by making well-informed choices, practising safe sex and attending antenatal care in government approved health centres. There should be more awareness in communities about the importance of good health, healthy lifestyles as well as people's right to quality health care services, especially for the most vulnerable such as women and children. Government, local leaders and other decision makers should be held accountable to their commitments to improve people's access to health and health care.

### WATER SUPPLY AND SANITATION

Access to an improved water source stagnated at 47% of the population from 1990 to 2006, then increased to 54% in 2010. In urban areas access decreased from 80% to 65% in 2006, and then recovered to 74% in 2010.

Adequate sanitation is typically in the form of septic tanks, as there is no central sewage system, except for in Abuja and some areas of Lagos. A 2006 study estimated that only 1% of Lagos households were connected to general sewers. In 2016, mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene is 68.6 deaths per 100,000 populations.

### HIV/AIDS

The Nigeria HIV/AIDS indicator and impact survey 2018 revealed that the national HIV prevalence rate among adults ages 15–49 is 1.4 percent. The prevalence of HIV in Nigeria varies widely by region and states. Akwa Ibom State has the highest prevalence rate of HIV with 5.6 percent and disease burden of 200,051 percentage of deaths and disability-adjusted life years (DALYs), and followed by Benue State (4.9%, 188,482 DALYs) and Rivers (3.8%, 196,225 DALYs). The States, Jigawa (12,804 DALYs) and Katsina (26,597 DALYs) both have the lowest prevalence of 0.3 percent. The epidemic is more concentrated and driven by high-risk behaviors, including having multiple sexual partners, low risk perceptions, inadequate access to quality health care services, as well as street/road hawking of goods by itinerant workers (hawkers) especially, around military and police checkpoints. Other risk factors that contribute to the spread of HIV, including prostitution, high prevalence of sexually transmitted infections, clandestine high-risk homosexual/heterosexual practices, and women trafficking.

Youth and young adults in Nigeria are particularly vulnerable to HIV, with young women at higher risk than young men.

### MALARIA

Malaria, a disease caused by mosquitoes has resulted in untold morbidity and mortality in Nigeria. Although, there has been slight decline in malarial transmission and deaths since 2007 it ranked the number one cause of deaths in the country, the disease still remains unflagging.

As of 2012, the malaria prevalence rate was 11 percent. A part of this data is from the President's Malaria Initiative which identifies Nigeria as a high-burden country. Nigeria's branch dealing with this problem,

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the National Malaria Control Program recognized the problem and embraced the World Malaria Day theme of "End Malaria for Good".

In 2017, according to IHME ranking, malaria ranked the fourth on the causes of most deaths in Nigeria with U5MR and under-1 child mortality of 103.2 deaths and 62.6 deaths per 1,000 live births respectively. With pockets of high-level transmission persisting in states across Nigeria coupled with the never-ending struggle against drug and insecticide resistance as well as the socio-economic costs associated with a failure to eradicate the disease, malaria eradication by 2050 seems unachievable. However, the step to eradicate the disease is a bold attainable goal if concerted efforts are put in place. The challenge of ineffective management of malaria prevention and control programs and inadequate use of data to inform strategies should be addressed. The control of mosquitoes, high quality diagnosis, and treatment are very necessary if the problem is to be successfully eradicated. Strong and committed leadership at various levels of government in Nigeria, reinforced through transparency and independent accountability mechanisms are very important to ensure a complete eradication of malaria in the country.

### ENDEMIC DISEASES

In 1985, an incidence of yellow fever devastated a town in Nigeria, leading to the death of 1000 people. In a span of 5 years, the epidemic grew, with a resulting rise in mortality. The yellow fever vaccine has been in existence since the 1930s. There are other endemic diseases in the country which include malaria, hepatitis A, hepatitis B, typhoid, meningitis and lassa fever. Travelers are normally advised to get travel vaccines and medicines because of the risk of these diseases in the country.

### FOOD

Nutrition, especially in the north of the country, is often poor. Since 2002, food staples are supposed to be fortified with nutrients such as vitamin A, folic acid, zinc, iodine and iron. Bill Gates, said there had been "pushback" by some in Nigerian industries as this reduced profit margins. The Bill & Melinda Gates Foundation is donating \$5 million over four years to implement a rigorous testing regime to make sure these standards are met. These nutrients would reach poorer children who ate mainly a cereal and beans diet at very low cost and reduce the risk of stunting. Vitamin A would reduce the risk of death from measles or diarrhoea. In some districts 7% of children die before they reach the age of five. Nearly half of these are attributable to malnutrition. Aliko Dangote, whose companies supply salt, sugar and flour, said there would need to be a crack down on the import of low-quality foodstuff, often smuggled into local markets.

### POLLUTION

Traffic congestion in Lagos, environmental pollution: water pollution, and air pollution; and noise pollution are major health issues.

### WATER

The aquatic systems in Nigeria are reservoirs for toxic chemicals. The activities of oil and gas industries as well as widespread discharge of effluents into water ways is an eyesore. Chemical substances such as polyaromatic hydrocarbons, per- and polyfluoroalkyl substances as well as heavy metals find their way into oceans, rivers and streams and contaminate them. In 2018, The Nation newspaper reported improper waste disposal in the country, emphasizing that there is no proper waste management system, hence the cause of the indiscriminate dumping of refuse, used polythene bags, plastic bottles and other liquid and solid wastes in the environment. The Huffingtonpost in May 2017 raised an alarm on the incessant dumping of plastics in the ocean. It posited that 'the oceans are drowning in plastics – and no one is paying

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attention to the menace'; and by indication, it seems people are overwhelmed by their own waste. Amidst this, Ellen MacArthur Foundation in Partnership with the World Economic Forum predicted that by 2050, plastic in the oceans will outweigh fish. With expected surge in consumption, negative externalities related to plastics will multiply by that time. Most wastes materials contain estrogenic chemicals - (estrogens) and androgenic chemicals - (androgens) and they have potential to leach into the surrounding environment, impact on the ecosystem and may alter hormonal functions. These contaminants and many other chemicals are toxic to aquatic lives, most often affecting their life spans and ability to reproduce; they make their way up the food chain as predator eats prey and bioaccumulate in the adipose tissues of these organisms.

### AIR

Nigeria's air quality is said to be among the most unsafe globally (ranked 4th) and four of its major cities – Onitsha, Aba, Kaduna, and Umuahia are among the worst polluted cities in the world in term of particulate matter of size 10 micrometers and below (PM10). The most recent report by WHO indicate that the country's annual mean concentration PM2.5 is 72 µg/m<sup>3</sup>, far exceeding the recommended maximum of 10 µg/m<sup>3</sup>. Data from the institutes of Health Metrics and Evaluation on Global disease burden (GBD) was used to ascertain the cause of death and DALYs in Nigeria from 2007 – 2017 and published literature where reviewed. According to World Health data report, most of the highest ranked causes of DALYs are related to environmental risk factors including chronic respiratory diseases, cardiovascular diseases, communicable diseases, maternal, neonatal and nutritional disease, which has cause about 800 thousand deaths and 26 million DALYs per year in Nigeria. Major environmental risks include indoor air pollution, ambient air pollution, water, sanitation and hygiene, although there is prolong and progressive decline in these except ambient PM and ground ozone pollution which show a steady rise associated with death and DALYs in Nigeria indicating a significant concern in environment health situation.

Table showing the proportion of death for each disease attributed to air pollution in Nigeria at 2019 for both sexes and all ages

| <b>Disease/disorder</b>               | <b>Air pollution attributable share of total death in percentages</b> |
|---------------------------------------|---|
| Ischemic heart disease                | 4.37  |
| Stroke                                | 3.98  |
| Lung cancer                           | 0.39  |
| Chronic obstructive pulmonary disease | 0.89  |

Table showing the proportion of DALYs for each disorder attributed to air pollution in Nigeria at 2019 for both sexes and all ages

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| Disease/disorder                      | Air pollution attributable share of total DALYs in percentages |
|---------------------------------------|--|
| Ischemic heart disease                | 1,3  |
| Stroke                                | 1.47   |
| Lung cancer                           | 0.13   |
| Chronic obstructive pulmonary disease | 0.41   |

### CAUSES

Nigeria is home to a lot of automobiles including cars, motorbikes, heavy duty vehicles like buses, lorries etc. that are old and has past their best days in term of energy efficiency. They emit a lot of unhealthy fumes including nitrogen oxides, sulfur oxides, carbon dioxides, carbon monoxides, particulate matter etc. A large amount of waste across the country including household and industrial are disposed by combustion which releases fumes from both organic items, synthetic material like plastic, rubber as well as from dangerous items like batteries and e-waste etc. Most households also contribute to emission of noxious smokes and particulate matters like carbon soot etc. as they rely on inefficiency kerosene stoves, fire wood and charcoal for cooking and most time this is done indoor with poor ventilation. Many offices and residences contribute to increased pollution level of the air with noxious fumes from generators which are used as substitute to the public epileptic power supply and these fumes are often released in largely unventilated areas. Other major sources including emission from factories and industries which release similar fumes like automobiles but uses mainly diesel in lieu of gasoline Road traffic accidents. Every year 1.25 million people are killed in a road traffic crashes. Between 20 and 50 million more people suffer non-fatal injuries, with many incurring a disability. Road traffic injuries cause considerable economic losses to individuals, their families, and to nations as a whole. These losses arise from the cost of treatment as well as lost productivity for those killed or disabled by their injuries, and for family members who need to take time off work or school to care for the injured. Road traffic crashes cost most countries 3% of their gross domestic product. Road traffic injuries are the leading cause of death among people aged between 15 and 29 years.

Over 3 400 people die on the world's roads every day and tens of millions of people are injured or disabled every year. Children, pedestrians, cyclists and older people are among the most vulnerable of road users. WHO works with partners - governmental and nongovernmental - around the world to raise the profile of the preventability of road traffic injuries and promote good practice related to addressing key behaviour risk factors – speed, drink-driving, the use of motorcycle helmets, seat-belts and child restraints.

With the continued dangerous trend of road traffic collision in Nigeria, which in 2013 placed it as one of the most road traffic accident-prone countries worldwide (the most in Africa), the Nigerian government saw the need to establish the present Federal Road Safety Corps in 1988 to address the carnage on the highways.



#### LEVEL AND TREND OF ROAD TRAFFIC ACCIDENTS

The Federal Road Safety Corps (FRSC) says 456 people died and 3404 others were injured in 826 accidents recorded nationwide in January (2018).

The FRSC stated this in its CCC report for January signed by its Corps Marshal, Boboye Oyeyemi.

#### THE UN SUSTAINABLE DEVELOPMENT GOALS

In September 2015, the General Assembly adopted the 2030 Agenda for Sustainable Development that includes 17 Sustainable Development Goals (SDGs). Building on the principle of "leaving no one behind", the new Agenda emphasizes a holistic approach to achieving sustainable development for all. Target 3.6 under Sustainable Development Goal 3 is designed specifically to address the issue of road traffic accident. It says "By 2020, halve (50% less) the number of global deaths and injuries from road traffic accidents".

The Federal Government of Nigeria has put some mechanisms in place to ensure implementation of the SDGs in the country however, Nigeria is still far from achieving this goal.

#### TRADITIONAL/ALTERNATIVE MEDICINE

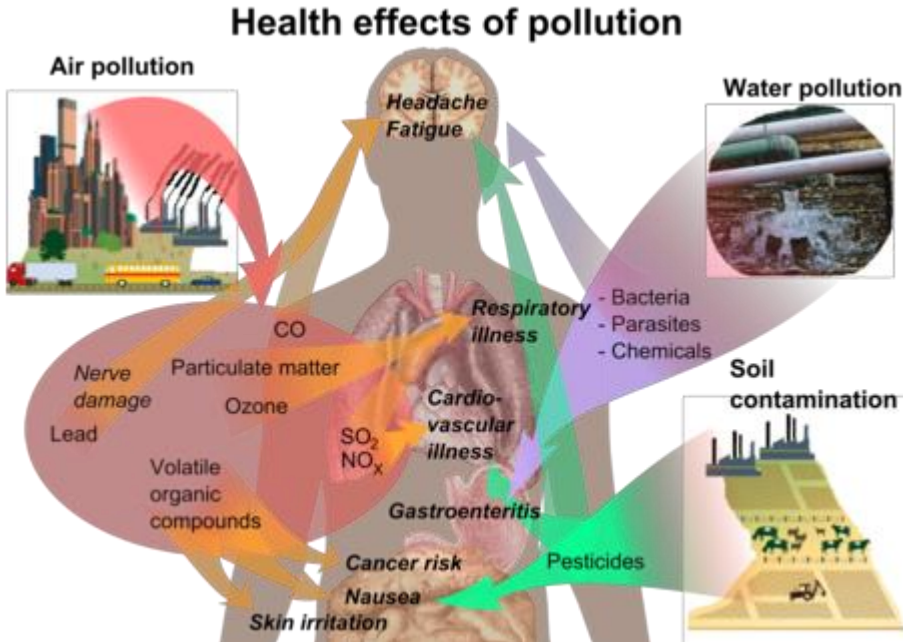
As recent reports have shown, in addition to the many benefits there are also risks associated with the different types of Traditional medicine / alternative medicine. Although consumers today have widespread access to various traditional/alternative medicine treatments and therapies, they often do not have enough information on what to check when using them in order to avoid unnecessary harm. While traditional medicine has a lot to contribute to the health and economy, much harm has resulted from unregulated sale and misuse of traditional/alternative medicine and herbs in the country and has significantly delayed patients' seeking professional healthcare.

#### CLIMATE CHANGE

In recent times, more attention has been drawn to the effects of climate change around the world. A lot of unprecedented changes are being recorded in the weather conditions of different regions and countries. These have manifested in form of wildfires, torrential rains and other extreme weather outcomes. It has been pointed out that the health effects of climate change will increase dramatically over the next few years and pose a risk to human life and the well-being of billions of people.

With around 200 million people, Nigeria is the most populated country in Africa. As the continent's main exporter of oil, Nigeria faces the challenge of balancing global energy demands and domestic economic stability with the need to address climate and environmental challenges. The impact of climate change in Nigeria could include rising temperatures, more intense and frequent extreme weather events and sea level rise. For the population, this could result in increased water and food insecurity, higher exposure to heat stress and ultraviolet radiation; changes in infectious and vector-borne disease transmission patterns; and an increased threat to coastal communities facing sea level rise. It is however important to add that adequate adaptation and mitigation could help to protect the population, presenting opportunities for actions towards better health outcomes even in the face of numerous challenges posed by climate change.

The greatest health risk is for illness to result in mortality. Climate change has the potential to exacerbate prevalent diseases as well as emerging ones like High blood pressure, psychosis, neurosis and congenital malformations. Climate change creates overwhelming problems for an already impoverished populace.



Health effects of pollution

Flooding is a consequence of climate change from rise in sea level and poor infrastructure, especially with drainage systems planning and design. For instance, southern Nigeria is highly susceptible to flooding; particularly Lagos, the commercial hub of the country, which is said to be one meter above the sea level, is threatened with possible extinction. The direct health implications of flooding could be deduced to include direct water borne diseases like typhoid, cholera, pneumonia, diarrhea and malaria. These, as we will see in the table below are diseases that already immensely burden the Nigerian populace.

Percentage of Total Deaths and DALYs of common diseases that can be aggravated by flood

|  | Percentage of total deaths | Percentage of DALYs |
|--|----------------------------|---------------------|
| Malaria  | 12%                        | 11.16%              |
| Typhoid fever  | 0.22%                      | 0.24%               |
| Diarreal diseases  | 11.36%                     | 11.86%              |
| Source: institute for Health Metric and Evaluation (IHME 2019) |                            |                     |

The WHO has identified Schistosomiasis, African trypanosomiasis, malaria, lymphatic filariasis, onchocerciasis, and leishmaniasis as "major tropical diseases". This is in consideration of their public health significance and economic consequences on afflicted individuals, families and societies. The devastating effects of these diseases are summarized in the words of Hiroshi Nakajima, former Director General, WHO: "beyond their toll of individual illness and death, these tropical diseases have insidious effects on society. They impede on national and individual development, make fertile land inhospitable, impair intellectual and physical growth and exact a huge cost in terms of treatment and control".

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Meningitis, measles, chicken pox and other health risks like high blood pressure and dehydration in pregnancy are also believed to be amplified by high temperatures. The number of people in emerging countries is expected to increase by 2.3 billion in 2005 to 4 billion in 2030. This means more carbon emissions due to human activities. Growing urban sprawls, including poor housing also further compounds the problem. These changes inevitably increase the peril heat waves in the cities due to the effects of climate change.

Additionally, high temperature affects diseases spread and rates of transmission of vector-borne and rodent-borne diseases. Temperature affects pathogen maturation rate and mosquito replication, the insect's density in a specific area, and increases infection likelihood. Malaria parasites are recognized to remain sensitive to temperature, particularly throughout the so-called extrinsic period of incubation for parasite lifecycle, which happens once the parasite remains alive in the mosquitos. For example, warmer temperatures promote faster reproductive cycles in mosquitoes that transit malaria and in the parasite itself.

Although Nigeria has identified with the rest of the world in acknowledging climate change and its potential impacts for health and wellbeing, there are still gaps in the planning and implementation of actions to mitigate these effects. The WHO- Climate and Health Country Profile for Nigeria (2015), highlights the successes and shortcomings that characterize the country's climate change response. These include: identifying a national focal point for climate change in the Ministry of Health and the development of a national health adaptation strategy. However, no actions have been implemented towards building institutional and technical capacities to work on climate change and health. Also, Nigeria has climate information included in its Integrated Disease Surveillance and Response system, including development of early warning and response systems for climate-sensitive health risks. Albeit, no activities have been implanted to increase resilience of health infrastructure. Finally, it is important to note that no financial commitments (both domestic and international funds) have been made to implements any action towards health resilience to climate change.

These gaps present opportunities for actions, the implementation of which has potential to better prepare Nigeria as a country to mitigate the health risks that climate change poses to its people. The WHO suggests a comprehensive vulnerability and adaptation assessment with a focus on health that includes relevant stakeholders from all sectors and an estimate of the costs to implement health resilience to climate change, covering infrastructure as well as institutional and technical capacities. Furthermore, actions need to be taken, that will ensure greening of the health sector, such as promoting the use of renewable energy, and finally, conducting a valuation of the co-benefits to health of climate mitigation policies. This will, among other benefits, help to monitor progress.

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### **3.2 Healthcare in Nigeria <sup>c</sup>**

Healthcare in Nigeria is a concurrent responsibility of the three tiers of government in the country. Private providers of healthcare have a visible role to play in health care delivery. The use of traditional medicine (TM) and complementary and alternative medicine (CAM) has increased significantly over the past few years.

Healthcare delivery in Nigeria has experienced progressive deterioration as a result of weakened political will on the part of successive governments to effectively solve a number of problems that have long existed in the sector over many years. This directly impacts the productivity of citizens and Nigeria's economic growth by extension. Over half of Nigeria's population live on less than \$1.90 a day ('Poverty

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Head-count'), making them one of the poorest populations in the world. As of February 2018, the country was ranked 187 out of 191 countries in the world in assessing the level of compliance with the Universal Health Coverage (UHC), as very little of the populace are health insured, whereas even government provision for health is insignificant. Out-of-pocket payments for health causes households to incur huge expenditure. Private expenditure on health as a percentage of total health expenditure is 74.85%.

The implication of this is that government expenditure for health is only 25.15 percent of all the money spent on health all across the nation. Of the percentage spent on health by the citizens (74.85%), about 70% is spent as out-of-pocket expenditure to pay for access to health services in both government and private facilities. Most of the remaining money spent by citizens on their health is spent on procuring 'alternatives' which cost a lot. Nigeria has better health personnel than most other African countries. However, considering its size and population, there are fewer health workers per unit population than are required to provide effective health services to the entire nation. Sadly, the most commonly advertised reason is the brain drain of health professionals to other countries, especially in Europe and America.

### HEALTH INFRASTRUCTURE

The federal government's role is mostly limited to coordinating the affairs of the university teaching hospitals, Federal Medical Centres (tertiary healthcare) while the state government manages the various general hospitals (secondary healthcare) and the local government focus on dispensaries (primary healthcare), which are regulated by the federal government through the NPHCDA.

The total expenditure on healthcare as % of GDP is 4.6, while the percentage of federal government expenditure on healthcare is about 1.5%. A long run indicator of the ability of the country to provide food sustenance and avoid malnutrition is the rate of growth of per capita food production; from 1970 to 1990, the rate for Nigeria was 0.25%. Though small, the positive rate of per capita may be due to Nigeria's importation of food products.

### HEALTH INSURANCE

Historically, health insurance in Nigeria could be applied to a few instances: free health care provided and financed for all citizens, health care provided by government through a special health insurance scheme for government employees and private firms entering contracts with private health care providers. However, there are few people who fall within the three instances; as at 2015 less than 5% of Nigerians have health insurance coverage.

In May 1999, the government created the National Health Insurance Scheme, encompassing government employees, the organized private sector and the informal sector. Legislative wise, the scheme also covers children under five, permanently disabled persons and prison inmates. In 2004, the administration of President Olusegun Obasanjo gave more legislative powers to the scheme with positive amendments to the original 1999 legislative act. 1.5 percent of Nigerians have been covered by the National Health Insurance Scheme since its establishment. In 2017, the House of Representatives Committee on Health Care Services in Abuja, organized a two-day investigative hearing; where the Minister of Health Isaac Folorunsho Adewole said that the sum of N351 billion had been expended on health management organizations so far without commensurate result.

There is immense private sector participation in the scheme with HMOs like Health Partners HMO, Total Health Trust, Police HMO, Clearline HMO, Multi Shield Nigeria, Expatcare Health International, Oceanic Health Management and Zuma Health Trust.

## BONE MARROW SURGERIES

A new bone marrow donor program, the second in Africa, opened in 2012. In cooperation with the University of Nigeria, it collects DNA swabs from people who might want to help a person with leukemia, lymphoma, or sickle cell disease to find a compatible donor for a life-saving bone marrow transplant. It hopes to expand to include cord blood donations in the future.

## CANCER CARE

About 80,000 Nigerians die of cancer annually and over 100,000 are diagnosed with cancer annually. More people are dying of cancer in Nigeria because cancer and non-communicable diseases are not given priority in the country's health budget. There are only seven cancer radiotherapy centres in Nigeria.

Many of the cancer-related deaths in Nigeria can be attributed to a lack of knowledge regarding this family of diseases. Furthermore, a lack of education on both prevention and early detection and a culture which endorses silence and places a negative social stigma on such illnesses has led to more than one-third of preventable cancer deaths.

## MENTAL HEALTH

The majority of mental health services is provided by 8 regional psychiatric centers and psychiatric departments and medical schools of 12 major universities. A few general hospitals also provide mental health services. The formal centres often face competition from native herbalists and faith healing centres.

The ratio of psychologists and social workers is 0.02 to 100,000.

## ISSUES

### REGULATION OF PHARMACEUTICALS

In 1989 legislation made effective a list of essential drugs. The regulation was also meant to limit the manufacture and import of fake or sub-standard drugs and to curtail false advertising. However, the section on essential drugs was later amended. In 2005 it was estimated that about 16.7% of pharmaceutical drugs in the country were counterfeit. In 2012 a new study concluded that the proportion had fallen to 6.4%, of which 19.6% were Anti-Malaria medicines. In 2014 that had fallen to 3.6%. About N29 billion worth of counterfeit drugs were destroyed between 2015 – 2017.

Drug quality is primarily controlled by the National Agency for Food and Drug Administration and Control. The agency has established a Mobile Authentication Service. A team of girls from the Regina Pacis Secondary School in Onitsha devised a better technological solution, an app called the FD Detector which uses barcode technology to verify drug authenticity and expiration dates.

This won them a place in the Technovation Challenge 2018.

Several major regulatory failures have produced international scandals:

In 1993, adulterated paracetamol syrup entered into the healthcare system in Oyo and Benue State, the result of was the death of 100 children. A year after the disaster, batches containing poisonous ethylene glycol, the major cause of the deaths, could still be purchased.

In 1996, about 11 children died of contamination from an experimental trial of the drug trovafloxacin.

In 2008–2009, at least 84 children died from a brand of contaminated teething medication.

## GEOGRAPHIC INEQUALITY



Malian Fulani immigrant selling herbal medicines in a Nigerian market

Healthcare in Nigeria is influenced by different local and regional factors that impact the quality or quantity present in one location. Due to the aforementioned, the healthcare system in Nigeria has shown spatial variation in terms of availability and quality of facilities in relation to need. However, this is largely as a result of the level of state and local government involvement and investment in health care programs and education. Also, the Nigerian ministry of health usually spend about 70% of its budget in urban areas where around 50% of the population resides.

## EMIGRATION OF HEALTHCARE WORKERS



Retaining health care professionals is an important objective

Survey shows looming brain drain in Nigeria's health sector in the rising trend of emigration of healthcare personnel – physicians, pharmacists, nurses, and laboratory scientists, physiotherapists and many others have difficulty getting into paid employment. Many fresh doctors, out of medical schools, and managed to get housemanship positions, the situation occurs every year. The problem persists beyond the period of housemanship or internship, when it comes to securing a well deserved employment. There are generally not enough job positions to go round. The challenge of this is clear. The problem of skewed distribution, with the few available personnel being mostly concentrated in the urban areas, where almost all the large facilities like General Hospitals and Teaching Hospitals are located. The underneath issues for this may include the political dimension, with some states unwilling to recruit large numbers of workers from other parts of the country as an act of deliberate policy, preferring to employ their own indigenes, or, where there is a short-fall, employ foreigners mostly from North Africa on short-term contracts. In 2007, a National Human Resources for Health Policy was formulated by the Federal Ministry of Health and approved by the National Council on Health. Subsequently, a Human Resource for Health Strategic Plan

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2008–2012 was drawn up to guide implementation of the policy at all levels. The ultimate aim was to ensure that adequate numbers of skilled and well-motivated health workers were available and equitably distributed through the nation in order to ensure provision of quality health services. The situation appears set to get worse. As the era of Sustainable Development Goals is commenced and the target of 2030 begins to come into focus, the statistics are far from providing reassurance.

There are 4000 Nigeria doctors practicing in the United States and 8000 practicing in the United Kingdom. Retaining these expensively trained professionals has been identified as an urgent goal. The brain drain cut across all healthcare professionals; thousands of Nigerian pharmacists and nurses are practicing in the UK and USA as well and so on.

### PRIVATIZATION AND COMMERCIALIZATION OF PUBLIC HEALTH SERVICE

The public health services in Nigeria is of poor quality and it is not adequately available, accessible, and affordable to many people who need these services. The search for solutions has led to the idea of privatization and commercialisation of public health services. This development is greatly favoured by the idea that it will increase competition and result in the lowering of unit price of health services and make such services more affordable to the poor. However, the argument against it is that privatization and commercialization in Nigeria will be a mirage unless institutional reforms take place.

### TRADITIONAL AND ALTERNATIVE MEDICINE

As recent reports have shown, in addition to the many benefits there are also risks associated with the different types of traditional medicine /complementary or alternative medicine. Although consumers today have widespread access to various TM/CAM treatments and therapies, they often do not have enough information on what to check when using TM/CAM in order to avoid unnecessary harm. While traditional medicine has a lot to contribute to the health and economy, much harm has resulted from unregulated sale and misuse of traditional/alternative medicine and herbs in the country and has significantly delayed patients' seeking professional healthcare.

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## **4.0 TRADITIONAL AND MODERN MEDICINE: HARMONIZING THE TWO APPROACHES<sup>i</sup>**

### **2. PROCEEDINGS**

#### **2.1 Opening ceremony**

Dr. Shigeru Omi, WHO Regional Director for the Western Pacific, opened the meeting with the emphasis on WHO's commitment to foster a better understanding of traditional medicine.

He reported on the high usage rate of traditional medicine in the Region and the increasing interest in traditional medicine from Member States during recent years. He indicated that WHO supported the efforts to bring traditional medicine into mainstream general health service. However, WHO could only endorse therapies supported by solid scientific evidence. Dr. Omi reminded the participants that they were facing many threats to human health and the outcomes of the meeting would lay the foundation for traditional and modern medicine to work together to meet ever increasing challenges of the new century.

Dr. Zhu Qing-shen, Vice-Minister of Health and Director-General of State Administration of Traditional Chinese Medicine (SATCM), of People's Republic of China, welcomed the attendees and described the important role traditional medicine plays in maintaining the health of the people of China.

Dr. Margaret Chan, Director of Health of Hong Kong, China;

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Dr. P.Y. Lam, Deputy Director of Health and several staff from Department of Health, Hong Kong, China; a delegate from Georgia;

Professor Zheng Shou–Zhan, President of Beijing University of Traditional Medicine, and some senior staff from the State Administration of Traditional Chinese Medicine also attended the opening ceremony.

Dr. S. Omi's speech is attached as Annex 2.

### 2.2 Purpose of the meeting, procedures and outcomes

Dr. Chen Ken, Medical Officer of Traditional Medicine, WHO Regional Office for the Western Pacific and responsible officer for the meeting, gave a brief introduction to the objectives, process, and proposed methods of work of the workshop.

The purpose of this meeting was to:

- review previous scientific research on traditional medicine;
- discuss appropriate evidence for better acceptance of traditional medicine; and
- identify research requirements, research priorities and appropriate research methods which could be adopted for creating additional evidence on the usefulness of traditional medicine.

It is expected that the conclusions and recommendations of the consultation meeting will be followed up by WHO and its Member States to ensure the proper use of traditional medicine by harmonizing traditional and modern medicine.

### 2.3 Presentations

Papers on specific themes relevant to the conference were prepared by the consultants, temporary advisers and the secretariat and were distributed among all participants. The consultation group agreed to receive verbal summaries of these papers during the plenary session. Twenty verbal presentations were made by the authors of the papers and the topics included:

- WHO's involvement in traditional medicine;
- acupuncture – research on its mechanisms;
- acupuncture – clinical trials and clinical effectiveness;
- medicinal plants and herbal medicines – experimental research;
- quality of medicinal plants;
- clinical trials in herbal medicine;
- evidence–based health care practice;
- issues of evidence in traditional medicine;
- Growth of traditional medicine; and
- Clinical research methodologies.



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These papers and presentations provided background material for subsequent discussions by sub-groups.

### 2.4 Group activities

The consultation group was divided into five sub-groups with each group focusing on one of the following: clinical research in acupuncture, clinical research in herbalism, basic science research in acupuncture, basic science research in herbalism, and socio-economic factors involved in harmonizing traditional and modern medicine. Following two days of small group discussions, the two sub-groups discussing herbal research were merged into one, and the two sub-groups discussing acupuncture research were merged into one on the final day of group discussions.

## 3. TRADITIONAL MEDICINE

### 3.1 Background and characteristics

Traditional medicine is the ancient and culture-bound medical practice which existed before the application of modern science to health. The practice of traditional medicine varies widely, in keeping with the societal and cultural heritage of different countries. Every human community has responded to the challenge of maintaining health and treating diseases by developing a medical system. Thus, traditional medicine has been practiced to some degree in all cultures.

A workshop on development of national policy on traditional medicine organized by WHO Regional Office for the Western Pacific in October 1999 defined traditional medicine as the sum total of knowledge, skills and practices of holistic healthcare, which is recognized and accepted by the community for its role in the maintenance of health and the treatment of diseases. Traditional medicine, based on the theory, beliefs and experiences indigenous to different cultures, was developed and handed down from generation to generation.

In some countries, remedies used by traditional medicine have re-emerged. Such techniques are usually known as "alternative" or "complementary" medicine, which as a form of medicine has evolved recently as a reaction to high technology medicine.

A traditional medicine practitioner is a person who is recognized by the community where he or she lives as someone competent to provide health care by using plant, animal and mineral substances and other methods based on social, cultural and religious practices.

Traditional medicine practitioners are also recognized as experts on community attitudes and beliefs related to physical, mental and social well-being and the causes of disease and disability. Traditional medicine practitioners include traditional healers, traditional birth attendants, herbalists and bone-setters.

There are many traditional systems of medicine. However, many traditional systems of medicine have some common characteristics.

- Traditional medicine is based on a belief that health is a state of balance between several opposing aspects in the human body. Illness occurs when an individual falls out of balance, physically or mentally. The "causes" of imbalance could be change of weather, intake of certain food; external factors, such as magical or supernatural powers; mental stimulation and societal reasons.

Traditional medicine tries to restore the balance using different therapies.

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- Traditional medicine is based on the needs of individuals. Different people may receive different treatments even if they suffer from the same disease.

Traditional medicine is based on a belief that each individual has his or her own constitution and social circumstances which result in different reactions to “causes of disease” and treatment.

- Traditional medicine applies a holistic approach. It considers a person in his or her totality within an ecological context and usually will not only look after the sick part of the body. Besides giving treatment, traditional practitioners usually provide advice on lifestyles and healthy behaviour.
- Traditional medicine precedes modern medicine. Most traditional remedies have not been evaluated by sound scientific methods. This means that, at this stage, traditional medicine is not easily understood by modern medicine. However, traditional remedies have been “field-tested” by tens of thousands of people for hundreds of years.
- Traditional medicine covers a wide scope and its practices vary widely from country to country. In the Region, the main therapeutic techniques are medicinal plants and acupuncture.

### 3.2 Changes in trends of usage

Traditional medicine exists in most countries and areas in the Western Pacific Region and makes a significant contribution to the health of the people of the Region. Interest in traditional medicine has increased over the last decade and seems likely to continue.

People now are more prepared to look for alternative approaches to maintain their health.

There are no solid data on the extent of usage of traditional medicine in the Region. However, data from several countries and areas in the Region show that around 40% to 60% of the population of these countries and areas use traditional medicine. For example, traditional medicine accounts for around 40% of all health care delivered in China and in Hong Kong, approximately 60% of the population has consulted traditional medicine practitioners at one time or another.

The use of traditional/complementary medicine in industrialized countries has increased significantly. Studies conducted in the US show that complementary therapy usage increased from 34% in 1990 to 42% in 1997.<sup>4</sup> In Australia, research has indicated that 48.5% of the population used at least one non-medically prescribed alternative medicine in 1993. The estimated national expenditure on alternative medicines and alternative practitioners is close to A\$1 000 million per annum, of which A\$621 million is spent on alternative medicines.

An Australian government report in 1996 estimated that there were at least 2.8 million traditional Chinese medicine consultations in 1996, representing an annual turnover of A\$84 million within the health economy. This growth was also reflected in a four-fold increase in the importation of Chinese herbal medicines since 1992.

Clearly, traditional medicine is widely used by the public, and in some countries its use has increased dramatically. Increased demands from public lead to increased interest and involvement of the academic and scientific community. Concurrently, more and more governments from countries and areas within the Region have shown their interest and willingness to promote the proper use of traditional medicine.

### 3.3 Consumers, government and other stakeholders

Based on the growing interest in traditional medicine shown by consumers, scientists and regulators, three important challenges present themselves.

- The public and the users of traditional medicine request safe, quality–controlled and effective remedies.
- Medical scientists request more scientifically sound evidence before comfortably accepting many traditional medicine practices. Many health professionals have doubts about the usefulness of traditional medicine. In many cases, they require more scientifically–based evidence if they are to trust its safety and effectiveness.

Meanwhile, the involvement of the academic and scientific community provides the opportunity to create more evidence by means of modern science.

- Governments need to establish and update mechanisms for the regulation of traditional medicine and its practitioners and, in doing so, require more scientifically–based evidence to support decision–making. As traditional systems of medicine become better documented, and more scientifically credible, usage is only likely to increase further.

Consumers, of course, have many different reasons for using traditional medicine, and may not require the same level of evidence of practice that is espoused by medical scientists. Consumers may have confidence in, for example, oriental herbal medicine because of its existence in public hospitals and medical infrastructure in China, Republic of Korea, and Japan, instituted by centuries of use, scholarly writings and a formal tertiary education system.

Consumers may also be prepared to try an herbal formula that has been used and documented in classical medical literature for many centuries and may be less convinced by a clinical trial of a new drug – having been applied only to a well–defined sample group.

Consumers’ awareness of these factors may generate more confidence in terms of ‘evidence behind practice’ than any single methodologically rigorous clinical trial. However, to the scientist it’s the latter, and not the former, that represents the stronger evidence.

## 4. TRADITIONAL MEDICINE AND MODERN MEDICINE

Traditional and modern systems of medicine were developed by different philosophies in different cultural backgrounds. They look at health, diseases and causes of diseases in different ways. These differences bring different approaches to health and diseases.

However, both systems deal with the same subject – human being.

The old and modern arts of healing should exist together.

### 4.1 Integration of traditional medicine with modern medicine

The integration of traditional medicine with modern medicine may have three different meanings.

First, it may mean incorporation of traditional medicine into the general health service system. The government recognizes the practice of traditional medicine and the use of traditional medicine is incorporated into the mainstream of health service system. In the Region, traditional medicine has been an integral part of formal health service system in several countries, albeit in different forms.

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Second, it may mean integration of the practice of traditional medicine with that of modern medicine. In fact, many medical doctors who have adequate knowledge of traditional medicine have tried to incorporate remedies used by traditional medicine into their daily work. In some places, traditional and modern medicines are practiced side by side. Studies have also shown that many patients use both traditional and modern medicine.

Third, it may mean the integration of traditional and modern medicine as two branches of medical science. Although traditional and modern medicines have developed in different cultural contexts and are at different stages of scientific development, they have many similarities. Efforts have been made to synthesize the two branches, in order to form a new branch of medical science, incorporating elements of both. However, at this stage this would appear to be a difficult task.

### 4.2 The need for harmonization of traditional and modern medicine.

Increased cross-cultural communication has resulted in the exposure of many indigenous forms of traditional medicine to new, more modern, medical environments. Various responses may and have occurred to the presence of differing approaches to health care.

These range from complete rejection of TM by modern medical practitioners and of modern medicine by TM practitioners, to a parallel existence with little communication over patient care, or to ultimately forced understanding, subsuming and integration of one model by the other. None of these approaches is ideal precisely because none confers adequate respect on the practices of the other.

This results in a weak utilization and exploration of the benefits presented by each model. Harmonization of traditional and modern medicine emphasizes the importance of respectful co-existence. Within the model of harmonization, there is the requirement to develop and hold a good understanding of the other approaches to health care. Modern medicine practitioners and researchers are required to achieve adequate education and awareness of the practice, principles and context of traditional medicine. Similarly, TM practitioners need to be significantly more aware of the nature of practice and strengths of modern medical approaches. The purpose of this broader education base is not simply to yield a better understanding of differing practices, but primarily to promote the best care for patients by intelligently selecting the most facilitating route to health and wellness.

Surveys and other sources of evidence indicate that traditional medical practices are frequently utilized in the management of chronic diseases. It is particularly for this category of illness that TM has developed a reputation. It is also in this area of treatment that modern medicine is considered the weaker. An approach to harmonizing activities between modern and traditional medicine will promote a clearer understanding of the strengths and weaknesses of each, and encourage the provision of the best therapeutic option for patients.

The alternative to this is poor health care practice and bad medicine, most especially as the quantifiable scientific evidence of effective TM practices mounts.

Collecting evidence based on research is, therefore, regarded an essential step, although, of course, much more is involved in harmonization.

## 5. EVIDENCE AND TRADITIONAL MEDICINE

### 5.1 Acquisition of traditional medical knowledge

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“In order to evaluate the efficacy of ginseng, find two people and let one eat ginseng and run, and the other run without eating ginseng. The one that did not eat ginseng will develop shortness of breath sooner.” Bencao Tujing, Atlas of Materia Medica, 1061AD.

Traditional medicine practitioners have developed unique methods of diagnosis and treatment that are specific to their particular cultures. Some of these approaches based on complex theoretical frameworks can be traced back as far as 3 500 years.

Although there is evidence from the Song dynasty in China that comparative trials were used to illustrate treatment effects, they were not applied in a rigorous systematic manner to advance the state of knowledge. For the most part, it was assumed that knowledge of traditional medicine was reinforced through clinical experience and transferred either verbally or by cataloguing accumulated experience in reference texts.

Clinical experience is an excellent way to learn about medicine.

However, development of new medical knowledge relies on treatment safety, costs, and systematic research. Given today’s interest in traditional and complementary medicine, information on safety, efficacy and costs is being requested by patients, governments, traditional practitioners and practitioners of modern medicine.

### 5.2. Evidence–based health care practice

The practice of evidence–based medicine (EBM) involves “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.” When it was originally proposed in 1992, EBM was defined as a new paradigm for medical practice: “Evidence–based medicine de-emphasizes intuition, unsystematic clinical experience and pathophysiologic rationale as sufficient grounds for clinical decision making and stresses the examination of evidence from clinical research.”

Although evidence–based medicine emphasizes the use of the randomized controlled trial (RCT) for the evaluation of therapeutic effectiveness whenever possible, the practice of EBM does not rely exclusively on the randomized controlled trial. Evidence to support clinical practice can come from any number of systematic research designs; however, these different types of research designs do not all lead to the same level of evidence. The rules of EBM privilege certain kinds of evidence as having more weight. The latest levels of evidence provided by the Cochrane collaboration include:

Level I: Strong evidence from at least one systematic review of well–designed RCTs.

Level II: Strong evidence from at least one RCT.

Level III: Well–designed trials without randomization.

Level IV: Non–experimental evidence.

Level V: Expert opinion.

Level VI: Someone told me.

There are several other ways to level the evidence proposed by different institutions.

EBM is the use of best evidence integrated with individual clinical expertise in making a medical decision. One cannot stand without the other. Without the clinical expertise, external evidence might not be applied appropriately to individual patients. Without the use of evidence, clinical expertise alone might

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be biased and out-of-date. In clinical guideline development process, actual recommendations come from different levels of evidence. Strong recommendations come from strong evidence (i.e. from well-designed randomized controlled trials). However, in most situations when there is a lack of good evidence, the panel usually considers other factors such as cost, availability of health personnel, laboratory and medical interventions, practical considerations, target population, etc. to decide on the best recommendations. Therefore, the role of traditional medicine in areas where western medicine is not readily available or affordable has to be emphasized. Even if there might be a lack of good evidence (and this is also true of western medicine), use of traditional medicine interventions might still be part of most clinical practice guideline recommendations.

The following methodology is proposed for creating evidence based recommendations (EBRs). This framework provides a series of validated steps to ensure the development and acceptance of objective, users-friendly, evidence-based recommendations for clinical practice.

The six-steps to EBR development are described below.

Step 1: Project definition and team formation:

- specification of questions to be addressed and selection of team,
- focused questions on the management of a specific disease or condition;

Step 2: Perform a formal literature search:

- electronic search, where possible,
- retrieval of local publications, including translation of primary sources by persons trained in traditional medicine and clinical epidemiology;

Step 3: Create systematic overviews:

- evaluation of literature discovered, based on objective criteria;

Step 4: Estimate expected benefits, harms and costs:

- evaluation of important sources of information from observational and historical databases which may reveal important information with respect to toxicity, costs and culturally-based patient preferences;

Step 5: Judge relative value of expected benefits, harms and costs:

- relative importance of benefits and harms to the patient and payer; and Step 6: Develop EBRs based on levels of evidence.

Evidence-based medicine is not a methodological research framework; it is a research transfer framework. Although evidence-based medicine de-emphasizes the sharing of unsystematic clinical experience, it does not invalidate clinical experience as a method of gaining knowledge. Using the EBM framework, however, a clinician can transfer his or her knowledge to other practitioners; the knowledge must be presented in a transparent fashion so that the recipient can appraise the knowledge to determine the level of evidence it represents.

## 6. EVIDENCE OF PRACTICE IN TRADITIONAL MEDICINE

These notes reflect consensus views developed in groups in response to papers submitted to the meeting. The groups consisted of representatives from various Member States with backgrounds in both traditional medicine and modern medicine.

### 6.1 Basic science research in acupuncture

The group recognized that although acupuncture research initially concentrated on analgesia and neurological models, recently it had broadened to other areas of physiological systems including endocrine, immunological and metabolic.

Two perspectives could be discerned in the research:

- traditional theory and clinical evidence is used to provide the basis for modern experiments in neurophysiology, and
- basic scientists are attempting to describe traditional ideas of meridians, point location, etc. in scientific terms.

The principal areas of this research were described in papers by Professors Cao Xiaoding, Kyuya Kogure and Liu Jungling. The group recognized, however, that much of the important original scientific work on acupuncture was not yet available in English.

Most of the research work on mechanisms of action was carried out on acute pain management, and it was not clear whether this was relevant to effects of acupuncture on chronic pain, which may have different underlying mechanisms, nor whether similar mechanisms could be applied to other therapeutic applications of acupuncture. The issue underscored the importance of integrating clinical science and basic research in future acupuncture studies.

### 6.2 Clinical research on acupuncture

The starting point of the group's discussion centred on the awareness of the enormous historical and cultural significance of traditional acupuncture, as well as the importance of clinical experience and observation in this area. However, the focus of discussion was on the modern methods of treatment evaluation.

A number of English language reports of clinical trials are available.<sup>11,12</sup> In the last few years, activities of the Cochrane Centre for Systematic Reviews have been extended to include reviews of complementary/traditional medicine. Reviews of the clinical trial literature on acupuncture for low back pain, asthma, nausea and vomiting and smoking cessation are also available. Reviews are in progress for the acupuncture treatment of chronic headache.

The findings from all these reviews are similar, in that clinical trials have been too few, too small, and inadequately controlled.

There have been doubts about the adequacy of treatment, problems with the definition of placebos and a variety of other methodological problems. Overall, methodological details have been lacking in many study reports. While progress has been made in defining an appropriate methodology for acupuncture evaluation, this has not yet translated into trials of a high standard that can provide definitive results. Hence, the results from most reviews are fundamentally inconclusive. Clearly, if research is to be

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continued, much larger trials of considerably better quality need to be conducted. Most of research literature remains in Chinese, and, therefore, not easily accessible to those carrying out the systematic reviews. Conversely, the English language studies and reviews are not easily accessed within China.

The conclusions reached from the clinical trial perspective contrast strongly with those reached by clinicians and researchers working from within a traditional medicine framework. From within traditional medicine, the result of literally hundreds of years of clinical experience, and thousands of case series suggest that acupuncture can be effective for a wide range of clinical conditions.

The modern clinical trial and the traditional medicine perspectives can be usefully encompassed with the evidence-based medicine framework described above. There is a need to acknowledge the evidence base within traditional medicine, while also recognizing the importance of clarifying the extent and limitations of traditional practice through methodologically sound research. However, the design of studies needs to incorporate traditional medicine perspectives, including differences in diagnostic approaches that guide treatment.

### 6.3. Basic science research in herbal medicine

A wealth of information exists in the literature regarding plants and plant formulas used in traditional medicine. The Western Pacific Region is a particularly rich source of such information. Historical data has also been the starting point for basic science research that has led to the discovery of active components. Using highly advanced research techniques a number of compounds have been discovered over the years and successfully brought into clinical use.

The collection of data on herbal use is an ongoing process. In China, over 100 000 herbal preparations have been recorded that are still in clinical use. Researchers in Fiji, Malaysia, Samoa and Tonga have recently published monographs on medicinal plants with information on taxonomy, traditional use, chemical constituents, etc.

Also, an extensive Korean database exists of over 12,000 prescription titles with respective formulas, 12,000 natural constituents with drawings of chemical structure and analytical data, photo images of standard herbal materials and original medicinal whole plants with taxonomical verification and a dictionary of disease classification in terms of TCM and modern medicine. All participants voiced the need for a comprehensive regional database that would allow easy access and exchange of information.

Quality control of herbal products will have a significant impact on the overall effectiveness of herbal medicines. To this end, China has introduced new legislation requiring approval for new raw materials and traditional herbal formulas to be classified as drugs.

New drug approvals require documentation of identification, cultivation, physical and chemical characteristics, pharmacology, standards of clinical use, stability, and preparation methods along with three reference samples. To date over 1,000 new drug applications have been approved. Recent legislation in Malaysia requiring the registration of herbal products has led to the licensing of 4,778 (28.9%) out of 16,518 products. Many (71.1%) failed to satisfy strict regulatory requirements as to their quality, safety and efficacy. 13 Research activities currently include evaluation of active herbal constituents for efficacy, bioavailability and toxicity. In Japan, 80% of practising physicians have experience using herbal formulas.

Japan now produces 210 Kampo herbal formulas according to strict quality controls, 147 of which are covered by health insurance. It was the consensus of the group that quality control measures should continue to be promoted.



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Phytochemical and pre-clinical research are the areas of research in which the active components of herbal remedies are isolated, their structures identified and biological activities analyzed for mechanisms of action, toxicity, etc. Recently in the Republic of Korea, acubin was isolated from *Plantago asiatica*, a traditional medicinal plant that has been used for hepatitis B. Derivatives synthesized from the lead compound, higenamine, isolated from *Aconitum tuber*, have shown activity as an anti-platelet aggregating agent. Extensive research has been performed in Japan on about 30 Kampo formulas on a pre-clinical or basic science level. One example of this research is the work on the immunostimulating activity of Juzen-Taiho-To (JTT). JTT consists of ten different component herbs. It has been shown to influence the immune system by enhancing the T-cell dependent antibody response, phagocytosis, anti-complementary activity and mitogenic activity against spleen B cells in mice. The biological activity was identified to originate from three different types of polysaccharides having different activities. These three different types of polysaccharides were separated into 22 unique active pectic polysaccharides. Although JTT consists of ten component herbs, the corresponding carbohydrate-lignan complex fractions from each component herb did not demonstrate immunity enhancing activity. However, when at least five certain herbs were combined, the activity was observed.

The series of experiments strongly suggests the presence of a synergistic effect in this Kampo preparation. Examples of other areas of Kampo medicine that are currently being investigated include the anti-dementia actions on the nervous system, treatment of liver diseases, allergic reactions, anti-influenza, anti-atherosclerosis activity, suppression of chronic inflammatory airway disease and anti-pyretic activity.

### 6.4 Clinical research in herbal medicine

The range and number of human clinical trials of traditional herbal medicines performed in China, Republic of Korea, Japan and other countries are extensive. For the purposes of this summary a sub-group of participants reviewed and graded a limited number of studies submitted to the group by participants to provide a snapshot of research activity in this area. The focus of activity of this group was on oriental herbal medicine.

The following six major aspects of clinical trial design were utilized to objectively evaluate the studies at hand:

- the use of explicit, objective entry criteria;
- appropriate use of a control group;
- random allocation of patients to control and intervention groups;
- appropriate levels of blinding;
- complete follow-up and reporting on all patients recruited into the trial; and
- the selection of unambiguous and clinically meaningful, patient-based end points.

Two additional criteria were considered important by the group if traditional medicine were to be assessed appropriately:

- the use of a traditional diagnostic framework in guiding treatment; and

- tailoring the treatment to trial subjects where possible.

These clinical trial criteria were used to grade clinical trials according to the strength of evidence they represent. The trials reviewed are summarized below and presented in Table 1. The quality of evidence represented by each trial was rated according to the guidelines in section.

#### Summary of studies

##### Gastroenterology

One well-performed randomized controlled trial has been recently published in English on irritable bowel syndrome. This trial was considered to represent level II evidence.

##### Hepatology

A randomized, prospective unblinded Japanese study of a traditional herbal formula demonstrated reduced cumulative incidence of hepatocellular carcinoma and increased survival of patients with cirrhosis. This trial was considered to represent level II evidence.

A retrospective study also demonstrated that long-term administration of a licorice root derivative was effective in reducing the cumulative incidence of liver cancer in chronic hepatitis C patients. This trial was considered to represent level IV evidence.

##### Reproductive endocrinology

An unblinded, randomized controlled comparison of herbal medicine with conventional medicine in polycystic ovary disease demonstrated positive outcomes along a number of parameters although there were concerns about methodological standards. This trial was considered to represent level II evidence.

A small randomized controlled trial on intrauterine growth retardation demonstrated a positive outcome on birth weight and placental villi but exhibited similar methodological problems. This trial was considered to represent level II evidence.

##### Dermatology

Two studies of traditional herbal medicine demonstrated effectiveness over placebo in both children and adults with refractory atopic eczema. Both studies were deemed level II evidence.

##### Psychiatry

A randomized, placebo-controlled blinded trial demonstrated the benefit of a traditional herbal formula in the treatment of vascular dementia. Although there were some limitations in design this study was credible overall. The trial was considered to represent level II evidence (always with Table).

#### Reviews

In addition, one systematic review and one meta-analysis were available for discussion.

##### Acute ischaemic or hemorrhagic stroke

A review and meta-analysis performed on 15 clinical trials of a State approved traditional Chinese herbal medicine, conducted between 1992–1996, revealed variable methodological quality (unpublished). Only one of the clinical trials reported single blind procedure, none double blind. All claimed a positive outcome.

However, the review identified significant problems with the trial methodology.

#### Acute respiratory infections

A systematic review of clinical trials of Chinese herbal medicines in acute respiratory infections concluded that the inadequate methods of most studies made it difficult to interpret the results with confidence.

#### Conclusions

Overall, the herbal trial reports represent some good preliminary evidence of the efficacy of herbal medicine in a number of clinical disorders including, but not limited to, those reported above. There is further evidence in numerous other clinical areas. The process of acquiring quantifiable clinical trial evidence on traditional oriental herbal medicine is clearly underway.

However, whilst some good quality research has been reported, there is a relative paucity of good clinical trials and systematic reviews of the practice of traditional (oriental) herbal medicine, and most remain published in non-English journals. Whilst the outcomes of the trials largely support the efficacy of herbal medicine, many are compromised by methodological flaws. The clinical trials published in English are few. There is a significant volume of clinical trials in the Chinese herbal literature, although methodological problems have been a major concern which weaken the credibility of the outcomes.

### 7. HARMONIZING TRADITIONAL AND MODERN MEDICINE: CONCLUSIONS AND RECOMMENDATIONS

The meeting participants recognized that a large proportion of the population in the Region use traditional medicine as a primary means of care. Traditional medicine will continue to exist as a separated medical system for some time. It was noted that many users of traditional remedies also use modern medicine at the same time. Many medical doctors apply both traditional and modern medicine. Harmonization of traditional and modern medicine will, therefore, ensure that the two approaches work effectively side by side properly.

#### 7.1 Towards harmonization of traditional and modern medicine

By the end of the conference, the consultation group identified a number of issues that were important in the harmonization of traditional and modern medicine. The group recommended several steps which would contribute to the goal of harmonizing the two systems of medicine.

##### 7.1.1 Promoting an evidence-based approach

An evidence-based approach is important in harmonizing traditional and modern medicine and minimizing bias. There is a need to acknowledge the evidence base within traditional medicine; traditional medicine should recognize the importance to clarify the extent and limitations of traditional practice through methodologically sound research. Importantly, the consultation group did not see any major problems with applying the principles of evidence-based medicine (including the randomized controlled trial) to TM research and practice. This is a process that will only assist in increasing the credibility of TM practices. To this end, researchers should endeavor to utilize rigorous features in clinical trial design as described in sections 5 and 6. All suitable and appropriate study designs should be encouraged for the purpose of acquiring useful information on the efficacy and safety of traditional practices and medicines. This would include drawing on study designs such as case series, retrospective studies, cohort and case-control studies, and involvement of traditional healers in documentation of treatment outcomes.

Research should establish the value of traditional medicine in not only treating disease, but also in promoting health and wellness.

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This could include research on the use of combinations of therapy (for example, acupuncture with dietary changes and/or herbal medicine).

The concept of an holistic approach to treating patients is important and paramount in traditional medicine. Hence, outcome measures in clinical trials need to be relevant to the whole health of patients. A strong emphasis was placed on the need to develop and validate the reliable, clinically meaningful, multi-dimensional outcome measures that related to quality of life.

Whenever possible, researchers should endeavor to utilize rigorous features in clinical trial design, including;

- the use of explicit, objective entry criteria;
- appropriate use of a control group;
- random allocation of patients to control and intervention groups;
- appropriate levels of blinding;
- complete follow-up and reporting on all patients recruited into the trial; and
- the selection of unambiguous and clinically meaningful, patient-based end points.

A more conducive environment for research on traditional medicine needs to be set up. This includes looking into the legal status and training practitioners, education of researchers, funding and utilization of research findings.

In undertaking clinical research, the Declaration of Helsinki and other guidelines relevant to ethical issues in health research should be followed.

### 7.1.2 Encouraging a mutual respect

Lack of adequate education by modern medical practitioners in the TM approaches to diagnosis and treatment, and the lack of adequate education in designing methodologically sound research by traditional medicine practitioners represent significant barriers to the harmonization of traditional and modern medicine. In the past, non-TM trained researchers conducted poor quality clinical research due to the inappropriate application of TM techniques.

Similarly, poor quality research resulted from TM practitioners failing to recognize the well-established importance of rigorous approaches to performing clinical trials. Improved relevant education is required on both sides.

While performing rigorous research on TM, it must be emphasized that TM principles of practice should be strictly adhered to. It is important that traditional medical theory is not ignored in the context of a good trial design. In some cases, whilst a modern medical diagnosis may be required for the purposes of screening and including patients for a clinical trial, the trial should be designed to permit a traditional diagnostic and therapeutic approach to practice. Practice is particularly individualized in TM and a research design that moves too far from TM practice would no longer achieve its purpose in evaluating TM. The importance of collaboration between TM practitioners and clinical researchers is apparent.

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Trialists and researchers need to develop expertise in both traditional medicine and research methodology, and they need to ensure that research methodologies are appropriate to the practice of traditional medicine. Furthermore, developing interpretations of traditional medicine in terms of modern medical theory is also important. This can provide credibility to the traditional medical diagnostic and theoretical concepts without undermining its practice base.

Harmonization through mutual respect of practices will occur if a wide range of well-performed clinical trials proceed. Barriers to the performance of worthy clinical trials should be minimized.

For example, it has been proposed that since herbal medicines are available in the public arena and the government has not sought to restrict their usage, a clinical evaluation of the products should be encouraged. For the purpose of a clinical trial, safety evaluation beyond the recorded history of use of the medicinal agents should not generally be required. In fact, the clinical trial itself provides safety information. Regulation and restriction, if required, should occur as a matter of public risk minimization measure, not to obstruct evaluation of publicly available products. This will provide an evaluation of effectiveness and assist the government not only to define a regulatory position, but also to clarify the potential role of the therapeutic agents concerned. This issue is of relevance to clinical researchers, government regulators and institutional ethics committees.

### 7.1.3 Disseminating information

Poor dissemination of research literature related to the practice of TM presents a major barrier to researchers worldwide. Some high quality basic science and clinical research on many forms of traditional medicine exist only in Japanese, Korean or Chinese language journals and are relatively inaccessible. Hence, there remains a need to translate, collate and disseminate the relevant research findings of the last two decades. In addition, TM researchers need to reach a broad readership and raise the level of awareness.

WHO, researchers, professional associations, research institutes and other agencies should consider mechanisms to improve communication and information sharing. These include further networking, newsletters, expert meetings, conferences and other mechanisms.

Due to the vast array of TM practices, geographical separation and cultural diversity, communication, even in the same tongue, presents a barrier to harmonization. The development of a “modern” language for TM may lead to better understanding of its theory and practice by the public, policy-makers and the medical society. A common language will contribute to further cooperation amongst researchers.

The general public will also benefit from information on the safety and effectiveness of traditional medicine and the outcome of scientific research explained in simple language easily understood.

### 7.1.4 Research on herbal medicine

The basic science areas of herbal medicine provides a means of assuring the quality and safety of herbal remedies. It may also lead to the discovery of clinically important drugs.

There is a need to change the order in which basic science research is performed in the discovery of new drugs in the practice of traditional herbal medicine. Historically, basic science research in herbal medicine begins with the selection of plants based on widespread use and folklore. This is followed by intensive laboratory work leading to the development of bioassays, isolation techniques and characterization of active constituents, determination of the mechanism of action and a battery of toxicology testing. Promising agents are then moved into clinical trials. Although many extremely useful drugs have been

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discovered using this method, the vast majority of plants that undergo this method of evaluation do not yield clinically useful drugs. Applying two new strategies that embrace the principles of evidence-based medicine may dramatically increase this success rate.

The first strategy is to categorize plants and traditional medicine formulas according to an Evidence Rated Research Scale. By utilizing this style of categorizing plants and herbal formulas, researchers will have a common language in which to assess the body of knowledge available for each plant or formula.

Evidence Rated Research Scale consists of the following:

1. Single plant or herbal formula that has extensive positive clinical efficacy, proven safety, known mechanism of action, structurally identified active compounds and strict quality control which fully supports its use in the general population
2. Single plant or herbal formula that has extensive pre-clinical in vitro and/or in vivo positive research results along with basic science research on safety, mechanism of action, structurally identified active compounds and strict quality control which supports its use in the general population but has not been clinically verified.
3. Single plant or herbal formula used and broadly accepted as efficacious based on a long history of use that has been tested for quality control and safety.

Clinical efficacy has not been verified by randomized controlled trials.

4. Single plant or herbal formula used and broadly accepted as efficacious based on a widespread and long history of use. Clinical efficacy has not been verified by randomized controlled trials.
5. Single plant or herbal formula used locally or only rarely found in the literature.

The second strategy involves shifting the initial focus of TM herbal research from that of basic science to clinical outcomes.

According to this approach, high quality clinical trials would initially be performed using plants or herbal formula believed to be efficacious. Those TM herbal remedies confirmed to be effective would then undergo rigorous scientific investigation. By applying a Post-clinical Basic Science Research Approach, the basic research scientists will conduct their investigations starting with clinically proven effective material which may enhance and expedite the discovery new clinically effective agents and research tools. The format of the Post-clinical Basic Science Research Approach is as follows:

- (1) Each interested regional country identifies and prioritizes diseases that warrant research.
- (2) Single plants or herbal formulas used to treat those diseases might then be chosen for a variety of reasons (most notably, clinical experience) although preference might also be given to plants appearing high on the

Evidence Rated Research Scale.

- (3) Safety and toxicity studies should be carried out (unless already documented). A long history of human use is acceptable evidence of basic safety under this scheme.
- (4) High quality, evidence-based clinical trials should then be designed and performed.
- (5) Plants or formulas that are shown to be positive in clinical trials will then undergo rigorous basic science research including:

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- isolation and structure elucidation of the active compound(s);
- dosage, bioavailability and advanced safety studies;
- pharmacokinetics and mechanism of action identification;
- activity enhancing chemical modification studies;
- other types biological activity studies; and
- quality control studies to standardize phytopharmacological equivalents.

Thus, by combining the knowledge and use of traditional medicine to obtain clinically useful evidence in which to focus the resources of modern medicine's basic science research, the health of the people utilizing both systems may be improved.

During the process of evaluating traditional herbal remedies, the responsibility of TM practitioners will be to facilitate the appropriate evaluation of effectiveness, while other medical research techniques provide the capacity and approaches to determine how the therapeutic agents work. This order of activity differs from conventional synthetic or semi-synthetic pharmaceutical research for new therapeutic chemical constituents, where the latter has had no marketplace exposure or history of human usage in therapy. This is an important distinction: TM therapeutics have a long history of human usage and previously accepted marketplace exposure. This distinction should motivate traditional medicine practitioners and relevant industry sectors to collaborate to raise adequate funding and to develop and fulfill meaningful research plans.

An awareness of the principles of TM practice is important in basic science research. The synergism of activity of the herbs demonstrated by the Japanese studies reported in section 6.3, where individual herbs failed to show activity demonstrated by the whole formula, highlights the importance of adopting traditional approaches to the utilization of traditional medicines. Attention in research should be paid to the synergistic behaviour of whole formulations in contrast to actions and safety of single bioactive agents.

In accordance with the UN Convention on Biologic Diversity held in Rio de Janeiro in 1992, researchers in the development of herbal remedies must recognize the importance of the conservation of diverse plant species.

### 7.1.5 Research on acupuncture

There is a need to standardize animal models in basic acupuncture research by considering standardized models from other fields. The animal models used in acupuncture research need to be understandable, reproducible, and exchangeable. Animal research must correlate as closely as possible to clinical reality.

Acupuncture researchers need to document the morphological and physiological connection to internal organs through the use of technologically advanced modalities such as functional magnetic resonance imagine (MRI) and positron emission tomography (PET) scans. This could lead to better understanding of the importance of acupoints and meridians, including the awareness of micro-anatomy, connective tissue and metabolic aspects. In view of the costs associated with these technologies, it was suggested that ways to co-ordinate and facilitate the use of these resources must be promoted by governmental bodies.

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Acupuncture research presents some unique methodological challenges that can cause problems with respect to the maintenance of blinding and thus may open trials of acupuncture to bias. The acupuncture researcher must consider the appropriate selection of sham procedures in order to address these issues. Some points to consider include:

- Sham needling presents difficulties related to choice of position, stimulation, duration and technique. Patient expectations and experience with acupuncture can result in failures in blinding.
- Mock TENS is difficult to undertake because the patient can perceive the active stimulation.
- Minimal acupuncture may have a mild effect and can be distinguished from true acupuncture by the subject.
- Placebo acupuncture, with a retractable blunt needle, demonstrates promise but has not yet been adequately evaluated in clinical trials.
- Alternative treatment, such as physiotherapy, may give indication of effectiveness over 'standard care'.

Researchers need to be very explicit when describing experimental trials so that all the steps of design and procedures are fully explained in order to allow other researchers to repeat the same experiment and grade the level of evidence.

### 7.1.6 Other perspectives on acceptance

Traditional medicine is rooted in respective cultures and traditions, so there are many issues and perspectives that need to be examined aside from the basic science and clinical aspects. Like all other systems of health care, the development of traditional medicine is not solely driven by science but equally by policy, and economic and socio-behavioral factors. These factors can act as a bridge between research and action.

Research on traditional medicine beyond the basic science and clinical perspective should be conducted. Other scientists such as social scientists, health economists and epidemiologists need to be part of multi-disciplinary teams conducting research in traditional medicine.

There is a need to understand the health and health care seeking behaviour of the users and non-users in the following areas:

- pathways to seeking care – issues such as delay of seeking care, concomitant use, doctor shopping and switching from one medical system to another;
- patterns of use – issues such as user characteristics, medical conditions for which traditional medicine are sought, extent and frequency of use, payments, factors associated with use and non-use and effects of education and policy on use and non-use;
- provider behaviour – issues such as provider characteristics, prescribing behaviour and referrals; and
- policy studies – cost analysis and issues such as effects of education and policy on patterns of use.



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Research in the context of the above will provide useful evidence to policy-makers in dealing with traditional medicine.

Business involvement in TM is a global concern. It is possible that profit motivation could override safety, efficacy and health concerns. Issues of professionalism, ethics and marketing are important areas for future research. Some examples include:

- impact of TM on health care expenditures (e.g. insurance coverage);
- investment in product development by business/ commercial sector (their concerns, marketing behaviour, and interest in private investment in TM)

Governments should actively promote the rational use of traditional medicine that have been scientifically validated. To do so, they need a national policy for approving those drugs and techniques that are safe and effective for specified clinical indications.

The adoption of such policy will help to overcome some of the legal barriers against the use of traditional medicine.

### 7.2 Operational recommendations

There are clear challenges to the harmonization of traditional and modern medicine. Better access to information, facilitating appropriate clinical trials, improving rigour in clinical trials, improving education and collaboration of practitioners and researchers, and respecting traditional practices in research are all important steps towards achieving harmonization.

It is recognized that the idea for harmonizing traditional and modern medicine will not occur immediately. To accumulate evidence based on research can be regarded as the first step. However, much more is involved in harmonization of traditional and modern medicine. The group also believes that a number of simple actions can be taken to initiate the efforts for harmonization. In addition to the suggestions and recommendations mentioned above, the group made the following operational recommendations to establish a framework to begin the process.

(1) WHO should continue to encourage governments to adopt policies to promote the rational and safe use of traditional medicine.

(2) WHO and its Member States should support the harmonization and appropriate integration of traditional medicine with modern medicine.

(3) WHO should collaborate with research institutes and researchers engaged in research on traditional medicine to disseminate their findings as widely as possible, including publication of their results in broadly circulated English language journals. Furthermore, professional associations, journals, research institutes and other agencies should endeavour to make available in English the reports of research studies presently available only in Chinese, Japanese and Korean literatures. This should include the preparation and dissemination in English and native languages such as Chinese, reviews of research conducted in other countries. The successful dissemination of the outcomes of well-designed and well-performed research will assist traditional and modern medicine practitioners to make informed decisions about the most effective therapy for patients.

(4) Appropriate mechanisms to improve dissemination of and access to information resulting from research activities should be developed:

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- WHO should assist in updating available databases on traditional medicines and utilization of those databases by researchers and other interested users;
  - WHO should consider commissioning the preparation of a document which could be available in English and native languages, to illustrate the use of the evidence-based approach to research in traditional medicine; and
  - WHO should undertake activities (forming networks, organizing meetings and conferences, and using electronic media) for information dissemination.
- (5) WHO should continue to co-ordinate data analysis on important traditional remedies. Researchers who have expertise in trial evaluation and traditional medicine should be mobilized to evaluate research papers published in the last five to ten years according to the levels of EBM. This could then form the framework for a scientifically-evaluated traditional medicine.
- (6) As part of acquiring clinical evidence, relevant governments or professional agencies should ensure that appropriate adverse event reporting and recording mechanisms are in place. Regular summary findings should be disseminated by the relevant government or professional agency to interested parties.
- (7) WHO should support the training of people with knowledge of traditional medicine to acquire skills in research methodologies including clinical epidemiology.

Furthermore, WHO should encourage and support the training of clinical trialists to acquire training in the theory and fundamentals of traditional medicine.

(8) WHO and its Member States should advocate, support and encourage the conducting of high quality research in traditional medicine, including clinical research, basic sciences, policy issues (legal and educational), and social, behavioural and economic issues. Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicine and Guidelines for Clinical Research on Acupuncture, prepared and published by WHO Regional Office for the Western Pacific, provide valuable guidance on principle and methodology for designing, conducting and evaluating basic scientific and clinical research in traditional medicine.

(9) WHO should encourage research to establish the value of traditional medicine in promoting health and wellness beyond treating diseases.

(10) WHO and its Member States should advocate that, provided adequate evidence of safety (such as history of human use) is available, clinical trials of widely used and established traditional remedies may be undertaken prior to obtaining the results of extensive 'pre-clinical' basic sciences research.

WHO has had a traditional medicine programme for the last 20 years. It was developed in conjunction with the goal of health for all and the adoption of the primary health care approach. WHO recognizes that a large percentage of the population of the Western Pacific Region still uses traditional medicine to treat disease and maintain health. Figures show that around 50% of the population in some countries in the Region is using traditional medicine for different reasons. This is also the case elsewhere in the world. For example, studies show that use of traditional or complementary medicine in the U.S.A. has increased from 33.8% of the population in 1990 to 42.1% in 1997. It seems probable that interest in traditional medicine will continue to increase in the future.

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We support Member States in their efforts to bring the proper use of traditional medicine into the mainstream of general health service systems. WHO's involvement in traditional medicine is focused on our joint efforts with Member States for national policy development, regulation of traditional medicine, use of traditional medicine in supporting primary health care, research and information exchange. WHO supports only a few specific remedies and techniques used by traditional medicine, such as use of artemisinin and acupuncture. For example, use of artemisinin in some countries as a first line anti-malaria drug is supported by WHO.

In the case of acupuncture, in June 1997, a provisional list of 43 diseases and disorders that lend themselves to acupuncture treatment was drawn up by a WHO Interregional Seminar on Acupuncture, Moxibustion and Acupuncture Anaesthesia held in Beijing, China. However, the selection of those diseases and disorders was based on clinical experience and not necessarily on controlled clinical research. A number of resolutions adopted by the World Health Assembly and the Regional Committee for the Western Pacific have urged Member States to undertake research on traditional medicine and to improve cooperation between traditional and modern medicine, especially as regards the use of scientifically proven, safe and effective traditional remedies. However, lack of scientifically-based evidence limits our involvement in supporting the use of specific traditional remedies. We believe that we need to keep an open mind on traditional medicine. However, we would like to endorse a therapy with solid scientific evidence.

Long historical use of many forms of traditional medicine and experiences passed from generation to generation have demonstrated the effectiveness of traditional remedies. However, scientific research is needed to provide additional evidence of its safety and effectiveness. Scientific research will serve as the basis of our endorsement of the use of traditional remedies and techniques. The major tasks of this consultation meeting are, first, to review the outcome of previous research on traditional medicine and, second, to identify research priorities and sound research methods. By identifying a research strategy, we will be able to focus on the

Looking back over this century, it is clear that modern medicine developed very quickly in the last 100 years. However, if we look back over the whole millennium, traditional medicine represented main stream of health care to deal with the health problems of human beings. Although modern medicine has enabled us to make great advances, particularly in disease control, many threats to human health remain. Some of these are new threats, such as lifestyle-related diseases including drug abuse and depression.

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#### 4.1 A History of Metaphysics <sup>w</sup>

##### The Presocratics

Although metaphysics properly begins with Aristotle's search for the underlying principles of reality, he looked to the claims of the pre-Socratics as possible answers to deep questions such as "what is there?" and what are the causes behind everything.

Most of their pre-Socratic claims were speculations about the physical nature of the cosmos and its origins. In some ways, the pre-Socratics might be viewed as the earliest natural scientists, with their strong interest in physics, chemistry, astronomy, geology, meteorology, and even psychology. By contrast, Socrates would change the subject to ethical issues. It took Aristotle to return to cosmological, theological, and metaphysical issues first raised by the pre-Socratic philosophers and great authors like Homer and Hesiod.

The two great antagonist views were from Parmenides and Heraclitus. For Parmenides, "All is One," there is no such thing as nothing (the void of the atomists), and change is an illusion (all of Zeno's paradoxes of motion supported his master's claims).

For Heraclitus, by contrast, "All is Flux." There is nothing but change. "You can't step in the same river twice." The one great positive insight of Heraclitus was that behind all changes there are laws – the "Logos." He clearly anticipates the modern notion of the laws of nature that control all change.

Aristotle gives great credit to several pre-Socratic philosophers, starting with Thales of Miletus, for attempting "natural" explanations for phenomena where earlier thinkers had given only poetic, mythological, or theological stories. Although the explanations were very simple, they were as basic as could be. Thales said "All is Water." This means everything material now is somehow made from water. This is the sort of basic principle and discovery of basic elements of nature that Aristotle was after.

For Anaximander of Miletus, the first principle is a sort of indefinite and unbounded moving element. For Anaximenes, another Milesian, the primal element from which all is made is air. For his primal element, Heraclitus chose Fire, because unlike Thales's Water and Anaximenes' Air (and of course Earth), Fire is always rapidly changing.

Pythagoras gave Plato the idea that mathematics could supply the most fundamental explanations of reality, namely the Forms, the organization and arrangement of things in the universe.

Most other pre-Socratics were focused on material explanations, especially the atomists, Democritus and Leucippus, who were physical determinists, and Epicurus, who agreed about the atoms and void, but made the atoms swerve to add an element of indeterminism to events.

Socrates and Plato Considered as a metaphysicist, Plato's greatest contribution was to promote the Forms or "Ideas." Plato coined the Greek word for idea (ιδέα) from the past tense of the verb "to see." For Plato, ideas are something we have seen when souls made their great circuit of the heavens before coming to Earth.

Plato was inspired by Pythagoras. Other than Pythagoras, whose fundamental understanding of reality was based on mathematics, the other pre-Socratics were all materialists.

Socrates had no interest in the materialists and their physical theories. He wanted to understand the human being and ethical values. He famously insisted that "virtue is knowledge." Anyone doing an evil thing must be doing it out of ignorance of the Good.

Ironically, Socrates spent his life showing that very few, if any, people understand what it is to know anything.

## ARISTOTLE

Metaphysics has signified many things in the history of philosophy, but it has not strayed far from a literal reading of “beyond the physical.” The term was invented by the 1st-century BCE head of Aristotle’s Peripatetic school, Andronicus of Rhodes. Andronicus edited and arranged Aristotle’s works, giving the name Metaphysics (τα μετα τα φυσικα βιβλια), literally “the books beyond the physics,” perhaps the books to be read after reading Aristotle’s books on nature, which he called the Physics. The Greek for nature is physis, so metaphysical is also “beyond the natural.”

Proponents of modern naturalism deny the existence of anything metaphysical, which some regard as “supernatural.”

Aristotle never used the term metaphysics. For Plato, Aristotle’s master, the realm of abstract ideas was more “real” than that of physical. i.e., material or concrete, objects, because ideas can be more permanent (the Being of Parmenides), whereas material objects are constantly changing (the Becoming of Heraclitus).

Where Plato made his realm of ideas the “real world,” Aristotle made the material world the source of ideas as mere abstractions from common properties found in many concrete objects. Neoplatonists like Porphyry worried about the existential status of the Platonic ideas. Does Being exist? What does it mean to say “Being Is”?

In recent centuries then, metaphysical has become “beyond the material.” Metaphysics has become the study of immaterial things, like the mind, which is said to “supervene” on the material brain.

Metaphysics is a kind of idealism, in stark contrast to “eliminative” materialism. And metaphysics has failed in proportion to the phenomenal success of naturalism, the idea that the laws of nature alone can completely explain the contents of the universe.

The books of Aristotle that Andronicus considered “beyond nature” included Aristotle’s “First Philosophy” — ontology (the science of being), cosmology (the fundamental processes and original causes of physical things), and theology (is a god required as “first cause?”).

Aristotle’s Physics describes the four “causes” or “explanations” (aitia) of change and movement of objects already existing in the universe (the ideal formal and final causes, vs. the efficient and material causes). Aristotle’s metaphysics can then be seen as explanations for existence itself. What exists? What is it to be? What processes can bring things into (or out of) existence? Is there a cause or explanation for the universe as a whole?

In critical philosophical discourse, metaphysics has perhaps been tarnished by its Latin translation as “supernatural,” with its strong theological implications. But from the beginning, Aristotle’s books on “First Philosophy” considered God among the possible causes of the fundamental things in the universe. Tracing the regress of causes back in time as an infinite chain, Aristotle postulated a first cause or “uncaused cause.” Where every motion needs a prior mover to explain it, he postulated an “unmoved first mover.” These postulates became a major element of theology down to modern times.

Modern metaphysics is described as the study of the fundamental structure of reality, and as such foundational not only for philosophy but for logic, mathematics, and all the sciences. Some see a need for

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a foundation for metaphysics itself, called metametaphysics, but this invites an infinite regress of “meta all the way down (or up).”

Aristotle’s First Philosophy included theology, since first causes, new beginnings or genesis, might depend on the existence of God.

And there remain strong connections between many modern metaphysicians and theologians.

### THE STOICS

The Stoics divided their philosophy into three parts, logic, ethics, and physics.

Stoic logic included rhetoric, dialectic, grammar, epistemology and a philosophy of language. They developed theories of concepts, propositions, perception, and thought. Their logic was propositional, rather than the Aristotelian logic of syllogisms and predicates.

They defined five fundamental logical tools:

if p then q; p; therefore q (modus ponens);

if p then q; not q; therefore not-p (modus tollens);

either p or q; p; therefore not-q;

either p or q; not p; therefore q;

not both p and q; p; therefore not-q;

They had a strict interpretation of the principle of bivalence (Aristotle’s non-contradiction) and the law of the excluded middle. Every statement is either true or false, even statements about the future, as Diodorus Cronus maintained. But Aristotle denied the present truth or falsity of future statements with his analysis of future contingency (e.g., the Sea Battle).

The Stoic philosophy of language had a theory of signs long before Charles Sanders Peirce’s semiotics or Ferdinand de Saussure’s semiology. A signifier is an utterance of a name, a proper noun (onoma). The name-bearer is the object or concept that gets signified. The signification consists of the immaterial qualities that they called lekta, or ‘sayables,’ predicates that are true or false of the signified. The sayables are that which subsists (grows and decays), the “peculiar qualifications” of an individual.

Stoic physics included a wide range of topics including ontology, cosmology, theology, psychology, and metaphysics. The basic principles of the universe (Aristotle’s archai) are two - matter and pneuma, a breath or psyche. Pneuma combined two of the four fundamental elements, fire and air, representing hot and cold, as the active principle.

A passive principle combined earth and water as the basis for material objects. The Stoics regarded matter as “unqualified” and inert. Changes in the material in an object they described as generation and destruction (following Aristotle).

Pneuma is the cause (aition) of change in the peculiar qualities of an individual that constitute growth and decay, corresponding to the Platonic and Aristotelian forms and ideas that shape a material object. Pneuma endows the bodies with different qualities as a result.

The pneuma of inanimate object is called a ‘tenor’ (hexis, “having”).

What it “has” are qualities. Pneuma in plants has a (phusis, ‘nature’).

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Pneuma in animals the Stoics called soul (psychê) and in rational animals pneuma includes the commanding faculty (hêgemonikon)

The Stoics saw the identity of an individual as its immaterial bundle of properties or qualities that they called the “peculiarly qualified individual” or ἰδίως ποιὸν.

Zeno of Citium had formulated a psychological theory of how we acquire beliefs that are justified empirically and not by reasoning.

To form a belief is to give one’s assent to an “impression” (a phenomenal appearance: phantasia) about the material substrate of an object. Some perceptions are ‘cognitive’ or self-warranting. Assenting to them is a cognition or grasp (katalêpsis) of their objects. Assent should be restricted to these cognitive or kataleptic impressions.

Cognitive impressions give us infallible knowledge or wisdom. Our beliefs will then be constituted entirely by self-warranting perceptual cognitions. Zeno argued that a cognitive impression “stamps” the form of the object (its peculiar qualities) on our mind or soul (pneuma), just as we now see immaterial information embodied in the material brain, experiences recorded in our ERR.

Following Aristotle, the Stoics called the material substance or substrate ὑποκείμενον (or “the underlying”). This material substrate is transformed when matter is lost or gained, but they said it is wrong to call such material changes “growth (αὐξήσεις) and decay (φθίσεις).” The Stoics suggested they should be called “generation (γενέσεις) and destruction (φθοράς).” These terms were already present in Aristotle, who said that the form, the essence, is not generated.

He said that generation and destruction are material changes that do not persist (as does the Stoic peculiarly qualified individual).

“It is therefore obvious that the form (or whatever we should call the shape in the sensible thing) is not generated—generation does not apply to it—nor is the essence generated; for this is that which is induced in something else either by art or by nature or by potency. But we do cause a bronze sphere to be, for we produce it from bronze and a sphere; we induce the form into this particular matter, and the result is a bronze sphere... For if we consider the matter carefully, we should not even say without qualification that a statue is generated from wood, or a house from bricks; because that from which a thing is generated should not persist, but be changed. This, then, is why we speak in this way.”<sup>1</sup>

It is important to see that the Aristotelian view is very similar to the Stoic - that individuals are combinations of matter and form.

At times Aristotle made the matter the principle of individuation, at other times he stressed the immaterial qualities or “affections,” as did the Stoics, with their peculiarly qualified individual (ἰδίως ποιὸν).

1 Aristotle, *Metaphysics*, Book VII, § vii & viii

Is Aristotle here the source of the four Stoic genera or categories?

The term “substance” (οὐσία) is used, if not in more, at least in four principal cases; for both the essence and the universal and the genus are held to be the substance of the particular (ἐκάστου), and fourthly the substrate (ὑποκείμενον). The substrate is that of which the rest are predicated, while it is not itself

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predicated of anything else. Hence we must first determine its nature, for the primary substrate (ὑποκείμενον) is considered to be in the truest sense substance.

Aristotle clearly sees a statue as an integral combination of its form/shape and its matter/clay, not two distinct things, as Skeptics would claim. Now in one sense we call the matter (ὕλη) the substrate; in another, the shape (μορφή); and in a third, the combination.

Both matter and form and their combination are said to be substrate. of the two. By matter I mean, for instance, bronze; by shape, the arrangement of the form (τὸ σχῆμα τῆς ιδέας); and by the combination of the two, the concrete thing: the statue (ἀνδριάς).

Thus if the form is prior to the matter and more truly existent, by the same argument it will also be prior to the combination.<sup>2</sup>

The Academic Skeptics attacked the Stoics, saying Stoics were making single things into dual beings, two objects in the same place at the same time, but indistinguishable.

“. . . since the duality which they say belongs to each body is differentiated in a way unrecognizable by sense-perception. For if a peculiarly qualified thing like Plato is a body, and Plato's substance is a body, and there is no apparent difference between these in shape, colour, size and appearance, but both have equal weight and the same outline, by what definition and mark shall we distinguish them and say that now we are apprehending Plato himself, now the substance of Plato? For if there is some difference, let it be stated and demonstrated.”<sup>3</sup>

Many of the classic metaphysical puzzles are arguments over this dual nature of something as matter and form, especially Dion and Theon, Tibbles, the Cat, The Growing Argument, The Ship of Theseus, and The Statue and the Clay.

<sup>2</sup> Aristotle, *Metaphysics*, Book VII, § iii, 1-2

<sup>3</sup> Anonymous Academic treatise, *Oxyrhynchus Papyrus 3008* in *Stoic Ontology*,

*The Hellenistic Philosophers*, A. Long and D. Sedley, p.167

Modern metaphysicians mistakenly think that matter alone constitutes an entity.

## ACADEMIC SKEPTICS

Fundamentally, the Skeptics attempted to deny knowledge, including epistemology and metaphysics.

Arcesilaus, the sixth head or scholarch of the Platonic Academy.

Under him, the Academy returned to the Socratic method and engaged in negative dialectics that denied the possibility of knowledge (*akatalêpsia*). Arcesilaus realized that he could not say that he knows nothing without making a knowledge claim. This mitigated absolute skepticism.

The Academic Skeptics refused to accept any philosophical arguments that claimed to justify knowledge. Whatever reasons are used to justify something must themselves be justified, leading to an infinite regress. The Skeptics recommended that their followers therefore suspend (*epochê*) all judgments.

Most of Arcesilaus's best known arguments were dialectical attacks on the Stoics. His major Stoic opponent was Chrysippus, whose philosophy of "assent" was more or less the opposite of Arcesilaus' *epochê*. Stoic epistemology was more empirical than the logical and rational approach of the Skeptics,



which allowed them to generate several dialectical puzzles and paradoxes from the Stoic premises or first principles.

#### THE SCHOLASTICS

For medieval philosophers, metaphysics was understood as the science of the supersensible. Albertus Magnus called it science beyond the physical. Thomas Aquinas narrowed it to the rational cognition of God. John Duns Scotus disagreed, arguing that only study of the world can yield knowledge of God. Aquinas and Scotus can be seen as the founders of the great division in philosophy between continental rationalism and British empiricism.

It began as a theological dispute over the freedom of God. Does God have freedom of the will or is God constrained by Reason? If God must be rational, then one can deduce everything about the world by reasoning in an ivory tower. If God was free to create anything, knowledge requires an empirical investigation of the world.

Scholastic philosophers mostly returned metaphysics to the study of being in itself, that is, ontology, which again today is the core area of metaphysical arguments. In renaissance Germany, Christian Wolff broadened metaphysics to include psychology, along with ontology, cosmology, and natural or rational theology. In renaissance England, Francis Bacon narrowed metaphysics to the Aristotelian study of formal and final causes, separating it from natural philosophy which he saw as the study of efficient and material causes.

#### DESCARTES

René Descartes made a turn from what exists to knowledge of what exists. He changed the emphasis from a study of being to a study of the conditions of knowledge or epistemology.

Descartes was the origin of the mind-body problem. He famously divided the world into mind (the ideal realm of thoughts) and body (the material world). For him, the physical world was a deterministic machine, but our ideas and thoughts could be free (undetermined) and could change things in the material world (through the pineal gland in the brain, he thought).

Information philosophy restores an immaterial mind to the impoverished and deflated metaphysics that we have had since empiricism and naturalism rejected the dualist philosophy of René Descartes and its troublesome mind-body problem.

#### LEIBNIZ

Gottfried Leibniz had a vision of a universal ambiguity-free language based on a new symbol set, a *characterica universalis*, and a machine-like calculus ratiocinator that would automatically prove all necessary truths, true in "all possible worlds." Gottlob Frege called Leibniz's idea "a system of notation directly appropriate to objects." In the three hundred years since Leibniz had this vision, logical philosophers and linguistic analysts have sought those truths in the form of "truth-functional" propositions and statements formulated in words, but they have failed to find any necessarily "true" connection between words and objects.

Information philosophy uses such system of notation, not in words, but in bits of digital information. And the interconnected computers of the Internet are not only Leibniz's calculus ratiocinator, but humanity's storehouse of shared experiences and accumulated knowledge. Like the individual experience recorder and reproducer (ERR) in each human mind, the World Wide Web is our shared Knowledge Recorder and

Reproducer. Computer simulations of physical and biological processes are the best representations of human knowledge about the external world of objects.

Leibniz's Principle of Sufficient Reason says that every event has a reason or cause in the prior state of the world. This appears to commit him to a necessary determinism, but like the ancient compatibilist Chrysippus, Leibniz argued that some empirical things are contingent.

Leibniz formulated many logical principles that play a major role in current metaphysical debates.

One is his Principle of Contradiction (Aristotle's Principle of Non-Contradiction). A proposition cannot be true and false at the same time, and that therefore A is A and cannot be not A. That A is A follows from what Leibniz called the Identity of Indiscernibles, the idea that no differences are perceivable between identical things. This came to be known as Leibniz's Law.

The Metaphysics of Identity Leibniz calls identity of any object with itself as a primary truth.

"Primary truths are those which either state a term of itself or deny an opposite of its opposite. For example, 'A is A', or 'A is not not-A'; If it is true that A is B, it is false that A is not B, or that A is not-B'; again, 'Each thing is what it is', 'Each thing is like itself, or is equal to itself, 'Nothing is greater or less than itself—and others of this sort which, though they may have their own grades of priority, can all be included under the one name of 'identities'.

All other truths are reduced to primary truths by the aid of definitions—i.e. by the analysis of notions; and this constitutes a priori proof, independent of experience. I will give an example.

A proposition accepted as an axiom by mathematicians and all others alike is 'The whole is greater than its part', or 'A part is less than the whole'. But this is very easily demonstrated from the definition of 'less' or 'greater', together with the primitive axiom, that of identity. The 'less' is that which is equal to a part of another ('greater') thing. (This definition is very easily understood, and agrees with the practice of the human race when men compare things with one another, and find the excess by taking away something equal to the smaller from the larger.) So we get the following reasoning: a part is equal to a part of the whole (namely to itself: for everything, by the axiom of identity, is equal to itself). But that which is equal to a part of the whole is less than the whole (by the definition of 'less'); therefore a part is less than the whole.<sup>5</sup>

4. There are no two individuals indiscernible from one another...

Two drops of water or milk looked at under the microscope will be found to be discernible. This is an argument against atoms, which, like the void, are opposed to the principles of a true metaphysic.

5. These great principles of a Sufficient Reason and of the Identity of Indiscernibles change the state of metaphysics, which by their means becomes real and demonstrative; whereas formerly it practically consisted of nothing but empty terms.

6. To suppose two things indiscernible is to suppose the same thing under two names." 6 Information philosophy restores the metaphysical existence of a Cartesian realm that is "beyond the natural" in the sense since at least David Hume and Immanuel Kant that the "laws of Nature" completely determine everything that exists, everything that happens, everything that exists in the phenomenal and material world.

5 Leibniz.. 'Primary Truths,' in Philosophical Writings, ed. G. H. R. Parkinson, p.87

6 Leibniz. "Correspondence with Clarke," in *Philosophical Writings*, p.216

While information philosophy is a form of Descartes' idealism/ materialism dualism, it is not a substance dualism. Information is a physical, though immaterial, property of matter. Information philosophy is a property dualism.

Abstract information is neither matter nor energy, although it needs matter for its embodiment and energy for its communication.

Information is immaterial. It is the modern spirit, the ghost in the machine. It is the mind in the body. It is the soul. And when we die, our personal information and its communication perish. The matter remains.

### The Empiricists

For empiricists in England like John Locke and David Hume, metaphysics included the "primary" things beyond psychology and the "secondary" sensory experiences. They denied that any knowledge was possible apart from experimental and mathematical reasoning. Hume thought the metaphysics of the Scholastics is sophistry and illusion.

If we take in our hand any volume; of divinity or school metaphysics, for instance; let us ask, Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matter of fact and existence?

No. Commit it then to the flames: for it can contain nothing but sophistry and illusion.<sup>7</sup>

Hume criticized the Theory of Ideas of his fellow British empiricists John Locke and George Berkeley. If, as they claim, knowledge is limited to perceptions of sense data, we cannot "know" anything about external objects, even our own bodies. But Hume said that we do have a "natural belief" in the external world and causal laws.

Hume's idea of the mind having a "feeling" (not a reason) that leads to natural beliefs became Kant's "second Copernican revolution" that the mind projects "concepts of the understanding" and "forms of perception" on the external world.

7 Hume (1748) *Enquiry Concerning Human Understanding*, section XII

### KANT

In Germany, Immanuel Kant's *Critiques of Reason* claimed a transcendental, non-empirical realm he called noumenal, for pure, or a priori, reason beyond or behind the phenomena. Kant's phenomenal realm is deterministic, matter governed by Newton's laws of motion. Kant's immaterial noumena are in the metaphysical nonempirical realm of the "things themselves" along with freedom, God, and immortality. Kant identified ontology not with the things themselves but, influenced by Descartes, what we can think – and reason - about the things themselves. In either case, Kant thought metaphysical knowledge might be impossible for finite minds.

Kant reacted to the Enlightenment, to the Age of Reason, and to Newtonian mechanics (which he probably understood better than any other philosopher), by accepting determinism as a fact in the physical world, which he called the phenomenal world. Kant's goal was to rescue the physical sciences from the devastating and unanswerable skepticism of David Hume, especially Hume's assertion that no number of "constant conjunctions" of cause and effect could logically prove causality.

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Kant called Hume's assertion the "crux metaphysicorum." If Hume is right, he said, metaphysics is impossible. Kant's Critiques of Reason were to prove that Hume was wrong.

Neither Hume's Idea of "natural belief" nor Kant's "concepts of the understanding" are the apodeictic and necessary truths sought by metaphysicians. They are abstract theories about the world, whose information content is validated by experiments. Hume's idea of the mind having a "feeling" (not a reason) that leads to natural beliefs became Kant's "second Copernican revolution" that the mind projects "concepts of the understanding" and "forms of perception" on the external world.

Kant's main change in the second edition of the Critique of Pure Reason was an attempted refutation of this British idealism (B 274).

He thought he had a proof of the existence of the external world.

Kant thought it a scandal in philosophy that we must accept the existence of material things outside ourselves merely as a belief, with no proof.

"The only thing which might be called an addition, though in the method of proof only, is the new refutation of psychological idealism, and the strict (and as I believe the only possible) proof of the objective reality of outer intuition. However innocent idealism may be considered with respect to the essential purposes of metaphysics (without being so in reality), it remains a scandal to philosophy, and to human reason in general, that we should have to accept the existence of things outside us (from which after all we derive the whole material for our knowledge, even for that of our inner sense) merely on trust, and have no satisfactory proof with which to counter any opponent who chooses to doubt it." 8

Kant's noumenal world outside of space and time is a variation on Plato's concept of Soul, Descartes' mental world, and the Scholastic idea of a world in which all times are present to the eye of God. His idea of free will is a most esoteric form of compatibilism. Kant's decisions are made in our souls outside of time and only appear determined to our senses, which are governed by our built-in a priori forms of sensible perception, like space and time, and built-in categories or concepts of intelligible understanding.

## POSITIVISMS

The motto of the information philosopher is "beyond logic and language." Specifically, we must show that logical positivism and logical empiricism, whose attack on metaphysics began as early as Auguste Comte in the early nineteenth century, have done nothing to solve any of the deep problems about the fundamental nature of reality.

Positivism is the claim that the only valid source of knowledge is sensory experience, reinforced by logic and mathematics. Together these provide the empirical evidence for science. Some see this as the "naturalizing" of epistemology.

Ernst Mach's positivism claimed that science consists entirely of "economic summaries" of the facts (the results of experiments).

He rejected theories about unobservable things like Ludwig 8 Kant (1787) Preface to Second Edition, Critique of Pure Reason, B XL

Boltzmann's atoms, just a few years before Albert Einstein used Boltzmann's own work to prove that atoms exist.

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This “linguistic turn” and naturalizing of epistemology can be traced back to Kant and perhaps even to Descartes. The logical positivism of Bertrand Russell and Ludwig Wittgenstein claimed that all valid knowledge must be scientific knowledge, though science is often criticized for “reducing” all phenomena to physical or chemical events. The logical positivists may have identified ontology not with the things themselves but what we can say - using concepts and language - about the things themselves.

The idea that all knowledge can be described by true statements began with Leibniz’s vision of a universal ambiguity-free language based on a new symbol set, a characterica universalis, and a machinelike calculus ratiocinator that would automatically prove all necessary truths, true in “all possible worlds.”

In the three hundred years since Leibniz had this vision, logical philosophers and linguistic analysts following Gottlob Frege have sought those truths in the form of “truth-functional” propositions and statements formulated in words, but they have failed to find any necessarily “true” connection between words and objects.

Frege had an enormous influence on Russell, who shared Frege’s dream of reducing mathematics, or at least arithmetic, to logic. The great Principia Mathematica of Russell and Alfred North Whitehead was the epitome of that attempt. It failed with the discovery of Russell’s Paradox and later Gödel’s incompleteness proof.

Russell hoped to work with the young Ludwig Wittgenstein to develop the “logical atoms,” the simplest propositions, like “red, here, now,” upon which more complex statements could be built. He saw the major problems of philosophy as problems of language and logic, that complete understanding of the natural world could be obtained through a complete set of logical propositions.

Wittgenstein’s Tractatus Logico-Philosophicus was the height of logical positivism - the idea that all knowledge, including all science, can be represented in logically true statements or propositions. The Tractatus includes the first hint of its own failure, with its dark comments about how little can be said.

“The totality of true propositions is the total natural science (or the totality of the natural sciences).” 9

“We feel that even if all possible scientific questions be answered, the problems of life have still not been touched at all.” 10

Logical positivists and the logical empiricists of the Vienna Circle not only asserted that all knowledge is scientific knowledge derived from experience, i.e., from verifiable observations, they also added the logical analysis of language as the principal tool for solving philosophical problems. They divided statements into those that are reducible to simpler statements about experience and those with no empirical basis. These latter they called “metaphysics” and “meaningless.”

While language is too slippery and ambiguous to serve as a reliable tool for philosophical analysis, quantitative information, which underlies all language use, is such a tool.

Logical positivists and empiricists mistakenly claim that physical theories can be logically deduced (or derived) from the results of experiments. A second flaw in all empiricist thinking since Locke et al. is the mistaken idea that all knowledge is derived from experience, written on the blank slate of our minds, etc. In science, this is the flawed idea that all knowledge is ultimately experimental. To paraphrase Kant and Charles Sanders Peirce, theories without experiments may be empty, but experiments without theories are blind.

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By contrast, the modern hypothetical-deductive method of science maintains that theories are not the logical (or inductive) consequences of experiments. As Einstein put it, after shaking off his early enthusiasm for Mach's positivistic ideas, theories are "free inventions of the human mind." Theories begin with hypotheses, mere guesses, "fictions" whose value is shown only when they can be confirmed by the results of experiments. Again and again, theories have predicted behaviors in as yet untested physical conditions that have surprised scientists, often suggesting new experiments that have extended the confirmation of theories, which again surprise us. As pure information, scientific knowledge is far beyond the results of experiments alone.

9 Wittgenstein (1922) *Tractatus Logico-Philosophicus*, 4.11

10 *Ibid*, 6.52

### LINGUISTIC ANALYSIS

The central figure in the transition from logical empiricism to linguistic analysis was Ludwig Wittgenstein.

Modern anglo-american metaphysicians think problems in metaphysics can still be treated as problems in language, potentially solved by conceptual analysis. They are today still analytical language philosophers, despite a general failure of words to describe objects in any deeply meaningful way. Language is too flexible, too ambiguous and full of metaphor, to be a diagnostic tool for metaphysics.

We must go beyond logical puzzles and language games to the underlying information contained in a concept, and in the material things that embody the concept. And it is now transparently obvious that the description of objects, aside from the scientific discovery of the natural laws governing their behavior, is best done with information, with computer simulations and dynamic animations of material objects, both inanimate and living.

Although many metaphysicians claim to be exploring the fundamental structure of reality, the overwhelming fraction of their writings is about problems in analytic linguistic philosophy, that is to say problems with words. Many questions appear to be verbal quibbles. Others lack meaning or have no obvious truth value, dissolving into paradoxes.

Based on current practice, we can sharpen the definition of a metaphysician to be an analytic language philosopher who discusses metaphysical problems.

By contrast, a metaphysicist is an information philosopher who is familiar with modern physics, chemistry, and biology, as well as the interpretation of quantum physics. The fundamental structure of reality today must be built on an understanding of quantum reality.

For example, the wave function of a quantum particle is pure information. Interpretations of quantum mechanics are fundamentally metaphysical, problems for a metaphysicist. What are we to say about a field of human inquiry whose problems have hardly changed over two millennia? Metaphysicians today still analyze logic and language in the puzzles and paradoxes that have been used for millennia to wrestle with metaphysical problems.

Debates between metaphysicians have changed relatively little in recent centuries, despite great advances in human knowledge.

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Most of these problems are the result of assuming that the contents of the universe are pure material. They depend on the idea that material alone constitutes complete knowledge - the identity – of any physical thing.

Analytic language philosophers are largely materialist, even eliminative materialists, many denying the existence of mind, for example. They are also mostly determinist, denying the existence of alternative possibilities in our actual universe, while investing a great deal of their energy in the study of inaccessible possible worlds (in each of which there are also no possibilities, only actuality).

The new light thrown by information philosophy on many metaphysical problems, puzzles, and paradoxes comes from establishing an immaterial, yet physical, realm of ideas alongside the material realm. No physical object is completely known without understanding its form in terms of quantifiable information. Information philosophy goes beyond logical puzzles and language games.

### MODAL LOGIC

Although the modes of necessity, possibility, and impossibility had been part of Aristotelian logic (indeed, even future contingency was analyzed), Gottlob Frege's logic of propositional functions included only one mode - simple affirmation and denial of statements and the universal and existential quantifiers. Bertrand Russell's *Principia Mathematica* followed Frege and ignored other modalities.

Although the Scholastics considered some questions of modality, it was the Harvard logician C.I. Lewis who advanced beyond Aristotle and developed the first modern version of modal logic. He wrote two textbooks, *A Survey of Symbolic Logic* in 1918 and *Symbolic Logic*, written with C. H. Langford, in 1927.

Lewis was critical of the *Principia* for its non-intuitive concept of "material implication," which allows irrelevant, even false premises  $p$  to imply any true consequences. Lewis proposed that implication must include "intensional" and meaningful, even causal, connections between antecedents and consequences, a revision he called "strict implication."

Lewis's inclusion of intension (meaning) was criticized by Willard Van Orman Quine, who thought symbolic logic should be limited to "extensional" arguments, based on the members of classes in a set theory basis for logic. In Quine's 1943 article, "Notes on Existence and Necessity," (revised to appear ten years later as part of the chapter "Reference and Modality" in his landmark book *From a Logical Point of View*, Quine saw no need for "intensional" statements in mathematics. Truth values are all that are needed, he says "These latter are intensional compounds, in the sense that the truth-value of the compound is not determined merely by the truth-value of the components...any intensional mode of statement composition...must be carefully examined in relation to its susceptibility to quantification...It is known, in particular, that no intensional mode of statement composition is needed in mathematics." 11

Quine saw the need for serious restrictions on the significant use of modal operators.<sup>12</sup> Just three years later, Ruth Barcan Marcus, publishing under her maiden name Ruth C. Barcan, added a modal axiom for possibility to the logical systems  $S_2$  and  $S_4$  of C.I. Lewis.

Lewis was pleased with her work, although by that time, he had given up his own work on logic.

Quine, however, reacted negatively to Marcus's suggestion in 1946 that modal operators (Lewis's diamond ' $\Diamond$ ' for possibly, and a box ' $\Box$ ' for "necessarily" suggested by Barcan's thesis adviser, F. B. Fitch) could be transposed or interchanged with universal and existential quantification operators (an inverted A ' $\forall$ ' for "for all" and a reversed E ' $\exists$ ' for "for some"), while preserving the truth values of the statements or propositions.

Marcus asserted the commuting of quantification and modal operators in what A.N. Prior called the "Barcan formulas."

$\forall x \Box Fx \supset \Box \forall x Fx. \forall x \Diamond Fx \supset \Diamond \forall x Fx.$

$\exists x \Box Fx \supset \Box \exists x Fx. \exists x \Diamond Fx \supset \Diamond \exists x Fx.$

11 Quine (1943) 'Notes on Existence and Necessity,' in Journal of Philosophy, 40

p.123-125

12 Ibid., p,127

In his 1943 article, Quine had generated a number of apparently paradoxical cases where truth value is not preserved when "quantifying into a modal context." But these can all be understood as a failure of substitutivity for putatively identical entities.

Information philosophy has shown that two distinct expressions that are claimed to be identical are never identical in all respects. So a substitution of one expression for the other may not be identical in the relevant respect. Such a substitution can change the meaning, the intension of the expression. Quine called this "referential opacity." This is a problem that can be solved with unambiguous references.

Frege had insisted that we must look past the reference or designator (his "Bedeutung") to the sense ("Sinn") of the reference, which is just what Lewis was attempting to do with his attempted addition of intension and "strict" implication...

Perhaps Quine's most famous paradox of referential opacity is this argument about the number of planets:

"(1) 9 is necessarily greater than 7 for example, is equivalent to

'9 > 7' is analytic and is therefore true (if we recognize the reducibility of mathematics to logic)..." 13

Given, say that

(2) The number of planets is 9, we can substitute 'the number of planets' from the non-modal statement (2) for '9' in the modal statement (1) which gives us the false modal statement

(3) The number of planets is necessarily greater than 7.

But this is false, says Quine, since the statement

(2) The number of planets is 9 is true only because of circumstances outside of logic.

Marcus analyzed this problem in 1961, which she called the "familiar example,"

13 Quine (1943) 'Notes on Existence and Necessity,' p.121

"(27) 9 eq the number of planets is said to be a true identity for which substitution fails in

(28)  $\Box(9 > 7)$  for it leads to the falsehood

(29)  $\Box(\text{the number of planets} > 7).$



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Since the argument holds (27) to be contingent ( $\sim\Box(9 \text{ eq the number of planets})$ ), 'eq' of (27) is the appropriate analogue of material equivalence and consequently the step from (28) to (29) is not valid for the reason that the substitution would have to be made in the scope of the square." 14

The failure of substitutivity can be understood by unpacking the use of "the number of planets" as a purely designative reference, as Quine calls it.

In (27), "the number of planets" is the empirical answer to the question "how many planets are there in the solar system?" It is not what Ruth Barcan Marcus would call a "tag" of the number 9. The intension of this expression, its reference, is the "extra-linguistic" fact about the current quantity of planets.

The expression '9' is an unambiguous mathematical (logical) reference to the number 9. It refers to the number 9, which is its meaning (intension).

We can conclude that (27) is not a true identity, unless before "the number of planets" is quantified, it is qualified as "the number of planets qua its numerosity, as a pure number." Otherwise, the reference is "opaque," as Quine describes it. But this is a problem of his own making.

As Marcus says, when we recognize (27) as contingent,  $\sim\Box(9 \text{ eq the number of planets})$ , it is not necessary that 9 is equal to the number of planets, its reference to the number 9 becomes opaque.

The substitution of a possible or contingent empirical fact that is not "true in all possible worlds" for a logical-mathematical concept that is necessarily true is what causes the substitution failure.

When all three statements are "in the scope of the square" ( $\Box$ ), when all have the same modality, we can "quantify into modal con- 14 Marcu (1961) Modalities and Intensional Languages," p. 313 texts," as Quine puts it. Both expressions, '9' and 'the number of planets, qua its numerosity,' will be references to the same thing, They will be identical in one respect, qua number. They will be "referentially transparent."

The Necessity of Identity In her third article back in 1947, "The Identity of Individuals," Barcan had first proved the necessity of identity. This result became a foundational principle in the modern incarnation of Leibniz's "possible worlds" by Saul Kripke and David Lewis.

Her proof combined a simple substitution of equals for equals and Leibniz's Law.

Quine described this in his 1953 "Reference and Modality" (p.153) as in the form

$(x)(y) (x = y) \supset \Box (x = y)$ , reading "for all x and for all y, if "x = y," then necessarily "x = y."

Quine found this relationship in the 1952 textbook, Symbolic Logic, by F. B. Fitch, who was Ruth Barcan's thesis adviser. Although Fitch mentions her work in his foreword, he does not attribute this specific result to her where he presents it. His proof is based on the assumption of substitutability, which he calls "identity elimination."

23.4 (1)  $a = b$ , (2)  $\Box[a = a]$ , then (3)  $\Box[a = b]$ , by identity elimination.15

Then in 1961, Marcus published a very brief proof of her claim, using Leibniz's Law relating identicals to indiscernibles.

"In a formalized language, those symbols which name things will be those for which it is meaningful to assert that I holds between them, where 'I' names the identity relation... If 'x' and 'y' are individual names then (1)  $x I y$

Where identity is defined rather than taken as primitive, it is customary to define it in terms of indiscernibility, one form of which is (2)  $x \text{ Ind } y =_{df} (\phi)(\phi x \text{ eq } \phi y)$ " 16

15 Fitch (1952) Symbolic Logic, p.164

16 Marcus (1961) Modalities and Intensional Languages,' p. 305

Statement (2) says that the indiscernibility of  $x$  from  $y$ , by definition means that for every property  $\phi$ , both  $x$  and  $y$  have that same property,  $\phi x \text{ eq } \phi y$ .

A few years after Marcus' 1961 presentation, David Wiggins developed a five-step proof of the necessity of identity, using Leibniz'

Law, as had Marcus. He did not mention her.

#### DAVID WIGGINS ON IDENTITY

David Wiggins and Peter Geach debated back and forth about the idea of "relative identity" for many years after Geach suggested it in 1962.

Ruth Barcan Marcus published her original proof of the necessity of identity in 1947 and repeated her argument at a 1961 Boston University colloquium.

Whether Wiggins knew of Marcus's 1961 presentation is not clear.

He should have known of her 1947 paper, and his work is similar to her 1961 derivation (which uses Leibniz's Law). Wiggins gives no credit to Marcus, a pattern in the literature for the next few decades and still seen today ignoring the work of female philosophers.

Saul Kripke clearly modeled much of his four-step derivation after Wiggins, especially his criticism of the derivation as "paradoxical".

Kripke gives no credit to either Marcus or Wiggins for the steps in the argument, but his quote from Wiggins, that such a claim makes contingent identity statements impossible, when they clearly are possible, at least tells us he has read Wiggins. And we know Kripke heard Marcus's presentation at the 1961 B. U. colloquium.

Here is Wiggins in 1965,

"I WANT to try to show (i) that there are insuperable difficulties any term + relation + term or subject + predicate analysis of statements of identity, (ii) that, however important and helpful the sense-reference distinction is,<sup>1</sup> this distinction does not make it possible to retain the relational or predicative analysis of identity statements, and (iii) that a realistic and radically new account is needed both of ' = ' and of the manner in which nounphrases occur in identity-statements.

Till we have such an account many questions about identity and individuation will be partly unclear, and modal logics will continue without the single compelling interpretation one might wish.

The connexion of what I am going to say with modal calculi can be indicated in the following way. It would seem to be a necessary truth that if  $a = b$  then whatever is truly ascribable to  $a$  is truly ascribable to  $b$  and vice versa (Leibniz's Law). This amounts to the principle (1)  $(x)(y)((x = y) \supset (\phi)(\phi x \supset \phi y))$

Suppose that identity-statements are ascriptions or predications.!

Then the predicate variable in (1) will apparently range over properties like that expressed by '( = a)'<sup>2</sup> and we shall get as consequence of (1)

$$(2) (x) (y) ((x = y) \supset (x = x \cdot \supset \cdot y = x))$$

There is nothing puzzling about this. But if (as many modal logicians believe), there exist de re modalities of the form

$\Box (\phi a)$  (i.e., necessarily ( $\phi a$ )), then something less innocent follows. If '( = a) ' expresses property, then ' $\Box (a=a)$ ', if this too is about the object a, also ascribes something to a, namely the property  $\Box ( = a)$ . For on a naive and pre-theoretical view of properties, you will reach an expression for a property whenever you subtract a noun-expression with material occurrence (something like ' a ' in this case) from a simple declarative sentence. The property  $\Box ( = a)$  then falls within the range of the predicate variable in Leibniz's Law (understood in this intuitive way) and we get (3)  $(x) (y) (x = y \supset (\Box (x = x) \cdot \supset \cdot \Box (y = x)))$

Hence, reversing the antecedents, (4)  $(x) (y) (\Box (x = x) \cdot \supset \cdot (x = y) \supset \Box (x = y))$

But  $(x) (\Box (x=x))$  ' is a necessary truth, so we can drop this antecedent and reach

$$(5) (x)(y)((x = y) \cdot \supset \cdot \Box(x = y))$$

Now there undoubtedly exist contingent identity-statements.

Let 'a = b' be one of them. From its simple truth and (5) we can derive ' $\Box(a = b)$ '. But how then can there be any contingent identity-statements?...

1 G. Frege, 'On Sense and Reference ', Translations from the Philosophic Writings of Gottlob Frege, ed. P. T. Geach and M. Black (Oxford, 1952), pp. 56-4]

2 Quotation marks are used under the convention that they serve to form a designation of whatever expression would result in a particular case from rewriting the expression within the quotation-marks with genuine constants in the place of free variables and dummy-expressions." 17

Saul Kripke on Identity Kripke does not cite Wiggins directly as the source of the argument, but just after his exposition above, Kripke quotes David Wiggins as saying in his 1965 "Identity-Statements"

Now there undoubtedly exist contingent identity-statements. Let a = b be one of them. From its simple truth and (5) [= (4) above] we can derive ' $\Box( a = b)$ '. But how then can there be any contingent identity statements?<sup>18</sup>

Kripke goes on to describe the argument about b sharing the property " = a" of being identical to a, which we read as merely selfidentity, and so may Kripke.

"If x and y are the same things and we can talk about modal properties of an object at all, that is, in the usual parlance, we can speak of modality de re and an object necessarily having certain properties as such, then formula (1), I think, has to hold. Where x is any property at all, including a property involving modal operators, and if x and y are the same object and x had a certain property F, then y has to have the same property F. And this is so even if the property F is itself of the form of necessarily having some other property G, in particular that of necessarily being identical to a certain object. [viz., = x]

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Well, I will not discuss the formula (4) itself because by itself it does not assert, of any particular true statement of identity, that it is necessary. It does not say anything about statements at all. It says for every object  $x$  and object  $y$ , if  $x$  and  $y$  are the same object, then it is necessary that  $x$  and  $y$  are the same object.

And this, I think, if we think about it (anyway, if someone does not think so, I will not argue for it here), really amounts to something very little different from the statement (2). Since 17 Wiggins (1965) *Identity Statements*, in *Analytical Philosophy* pp.40-41

18 Kripke (1971) *'Identity and Necessity'*, p. 136

$x$ , by definition of identity, is the only object identical with  $x$ , " $(y)(y = x \supset Fy)$ " seems to me to be little more than a garrulous way of saying ' $Fx$ ' and thus  $(x)(y)(y = x \supset Fx)$  says the same as  $(x)Fx$  no matter what ' $F$ ' is — in particular, even if ' $F$ ' stands for the property of necessary identity with  $x$ . So if  $x$  has this property (of necessary identity with  $x$ ), trivially everything identical with  $x$  has it, as (4) asserts. But, from statement (4) one may apparently be able to deduce various particular statements of identity must be necessary and this is then supposed to be a very paradoxical consequence." 19

The indiscernibility of identicals claims that if  $x = y$ , then  $x$  and  $y$  must share all their properties, otherwise there would be a discernible difference. Now Kripke argues that one of the properties of  $x$  is that  $x = x$ , so if  $y$  shares the property of ' $= x$ ,' we can say that  $y = x$ .

Then, necessarily,  $x = y$ .

However, two distinct things,  $x$  and  $y$ , cannot be identical, because there is some difference in extrinsic external information between them. Instead of claiming that  $y$  has  $x$ 's property of being identical to  $x$  (" $= x$ ") , we can say only that  $y$  has  $x$ 's property of being selfidentical, thus  $y = y$ . Then  $x$  and  $y$  remain distinct in at least this intrinsic property as well as in extrinsic properties like their distinct positions in space.

### DAVID LEWIS ON IDENTITY

David Lewis, the modern metaphysician who built on Leibniz' possible worlds to give us his theory of "modal realism," is just as clear as Leibniz on the problem of identity.

"[W]e should not suppose that we have here any problem about identity. We never have. Identity is utterly simple and unproblematic.

Everything is identical to itself; nothing is ever identical to anything else except itself. There is never any problem about what makes something identical to itself, nothing can ever fail to be. And there is never any problem about what makes two things identical; two things never can be identical." 20

Except, says an information philosopher, "in some respects."

19 Kripke (1971) *'Identity and Necessity'*, p. 137-138

20 Lewis (1988) *'Counterparts or Double Lives,' On the Plurality of Worlds*, p.192

### MODAL LOGIC AND POSSIBLE WORLDS

In the "semantics of possible worlds," necessity and possibility in modal logic are variations of the universal and existential quantifiers of non-modal logic. Necessary truth is defined as "truth in all possible worlds." Possible truth is defined as "truth in some possible worlds." These abstract notions about "worlds" — sets of propositions in universes of discourse — have nothing to do with physical possibility, which depends on the existence of real contingency.

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Propositions in modal logic are required to be true or false. Contingent statements that are neither true or false are not allowed. So much for real possibilities, which cannot be based on truths in some possible worlds.

Historically, the opposition to metaphysical possibility has come from those who claim that the only possible things that can happen are the actual things that do happen. To say that things could have been otherwise is a mistake, say eliminative materialists and determinists.

Those other possibilities simply never existed in the past.

The only possible past is the past we have actually had.

Similarly, there is only one possible future. Whatever will happen, will happen. The idea that many different things can happen, the reality of modality and words like “may” or “might” are used in everyday conversation, but they have no place in metaphysical reality. The only “actual” events or things are what exists. For “presentists,” even the past does not exist. Everything we remember about past events is just a set of “Ideas.” And philosophers have always been troubled about the ontological status of Plato’s abstract “Forms,” entities like the numbers, geometric figures, mythical beasts, and other fictions.

Traditionally, those who deny possibilities in this way have been called “Actualists.”

In the last half-century, one might think that metaphysical possibilities have been restored with the development of modal logic.

So-called modal operators like “necessarily” and “possibly” have been added to the structurally similar quantification operators “for all” and “for some.” The metaphysical literature is full of talk about “possible worlds.”

The most popular theory of “possible worlds” is David Lewis’s “modal realism,” an infinite number of worlds, each of which is just as actual (eliminative materialist and determinist) for its inhabitants as our world.

It comes as a shock to learn that every “possible world” is just as actual, for its inhabitants, as our world is for us. There are no alternative possibilities, no contingency, that things might have been otherwise, in any of these possible worlds. Every world is as physically deterministic as our own.

Modal logicians now speak of a “rule of necessitation” at work in possible world semantics. The necessarily operator ‘ $\Box$ ’ and the possibly operator ‘ $\Diamond$ ’ are said to be “duals” - either one can be defined in terms of the other ( $\Box = \sim\Diamond\sim$ , and  $\Diamond = \sim\Box\sim$ ), so either can be primitive. But most axiomatic systems of modal logic appear to privilege necessity and de-emphasize possibility. They rarely mention contingency, except to say that the necessity of identity appears to rule out contingent identity statements.

The rule of necessitation is that “if p, then necessarily p,” or  $p \supset \Box p$ .

It gives rise to the idea that if anything exists, it exists necessarily.

This is called “necessitism.” The idea that if two things are identical, they are necessarily identical, was “proved” by Ruth Barcan Marcus in 1947, by her thesis adviser F.B. Fitch in 1952, and by Willard Van Orman Quine in 1953. David Wiggins in 1965 and Saul Kripke in 1971 repeated the arguments, with little or no reference to the earlier work.

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This emphasis on necessitation in possible-world semantics leads to a flawed definition of possibility that has no connection with the ordinary and technical meanings of possibility.

Modal logicians know little if anything about real possibilities and nothing at all about possible physical worlds. Their possible worlds are abstract universes of discourses, sets of propositions that are true or false. Contingent statements, that may be true or false, like statements about the future, are simply not allowed.

They define necessary propositions as those that are “true in all possible worlds.” Possible propositions are those that are only “true in some possible worlds.” This is the result of forcing the modal operators  $\Box$  and  $\Diamond$  to correspond to the universal and existential quantification operators for all  $\forall$  and for some  $\exists$ . But the essential nature of possibility is the conjunction of contingency and necessity.

Contingency is not impossible and not necessary ( $\sim\sim\Diamond \wedge \sim\Box$ ).

We propose the existence of a metaphysical possibilism alongside the notion necessitism.

“Actual possibilities” exist in minds and in quantum-mechanical “possibility functions” It is what call “actual possibilism,” the existence in our actual world of possibilities that may never become actualized, but that have a presence as abstract entities that have been embodied as ideas in minds. In addition, we include the many possibilities that occur at the microscopic level when the quantummechanical probability-amplitude wave function collapses, making one of its many possibilities actual.

Actual possibles can act as causes when an agent chooses one as a course of action.

Why Modal Logic Is Not Metaphysics Modal logicians from Ruth Barcan Marcus to Saul Kripke, David Lewis, and the necessitist Timothy Williamson are right to claim metaphysical necessity as the case in the purely abstract informational world of logic and mathematics. But when information is embodied in concrete matter, which is subject to the laws of quantum physics and ontological chance, the fundamental nature of material reality is contingent and possibilist.

There are two reasons for the failure of modal logic to represent metaphysical reality. The first is that information is vastly superior to language as a representation of reality. The second is that truths and necessity cannot be the basis for metaphysical possibility.

Possible world semantics is a way of talking about universes of discourse - sets of true propositions - that considers them “worlds.”

It may be the last gasp of the attempt by logical positivism and analytic language philosophy to represent all knowledge of objects in terms of words.

Ludwig Wittgenstein’s core idea from the Tractatus had the same goal as Gottfried Leibniz’s ambiguity-free universal language, The totality of true propositions is the total natural science (or the totality of the natural sciences).<sup>21</sup>

Information philosophy has shown that the meaning of words depends on the experiences recalled in minds by the Experience Recorder and Reproducer. Since every human being has a different set of experiences, there will always be variations in meaning about words between different persons, as Gottlob Frege pointed out.

The goal of intersubjective agreement in an open community of inquirers hopes to eliminate those differences, but representation of knowledge in words will always remain a barrier and source of

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philosophical confusion. The physical sciences use analytic differential equations to describe the deterministic and continuous time evolution of simple material objects, which is a great advance over ambiguous words. But these equations fail at the quantum level and where discrete digital messages are being exchanged between biological interactors. Moreover, while mathematical methods are precise, their significance is not easily grasped.

The very best representation of knowledge is with a dynamic and interactive model of an information structure, what Wittgenstein imagined as a “picture of reality.” Today that is a three-dimensional model implemented in a digital computer with a high-resolution display, even a virtual reality display. While computer models are only “simulations” of reality, they can incorporate the best “laws” of physics, chemistry, and biology. And since computer models are pure information, abstract ideas, they seem “beyond physical” and reaching the metaphysical.

Sadly, modal logicians have never proposed more than a handful of specific propositions for their possible worlds, and many of these generated controversies, even paradoxes, about substitutivity of presumed identicals in modal contexts. Word and object have degenerated to words and objections. By comparison, molecular models of the biological machines that have evolved to keep us alive and let us think can be “shown,” not said, as Wittgenstein imagined.

21 Wittgenstein (1922) *Tractatus Logico-Philosophicus*, 4.11

His later work can be summed up as the failure of language to be a picture of reality. Information philosophy gives us that picture, not just a two-dimensional snapshot, but a lifelike animation and visualization of the fundamental nature of metaphysical reality.

Our information model incorporates the irreducible ontological chance and future contingency of quantum physics. The claimed “necessity of identity,” and the “necessary a posteriori” of natural and artificial digital “kinds” with identical intrinsic information content are just more “ways of talking.” There is no necessity in the physical world.

Truths and necessity are ideal concepts “true in all possible worlds,” because they are independent of the physical world. They have great appeal as eternal ideas and “outside space and time.”

Possible worlds semantics defines necessity as “propositions true in all possible worlds” and possibility as “propositions true in some possible worlds.” There is no contingency here, as the only allowed propositions are either true or false. Modal logicians have little knowledge of our actual physical world and zero factual knowledge, by definition, of other possible worlds. The possible worlds of “modal realism” are all actual worlds, deterministic and eliminatively materialist. There are no possibilities in possible worlds, even in the “many worlds” of physics.

A necessitist metaphysics is only a half-truth. Without metaphysical possibility, we cannot account for the information in the universe today, nor can we explain the cosmic, biological, and human creation of new information in our free and open future.

Necessitism and possibilism are perhaps another congruence with the great duals of idealism and materialism.

## THE RETURN OF METAPHYSICS AND ITS PARADOXES

In the last few decades, metaphysicians have celebrated the failures of logical positivists and logical empiricists, especially their loud claims that metaphysics is nonsense or meaningless.

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The sad failure of analytic language philosophy to solve any meaningful problems in philosophy has also encouraged a number of philosophers to return to metaphysical questions.

But can they make any progress on the fundamental nature of reality if their tools are still only logic and language analysis? The information philosopher thinks not. We must go beyond logical puzzles and language games to underlying information structures.

Now academic philosophers have never failed to teach all the classic problems, paradoxes, and puzzles, mostly presenting them as insoluble, which gives them a form of job security, but this must be discouraging for would-be future philosophers.

The well-known lack of progress in philosophy compared to the advances in knowledge made in the sciences is more than an embarrassment, it is in some cases a scandal, as the information philosopher has tried to show.

Even in the sciences, the deference shown to philosophers by the special sciences, when it comes to the fundamental nature of reality, has held back those sciences.

Notably, the deep belief in natural laws that are deterministic has held back the essential role of chance in physics and biology. The claims of eliminative materialism have held back progress on the mind-body problem and the free will problem in psychology.

Indirectly caused by philosophical views, these are scandals in the special sciences themselves. The philosophical notion that many genuine problems about reality must be taught as mysteries, not only paradoxes and puzzles, is a disservice to generations of students, who come away not only confused, but ill-informed.

Consider these negative comments from a recent important study of metametaphysics, the foundations of metaphysics itself.

“When one is first introduced to a dispute that falls within the purview of metaphysics — or perhaps even after years of thinking hard about it — one can experience two sorts of deflationary intuitions. First one may sense that nothing is really at issue between the disputants. The phenomenology here resembles that of countering merely ‘verbal’ or ‘terminological’ disputes in ordinary conversation...

We come now to the second type of intuition that is elicited by metaphysical disputes. Even when we sense that something might really be at issue when it comes to a question of metaphysics, we may still get the impression that the answer is more or less trivial — it can be known by drawing out consequences of truisms that we all accept or by reflecting on a conceptual framework that we all share.

These two deflationary intuitions threaten the robustly realist approach that is dominant today — at least among analytic philosophers who specialize in metaphysics. Most contemporary metaphysicians think of themselves as concerned, not primarily with the representations of language and thoughts, but with the reality that is represented.” 22

Information philosophy hopes to reinflate metaphysics by adding back the immaterial ideas that have been eliminated by naturalists and materialists, with their claims that the world is causally closed.

Information physics shows that the universe is open, continually expanding and generating creative new possibilities for the future.



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Careful analysis of the information content (the abstract form that shapes a concrete object, arranging its parts) has given us plausible solutions for several classic paradoxes and puzzles in metaphysics.

Information is neither matter nor energy, although it needs matter for its embodiment and energy for its communication. It is immaterial. It is the modern spirit, the ghost in the machine.

Living things use information to control the flows of matter and energy through their bodies. Information is the mind in the body.

It is the soul. And when we die, our personal information and its communications perish. The matter remains.

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### 4.1.1 Spiritual Medicine <sup>w</sup>

Constructing and deconstructing the terminology of spirit: a journey back to the Greek roots

#### ABSTRACT

Over the past few decades, literature related to spirituality presents rising interest within researchers. Many tried to encode the term but there is not a widely agreed definition of spirituality. My interest in investigating the terminology led me to some hypothesis. The antiquity of the word must be important in order to understand how the word was originally used. The purpose of this short communication is giving flesh to the notion of spirituality as it goes into the heart of Ancient Greek philosophy in order to encode the term. A large body of literature acknowledges the connectedness between spirituality and the Greek word πνεύμα (pneuma) which means spirit, mind, soul, and breathing. The semantic root of the English term spirituality is the Latin word spirare which meant to breathe, to blow and to live. Spirituality does elicit an experiential sense by force of the words' own signification and etymology. Based on the definitions of spirit outlined in this manuscript; the spirit animates not only human beings but all beings. This analysis shows that since "air" is an extension of breath, spirituality must possibly be as vital as the air we breathe. It must be our 'Breath of Life'. Air has also been ascribed divine attributes, so spirituality could also be the 'Breath of God'. This 'Breath' could help people understand answers to ultimate questions about life, about meaning and about the relationship to the sacred, the transcendent, and the Divine.

#### INTRODUCTION

Over the past few decades, literature related to spirituality presents rising interest within researchers. The role and meaning of spirituality has been discussed in various worldwide publications. Many tried to encode the term but there is not a widely agreed definition of spirituality. When discussing about this debate Dreyer and Bennett (2006) very aptly say "... there is also the issue of definition. There are hundreds from which to choose". The word of spirituality is on countless lips today. A religious language usually refers to the notion of spirituality as to what is not material; several metaphors are also used in order to define the term; the dualistic view of matter and spirit seems to have influenced several other researchers; philosophical paradigms are still trying to capture the definition; while a universal approach of the term that touches upon us all also attempts to lead a path. No borders exist and so this debate can proceed incessantly.

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Due to this large number of definitions and approaches an unresolved question still remains to be answered. What is spirituality? For someone unfamiliar with the term things get even more confusing. People might have heard about spirituality but are not really sure what it is. Many researchers have the desire to attribute a universal essence to the meaning of spirituality. Sometimes this desire ignores the historical and cultural traces and differences in the uses of the term. Spirituality is not an invention of these last few decades. Kielkiewicz and Dalzell (2014) stated that spirituality was known and practiced by generations of people down through the ages. According to Miner-Williams (2006) spirituality has been discussed since the earliest of times, and many hundreds of philosophies have explored this phenomenon. The phenomenon is used and understood very differently in today's context in comparison to its original root. "Currently, there is no 'gold standard' for the definition of spirituality that can be established independent of the historical use of the term in the English language or the Greek or Latin roots from which the word 'spirituality' is derived".

Two recent researches on Greek Chronic Obstructive Pulmonary Disease (COPD) patients and COPD caregivers showed that the antiquity of the word (Greek: πνεύμα) could be important in order to understand how it was originally used. My interest in investigating this kind of cognition led me to some hypothesis. I am not aware if there is "some kind of ancient 'authentic' or 'true' spirituality" but I believe that in order to encode the term we must go back to Ancient Greeks ways of thinking. There were we can actually identify the root of the word spirituality.

### AIM

The purpose of this short communication is giving flesh and historical grounding to the notion of spirituality. It mainly goes into the heart of Ancient Greek philosophy in order to encode the term. It is based on a detailed search of work published in the database of Pubmed and Google Scholar using terms that included spirituality, spirit, Ancient Greek and Roman philosophy, religiosity, air, and breath. Maybe this analysis could help readers come closer to the original meaning of the word while trying to explain the phenomenon of spirituality.

### CONSTRUCTING AND DECONSTRUCTING SPIRITUALITY

Many researchers try to use shortened or narrower definitions in order to decode spirituality. Spirituality has been described as a variable of holism as it involves a sense of connectedness to other people, nature, and life as a whole. Moving away from this holistic perspective one "may cut of spirituality from the half of its body". Waaijman also wonders "...whether this intense interest is not a Procrustes bed".

Holistic spirituality is a necessity for our postmodern world. Holism comes from the word 'whole' which is perceived in multiple meanings such as the entire, total, undivided, undamaged, or a complete entity.

The word 'whole' comes from the Greek word 'όλος'. This totality of the terminology was probably captured from Anaximenes. Anaximenes (Ἀναξίμενης; in Greek) of Miletus (c. 585–528 B.C.E.) was a pre-Socratic Greek philosopher. Anaximenes is best known for his doctrine that air is the source of all things. He proposed air as the First Cause from which all else comes and conceived "air" as an extension of breath.

Joshua Mark states that "to the Greeks of the time, air was comparable to soul and, just as one's breath gave an individual life, so air, Anaximenes claimed, gave life to all observable phenomena". While describing the same phenomenon it is stated that "by 'air,' Anaximenes meant some original element that can give life (breath or soul) to human beings.

Some may wonder about how all these are related to spirituality. Hence, why not start unfolding Ariadne's mite. Carrette and King identify that although the term 'spirituality' developed from earlier Greek and

Latin roots, there are significant dimensions to these earlier uses that are lost once one defines the spiritual in narrowly privatized terms.

I believe that spirituality leads on to its own ancient path; it is not a trend that changes yearly. Did this 'genuine' or 'ancient' spirituality come from the transfiguration of a previously existed spirituality? Probably not, it proved its existence incessantly and it still is.

A large body of literature acknowledges the connectedness between spirituality and the Greek word πνεύμα (pneuma). The Greek term πνεύμα (pneuma) reveal the linguistic root of the word.

The Greek word for spirituality is 'πνευματικότητα' (=πνευματικότητα). Πνευματικότητα comes from the Greek word πνεύμα (pneuma) which means spirit, mind, soul and breathing. The root πνευ- talked about the dynamic movement of air describing a person's breath, which meant they were alive (breath equals life). Pneuma, "air in motion, breath, wind," is equivalent to aer (ἀήρ, "air") as the element from which all else originated. Anaximenes concept of "air," seems to explain both spiritual and physical phenomena. "Ὅϊον ἡ ψυχὴ ἢ ἡμετέρα ἀήρ οὔσα συγκρατεῖ ἡμᾶς, καὶ ὅλον τὸν κόσμον πνεῦμα καὶ ἀήρ περιέχει" [(Aét. I 3, 4 (D. 278)]. (= Just as our soul (psyche), being air (aer), holds us together, so do breath (pneuma) and air (aer) encompass the whole world.

Based on the definitions of spirit outlined above; it seems that for the Greeks, spirit animates not only human beings but all beings.

In the classical societies of Greece and Rome, spirituality also maintained a central place. Breath was also associated with "soul," the source of life, in many ancient cultures, including the Romans. The modern English term 'spirituality' refers to spirit and comes from the Latin spiritualitas. Spiritualitas springs from the noun spiritus which means 'the breath of life'. The semantic root of spiritus is the word spirare which meant to breathe, to blow and to live.

It seems that spirituality does elicit an experiential sense by force of the words' own etymology and signification.

If we suppose that spirituality is all around us, as air, is it then, possible to see the affect this "phenomenon"? First and foremost, someone will argue that we cannot see spirituality. Maybe this statement is not quite true because I personally believe that we must conceive spirituality both outside and inside the boundaries of our senses.

Spirituality was strongly associated with air. "Air can be thought of as a kind of neutral stuff that is found everywhere, and is available to participate in physical processes".

In Hermes Trismegistus we can read the following dialogue between Hermes and Asclepius talking about air.

-Hermes. Is not the air a body?

-Asclepius. A body it is.... The air is body, and this is the body which permeates through all the entities, and permeating fills all things.

Spirituality was strongly associated with breath and breathing. Our daily reality is both spiritual and material. Breathing for example is the most basic of the voluntary behaviors of living beings and it requires no volition at all. Fontana progresses to discuss breathe as a force that unifies the unseen and the seen dimensions. Kourie and Ruthenberg stated that "the earth, the body and materiality breathes with an organic life and mystery".

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Some may wonder; are we able come to an awareness of the mystery of God, or the Divine or find answers to ultimate questions about life based on air and breathing? Is this approach too simplistic to be taken under consideration?

Anaximenes ascribed to air divine attributes. He wrote the Gods and the Divine derived from air. With the spread of Christianity and its concept of the Holy Spirit, spirit and spirituality became associated with a religion. It seems that most religions endeavour to inculcate a sense of the spirituality in their believers. Christians for instance have thought of the Holy Spirit as 'the breath of God'. The Book of Genesis depicts the Spirit of God at the beginning of creation as a wind. The words wind and breath are linked together as God breathes life into Adam. '... And the Lord God formed a man's body from the dust of the ground and breathed into it the breath of life. And the man became a living person.' (Genesis 2, 2).

Nowadays, there are many ways that people describe spirituality. Assembling my thoughts on this topic I asked myself, "Is it may be time to tighten the definition?"

I may take a risk but I would like to give a brief reference of some characteristics which I believe could be possibly accounted to spirituality. I will also try to convey some ideas on the effect of spirituality on people's lives.

1. Spirituality takes its place in the world of every-day experience.
2. Spirituality is not static; it changes forms and shapes, it "flows" around us, affecting and changing our daily lives.
3. Spirituality is an inexhaustible source.
4. Spirituality has no center, edges, boundaries, or limits.
5. Spirituality is continuous. It has infinite moments and signs since the dawn of time.
6. Spirituality requires no volition but gives us back everything.
7. Spirituality is our 'inner guardian' because is as vital as breath and breathing.

This 'Breath' probably helps people understand answers to ultimate questions about life, about meaning and about the relationship to the sacred, the transcendent, and the Divine.

Since "air" is an extension of breath; spirituality must possibly be as vital as the air we breathe.

It must be our Breath of Life.

Since air has been ascribed divine attributes; spirituality could also be the Breath of God. So is this 'Breath of God' equal (=) with the 'Breath of Life'?

Although there are numerous modern scholars that are addressing this relationship between spirituality and breath many may argue with this approach. Some may also wonder if this is the only definitive meaning of spirituality and if it has to be so strict?

Questions and answers about spirituality are not absent in other cultures, and philosophies. Spirituality is not separated from the spheres of human and other forms of life. Unfortunately, some key issues in Greek philosophy tend to be forgotten. I believe that this ancient knowledge on the specific terminology could be our leading path. There is no need to change a deeply rooted ancient belief about spirit and spirituality by simply treating it as being too simplistic. Going back to Ancient Greeks' ways of thinking about spiritual ideas in order to decode the definition of spirituality is to everyone's great benefit.

## CONCLUSION

Maybe the terminology of spirituality is confusing for many people. Different people from different backgrounds describe spirituality differently. Diving into Greek philosophy and exploring the antiquity of the word helps us to understand how the word was originally used. Some of these things may not speak to you at all but there are many reasons for exploring spirituality. Fuller understanding of the phenomenon requires further exploration. The Greek path of spirituality could take people on an interior journey in order to meet and connect with the Breath of their Lives.

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### **4.1.2 CRYSTAL HEALING is a Metaphysics Diploma course <sup>w</sup>**

#### HISTORY

The therapeutic use of crystals is not a new or alternative healing method. The art of healing with gems is thousands of years old. Evidence that gemstones were used to heal disease can be found from the most ancient civilisations. They were also considered to have protective and talismanic properties, and to keep evil spirits away.

Crystal amulets, talismans and charms have often been found in prehistoric burial grounds. Such items were considered essential for the wellbeing of the dead. The legendary land of Atlantis (50 000 BC) also features prominently in crystal history. Crystals in Atlantis were used for communication, to store energy and to provide light and heat. The Atlantians also kept secret records on or in quartz crystals. This, they believed, would ensure that such records would remain intact forever, with no risk of destruction through age or local catastrophe.

Use of crystals for healing can be found in Sumerian writings and Indian vedic texts (4 000 BC). Vedic naturopathic medicine is known as Ayurveda. Ayurveda also makes use of crystal healing in the form of elixirs, pastes and powders made from gemstones. In the first Chinese medical book, written 5 000 years ago by Shen Nung, the Red Emperor, detailed descriptions of gemstones and their influence on the human body can be found.

In the Bible, crystals are mentioned at least 200 times. There are strict instructions about the crystals to be used in the breastplate that God had instructed Moses to produce for Aaron, the priest.

In Egypt, the tomb of Tutankhamun shows the reverence with which the ancient Egyptians regarded jewels. They believed that, in addition to indicating the wealth and majesty of the pharaoh, the stones possessed mystical charms to protect him in the after-life. Tutankhamun's sarcophagus was made of quartzite. Within the linen bandages that swathed his body were 143 bejewelled amulets.

In the 12th Century, Hildegard van Blingen (1098 – 1179) composed the *Physika*, which dealt with gemstones in a comprehensive fashion. This lady developed entirely new ways of healing with gems. Paracelsus (1493 – 1541) published a book called *On Minerals* in which he distinguished between chemical formulae and the elemental powers that reside within stones. Famous Greek, Roman and Arabic doctors and scholars wrote of the power of gems, which played an important role in their methods of healing. In the middle ages a book was published, called *Liber Lapidu seu de Gemmis*, which provided an overview of sixty gems and their therapeutic properties. This book was a bestseller and was translated into four languages. It went through fourteen editions and was published from 1511 to 1799.

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In America, both the Mayans and Indians used crystals as a means to diagnose illness as well as to cure it. Indians of the Cherokee tribe also used crystals for divination. Medicine men in American Indian tribes claimed to be able to foresee the future by gazing into the depths of large faceted crystals, just as today's fortune tellers gaze into crystal balls. The Mayans also used obsidian slabs to foretell the future.

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### 4.2 The History of Naturopathic Medicine <sup>ϕ</sup>

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#### HISTORY AND ORIGINS OF NATUROPATHIC MEDICINE

Naturopathic medicine is both an ancient and a modern tradition of medicine within the United States and Europe. It was formed officially at the beginning of the 20th century by physicians wishing to bring various traditions of classical and folk medicine into a modern scientific framework. Using the foundation of core principles that continue to define naturopathic medicine these doctors combined the best of European and American folk herbalism, Eclectic herbal medicine, homeopathy, hydrotherapy and hygiene, healing diets and nutrients, fasting and nature cure, exercise and spinal manipulation. At the time of naturopathy's birth into a formal profession, Dr. Benedict Lust, one of its founders, declared that all types of doctors were welcome to call themselves naturopaths as long as their practice was consistent with these shared underlying principles.

CURRENT DEFINITION OF NATUROPATHIC MEDICINE

Today the American Association of Naturopathic Physicians defines naturopathic medicine as a blend of centuries-old natural non-toxic therapies with current advances in the study of health and human systems, covering all aspects of family health from prenatal to geriatric care. Naturopathic medicine concentrates on whole patient wellness – the medicine is tailored to the patient and emphasizes prevention and self-care.

Naturopathic medicine attempts to find the underlying cause of the patients' condition rather than focusing solely on symptomatic relief. Thus, the core principles of naturopathic medicine have generally been agreed upon as:

1. The Healing Power of Nature, or in Latin: *Vis Medicatrix Naturae*, which is the fundamental observations that our human bodies are part of nature and that the force of life itself is healing. The ancient Greek word "physis" refers to this vital force of nature within all living organisms and is the root for such words as physician, physics and physique. Before the 20th century this approach to medicine was called Vitalistic; in the language of modern science it parallels the emerging knowledge of self-organizing processes, ecology and systems theory. Thus, naturopathy has always focused on health as much as disease, stimulating, enhancing and supporting your body's inherent ability to heal as much as the virus, bacteria, injury or illness. We know what it feels like to be vital and vigorous. Naturopathy focuses on tapping into these deep resources and using them to heal our illnesses and keep us well.

2. Treat the Cause, or in Latin: *Tolle Causam*. Many symptoms are expressions of the body's attempt to heal itself and their suppression will not address the root causes of dysfunction, illness and disease. Quite simply, treating symptoms is always important in medicine but deep and lasting healing, the medical outcomes that we all really seek are based on discovering the causes of dysfunction and disease and changing them in a fundamental and lasting way. This also inherently means that each individual needs to be treated in a unique and evolving therapeutic process that reflects their history and physical characteristics, addresses their weaknesses, stresses and strengths, and creates opportunities for their own personal growth, self-discovery and transformation. Thus, a digestive problem such as heartburn needs to be treated but opens the doorway to looking at stress patterns, movement, tension and exercise, healing and stressful foods, and new tools for feeling what is good for us. Treating the cause removes blockages that have been preventing the natural healing processes from occurring and thus unleashes our inner healing momentum and empowers us to learn from our illnesses and difficulties to live better, stronger, healthier, more creative lives. Preventive medicine isn't just about reducing risks and avoiding disease, it is really about learning to hear your body's feedback and discovering ways to not just feel "OK," but to feel better.

3. Do No Harm, or in Latin: *Primum no nocere*. Hippocrates declared: "First, Do no harm" as the most important principle of medicine back in ancient Greece. Naturopathic medicine embraces a wide range of non-toxic therapies including lifestyle counseling and exercise programs, diet and nutrition, herbs and homeopathy, spinal manipulation to minor surgery. In fact, almost anything form of medical care can be consistent with naturopathic principles as long as it does not harm the patient or interfere with their body's inherent healing processes. Minimizing side effects can come not from using weak medicines but should result from personalized care specifically directed toward your individual needs and possibilities within an attentive and skillful doctor-patient relationship using modern scientific tools but also taking the time to listen and provide a healing touch.

4. Treat the Whole Person. Health and wellness, dysfunction or disease all result from a complex and ever-changing interaction of physical, emotional, dietary, genetic, environmental, lifestyle and other factors. Naturopathic physicians treat the whole person, taking all of these factors into account to craft an

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individualized, evolving and dynamic therapeutic process that doesn't just treat your "problem" but focuses on you, the person who happens to have that "problem".

5. Doctor as Teacher. The literal meaning of "Doctor" is "teacher". Thus, while a naturopathic physician recognizes the need to "fix" problems at a mechanical or symptomatic level, the greater opportunity for true and lasting healing arises when we, as patients, learn from our health problems and change how we live so that we avoid the situations that contributed to our distress and live our lives in more aware, healthy and nurturing ways. Thus, a naturopathic physician aspires to engender a safe and healing environment for a supportive and challenging therapeutic relationship.

### THE EDUCATION, TRAINING AND LICENSING OF NATUROPATHIC PHYSICIANS

Naturopathic physicians (N.D.) are general practitioners trained as specialists in natural medicine. They are most highly trained practitioners in the broadest scope of naturopathic medical modalities. A naturopathic physician has a Doctorate of Naturopathic Medicine degree from a four-year graduate level naturopathic medical college with admission requirements comparable to those of conventional medical schools. In addition to the standard medical curriculum of basic medical sciences and conventional diagnostics, naturopathic students must do extensive coursework and clinical study in natural therapeutics such as therapeutic nutrition, botanical medicine, homeopathy, hydrotherapy, naturopathic manipulative therapy, pharmacology, counseling and minor surgery. Many NDs have additional training and certification in acupuncture and home birthing. Naturopathic Colleges are certified and regulated by The Council on Naturopathic Medical Education, accredited by that body and/or state or regional accrediting bodies, and recognized by the US Department of Education. Naturopathic physicians practice throughout the United States and Canada, as well as The United Kingdom, Australia, India and other countries. In the U.S., NDs are licensed in thirteen states, as well as the District of Columbia, Puerto Rico and Virgin Islands, each of which has a set of statutes and regulations, as well as a state medical board, which govern and oversee the practices of naturopathic physicians in that state. In many states, NDs are licensed as primary care providers with the authority to order lab tests, prescribe a broad range of prescription medications, and sign birth and death certificates.

Naturopathic Physicians practice a wide range of natural therapeutics, including:

#### CLINICAL NUTRITION.

Nutrition and therapeutic use of food have always been a fundamental aspect of naturopathic medicine. A growing body of scientific knowledge on diet and nutrition validates this approach to promoting health, preventing illness and treating disease. Many medical conditions can be treated effectively, with fewer complications and adverse effects, using foods, customized diets, and nutritional supplements. Proper nutrition for the individual provides the foundation of preventive medicine and a healthy lifestyle.

#### HOMEOPATHY.

This powerful system of medicine was first developed in its modern form in Germany over 200 years ago. Homeopathic medicines act to stimulate and organize the body's innate healing response.

#### BOTANICAL MEDICINE.

Plants can be powerful medicines. A growing body of scientific research demonstrates that herbs can often be as effective, and sometimes superior to, pharmaceutical drugs in clinical situations. When used appropriately, they are safe and effective.

#### PHYSICAL MEDICINE.

Naturopathic physicians are trained in techniques of massage, manipulation, and physical therapeutics, which are used to treat injury and pain.

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### **4.3 The history of Naprapathy<sup>w</sup>**

Naprapathy was founded in the beginning of the 20s century by Dr. Oakley Smith. He was from the beginning working with chiropractors, but quickly abandoned the thought that ‘fetlocks can jump out of their place’, the so called “subluxation-theory”, which at the time was the customary theory within chiropractics. Instead, Smith believed that the reason behind dysfunction and pain in the neuromusculoskeletal system (muscles, joints, bone structure, connective tissue and nervous system) could, amongst other things, be explained by modifications in the connective tissues and states of tension in surrounding soft tissues. Today’s science can explain that big parts of his conclusions were correct. As a direct effect of Smith’s realisation that the causes of pain and other discomfort was much more complex than just fetlocks and their position, he widened the treatment techniques to also cover soft tissue techniques. This characterize the naprapathy of today when you combine specific joint techniques with soft tissue techniques such as massage.

### **4.4 The History of Physical Therapy<sup>w</sup>**

Physical therapy (or Physiotherapy) is a health care profession primarily concerned with the remediation of impairments and disabilities and the promotion of mobility, functional ability, quality of life and movement potential through examination, evaluation, diagnosis and physical intervention carried out by Physical Therapists (known as Physiotherapists in most countries). In addition to clinical practice, other activities encompassed in the physical therapy profession include research, education, consultation and administration.

Physical Therapists play an important role in today’s healthcare system. As trusted healthcare experts in restoring and improving motion, they contribute to their patients’ quality of life by keeping them healthy, fit, and active and, in many instances, avoiding surgery and long-term use of prescription medications. In work-related injuries, physical therapy is often the last course of treatment utilized before the patient is released to return to work and placed at Maximum Medical Improvement. Although most people are familiar with the term physical therapy, few know of how this very important profession came to be.

From the elite athlete, person with back or neck pain to someone having a spinal cord injury or stroke, the profession of physical therapy now treats a multitude of musculoskeletal injuries and disorders. Physical Therapy, like modern medicine, has constantly evolved over the last century, now able to treat problems successfully better than ever before. Here is a small look at the history of physical therapy.

Physicians like Hippocrates and later Galenus are believed to have been the first practitioners of physical therapy, advocating massage, manual therapy techniques and hydrotherapy to treat people in 460 BC. After the development of orthopedics in the eighteenth century, machines like the Gymnasticon were developed to treat gout and similar diseases by systematic exercise of the joints, similar to later developments in physical therapy.

The earliest documented origins of actual physical therapy as a professional group date back to Per Henrik Ling, “Father of Swedish Gymnastics,” who founded the Royal Central Institute of Gymnastics (RCIG) in 1813 for massage, manipulation, and exercise. The Swedish word for physical therapist is sjukgymnast = someone involved in gymnastics for those who are ill. In 1887, PTs were given official registration by Sweden’s National Board of Health and Welfare. Other countries soon followed. In 1894 four nurses in Great Britain formed the Chartered Society of Physiotherapy. The School of Physiotherapy at the

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University of Otago in New Zealand in 1913 and the United States' 1914 Reed College in Portland, Oregon, which graduated "reconstruction aides."

Modern physical therapy was established in Britain towards the end of the 19th century. Soon following American orthopedic surgeons began treating children with disabilities and began employing women trained in physical education, massage, and remedial exercise. These treatments were applied and promoted further during the Polio outbreak of 1916. During the First World War women were recruited to work with and restore physical function to injured soldiers, and the field of physical therapy was institutionalized. In 1918 the term "Reconstruction Aide" was used to refer to individuals practicing physical therapy.

The first school of physical therapy was established at Walter Reed Army Hospital in Washington D.C. following the outbreak of World War I.

Research catalyzed the physical therapy movement. The first physical therapy research was published in the United States in March 1921 in "The PT Review." In the same year, Mary McMillan organized the Physical Therapy Association (now called the American Physical Therapy Association (APTA) and which currently represents approximately 76,000 members throughout the United States. The APTA defines physical therapy as: "clinical applications in the restoration, maintenance, and promotion of optimal physical function."

In 1924, the Georgia Warm Springs Foundation promoted the field by touting physical therapy as a treatment for polio. Treatment through the 1940s primarily consisted of exercise, massage, and traction. Manipulative procedures to the spine and extremity joints began to be practiced, especially in the British Commonwealth countries, in the early 1950s. Later that decade, physical therapists started to move beyond hospital-based practice to outpatient orthopedic clinics, public schools, colleges/universities health centers, geriatric settings (skilled nursing facilities), rehabilitation centers and medical centers.

Specialization for Physical Therapy in the United States occurred in 1974, with the Orthopaedic Section of the APTA being formed for those Physical Therapists specializing in Orthopedics. In the same year, the International Federation of Orthopaedic Manipulative Therapy (IFOMT) was formed, which has heralded change and progress in manual therapy worldwide ever since. During this period, the eastern United States were greatly influenced by the training of Norway's Freddy Kaltenborn (Osteopathic Physician, Chiropractor, Physical Therapist, and Athletic Trainer. Mariano Rocabado, PT of Chile, who specialized in treatment of Temporomandibular disorders, also brought much new information and continues to contribute to our profession. Australia's Geoffrey Maitland, PT initially influenced the training of manual therapy on the west coast.

In the 1980's, the explosion of technology and computers led to more technical advances in rehabilitation. Some of these advances have continued to grow, with computerized modalities such as ultrasound, electric stimulators, and iontophoresis with the latest advances in therapeutic cold laser, which finally gained FDA approval in the United States in 2002. Other advances, such as electronic resistive exercise known as Isokinetics, have fallen out of popularity for various reasons, despite having their place within the profession.

The 1990's brought much attention to manual therapy, with formal residency programs becoming more numerous. During the summer of 1991, Norwegian manual therapist Freddy Kaltenborne helped create the American Academy of Orthopedic Manual Physical Therapy (AAOMPT). Dr. Stanley Paris, PT and Ola Grimsby, PT were among the founding members. This organization was a means for physical therapists to band together with a common specialization in manual and manipulative therapy.

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In the 21st century, the profession has continued to grow substantially, by further developing the scientific basis for its services, and by creating entry-level education standards to meet the demands of today's health care system. This vital work will continue as the health care system is reformed.

Today's physical therapy profession boasts confident, accomplished, professional practitioners on the cutting edge of health care, and it consistently ranks as one of the international most desirable careers. These practitioners help individuals of all ages to have optimal functioning and quality of life, while ensuring patient safety and applying evidence to provide efficient and effective care. Extensive education, clinical expertise, and "hands on" approach give Physical Therapist a unique, individualized approach. When you are in the hands of a physical therapist, you have a plan of care that is safe and appropriate and customized to meet your individual needs.

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### 4.5 Osteopathic Philosophy and History <sup>w</sup>

Michael A. Seffinger, Hollis H. King, Robert C. Ward, John M. Jones, iii, Felix J. Rogers, Michael M. Patterson

#### HOW IT ALL BEGAN

Andrew Taylor Still (1828–1917) was an American frontier doctor who was convinced that 19th century patient care was severely inadequate. This resulted in an intense desire on his part to improve surgery, obstetrics, and the general treatment of diseases, placing them on a more rational and scientific basis.

As his perspectives and clinical understanding evolved, Still created an innovative system of diagnosis and treatment with two major emphases. The first highlights treatment of physical and mental ailments (i.e., diseases) while emphasizing the normalization of body structures and functions. Its hallmark was a detailed knowledge of anatomy that became the basis for much of his diagnostic and clinical work, most notably palpatory diagnosis and manipulative treatment.

The second emphasizes the importance of health and well being in its broadest sense, including mental, emotional, and spiritual health, and the avoidance of alcohol and drugs, and other negative health habits.

#### ORIGINS OF OSTEOPATHIC PHILOSOPHY

Historically, Still was not the first to call attention to inadequacies of the health care of his time.

Hippocrates (c. 460– c. 377 B.C.E.), Galen (c. 130–c. 200), and Sydenham (1624–1689) are others. Each, in his own way, criticized the inadequacies of existing medical practices, while focusing contemporary thinking on the patient's natural ability to heal.

In addition, Still was deeply influenced by a number of philosophers, scientists, and medical practitioners of his time. There is also evidence he was well versed in the religious philosophies and concepts of the Methodist, Spiritualist, and Universalist movements of the period.

Following the loss of three children to spinal meningitis in 1864, Still immersed himself in the study of the nature of health, illness, and disease. His goal was to discover definitive methods for curing and preventing all that ailed his patients. He implicitly believed there was "a God of truth," and that: "All His works, spiritual and material, are harmonious. His law of animal life is absolute. So wise a God had certainly placed the remedy within the material house in which the spirit of life dwells." Furthermore, he believed he could access these natural inherent remedies "by adjusting the body in such a manner that the

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remedies may naturally associate themselves together, hear the cries, and relieve the afflicted". In this quest, he combined contemporary philosophical concepts and principles with existing scientific theories. Always a pragmatist, Still accepted aspects of different philosophies, concepts, and practices that worked for him and his patients. He then integrated them with personal discoveries of his own from in depth studies of anatomy, physics, chemistry, and biology. The result was the formulation of his new philosophy and its applications. He called it: "Osteopathy."

Still's moment of clarity came on June 22, 1874. He writes, "I was shot, not in the heart, but in the dome of reason". "Like a burst of sunshine the whole truth dawned on my mind, that I was gradually approaching a science by study, research, and observation that would be a great benefit to the world". He realized that all living things, especially humans, were created by a perfect God. If humans were the embodiment of perfection, then they were fundamentally made to be healthy. There should be no defect in their structures and functions.

Since he believed that "the greatest study of man is man," he dissected numerous cadavers to test his hypothesis. He believed that if he could understand the construction (anatomy) of the human body, he would comprehend Nature's laws and unlock the keys to health. Still found no flaws in the concepts of the body's well-designed structure, proving to him that his hypothesis was correct.

A corollary to Still's revelation was that the physician does not cure diseases. In his view, it was the job of the physician to correct structural disturbances so the body works normally, just as a mechanic adjusts his machine. In *Research and Practice* he wrote, "The God of Nature is the fountain of skill and wisdom and the mechanical work done in all natural bodies is the result of absolute knowledge. Man cannot add anything to this perfect work nor improve the functioning of the normal body. Man's power to cure is good as far as he has a knowledge of the right or normal position, and so far as he has the skill to adjust the bones, muscles and ligaments and give freedom to nerves, blood, secretions and excretions, and no farther. We credit God with wisdom and skill to perform perfect work on the house of life in which man lives. It is only justice that God should receive this credit and we are ready to adjust the parts and trust the results".

While Still practiced the orthodox medicine of his day from 1853 to 1879, including the use of oral medications such as purgatives, diuretics, stimulants, sedatives, and analgesics, and externally applied salves and plasters, once he began using his new philosophical system he virtually ceased using drugs. This occurred after several years where he experimented with combinations of drugs and manipulative treatment. In addition, he compared his results with those of patients who received no treatment at all. After several years' experience, he became convinced that his mechanical corrections consistently achieved the same or better results without using medications.

It was at that point that Still philosophically divorced himself from the orthodox practices of 19th century medicine. He writes, "Having been familiar myself for years with all their methods and having experimented with them I became disheartened and dropped them". His unerring faith in the natural healing capabilities of the mechanically adjusted body formed the foundation for his new philosophy.

Unsure of what to call his new hands-on approach in the early years, Still at times referred to himself as a "magnetic healer" and "lightning bone-setter". In the 1880s Still began publicly using the term "osteopathy" as the chosen name for his new profession. He writes: "Osteopathy is compounded of two words, osteon, meaning bone, (and) pathos, (or) pathine, to suffer. I reasoned that the bone, „Osteon,“ was the starting point from which I was to ascertain the cause of pathological conditions, and so I combined the „Osteo“ with the „pathy“ and had as a result, Osteopathy".

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As the name osteopathy implies, still used the bony skeleton as his reference point for understanding clinical problems and their pathological processes. On the surface, he was most interested in anatomy. On the other hand, he taught that there is more to the skeleton than 206 bones attached together by ligaments and connective tissue. In his discourses, Still would describe the anatomy of the arterial supply to the femur, for example, trace it back to the heart and lungs, and relate it to all of the surrounding and interrelated nerves, soft tissues, and organs along the way. He would then demonstrate how the obstruction of arterial flow anywhere along the pathway toward the femur would result in pathophysiologic changes in the bone, producing pain or dysfunction.

He writes of his treatment concepts: “Bones can be used as levers to relieve pressure on nerves, veins and arteries”. This can be understood in the context that vascular and neural structures pass between bones or through orifices (foramina) within a bone. These are places where they are most vulnerable to bony compression and disruption of their functions. In addition, fascia is a type of connective tissue that attaches to bones. Fascia also envelops all muscles, nerves, and vascular structures. When strained or twisted by overuse or trauma myofascial structures not only restrict bony mobility, but also compress neurovascular structures and disturb their functions. By using the bones as manual levers, bony or myofascial entrapments of nerves or vascular structures can be removed, thus restoring normal nervous and vascular functions.

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### 4.6 Craniosacral therapy <sup>w</sup>

Craniosacral therapy (CST) or cranial osteopathy is a form of alternative therapy that uses gentle touch to palpate the synarthrodial joints of the cranium. CST is a pseudoscience, and its practice has been characterized as quackery. It is based on fundamental misconceptions about the physiology of the human skull and is promoted as a cure-all for a variety of health conditions.

CST was invented in the 1970s by John Upledger as an offshoot of cranial osteopathy, which had been devised in the 1930s by William Garner Sutherland.

Medical research has found no good evidence that either CST or cranial osteopathy confers any health benefit, and they can be harmful, particularly if used on children or infants. The basic assumptions of CST are not true, and practitioners produce conflicting and mutually exclusive diagnoses of the same patients.

Practitioners of CST claim it is effective in treating a wide range of conditions, sometimes claiming it is a cancer cure, or a cure-all. Practitioners particularly advocate the use of CST on children. The American Cancer Society cautions that CST should never be used on children under age two. Pediatricians have expressed concern at the harm CST can cause to children and infants.

Craniosacral therapy (CST)

Cranial-sacral therapy

Cranial osteopathy

Cranial therapy

Craniopathy

Sacro-occipital technique

Bio-cranial therapy

Craniosacral therapy

Alternative therapy

NCCIH Classification Manipulation and body-based School Osteopathy

Effectiveness and safety

CST is potentially harmful. There have been cases of people with head injuries suffering further injury as a result of CST. If used as an alternative for legitimate therapy for a serious condition, choosing CST can have serious adverse consequences.

According to the American Cancer Society, although CST may relieve the symptoms of stress or tension, "available scientific evidence does not support claims that craniosacral therapy helps in treating cancer or any other disease". Cranial osteopathy has received a similar assessment, with one 1990 paper finding there was no scientific basis for any of the practitioners' claims the paper examined. A 2019 systematic review found limited evidence that CST may bring some relief for up to 6 months for people with chronic pain.

In October 2012, Edzard Ernst conducted a systematic review of randomized clinical trials of craniosacral therapy. He concluded that "the notion that CST is associated with more than nonspecific effects is not based on evidence from rigorous randomised clinical trials."

Commenting specifically on this conclusion, Ernst wrote on his blog that he had chosen the wording as "a polite and scientific way of saying that CST is bogus." Ernst also remarked that the quality of five of the six trials he had reviewed was "deplorably poor", a sentiment that echoed an August 2012 review that noted the "moderate methodological quality of the included studies."

Ernst criticized a 2011 systematic review performed by Jakel and von Hauenschild for including observational studies and including studies with healthy volunteers. This review concluded that the evidence base surrounding craniosacral therapy and its efficacy was sparse and composed of studies with heterogeneous design. The authors of this review stated that currently available evidence was insufficient to draw conclusions.

The evidence base for CST is sparse and lacks a demonstrated biologically plausible mechanism. In the absence of rigorous, well-designed randomized controlled trials, it is a pseudoscience, and its practice quackery.

Tests show that CST practitioners cannot in fact identify the purported craniosacral pulse, and different practitioners will get different results for the same patient. The idea of a craniosacral rhythm cannot be scientifically supported.

## REGULATION

Edzard Ernst wrote that in 2005 in the United Kingdom, a foundation of the Prince of Wales issued a booklet listing CST as one of several popular alternative therapies, but admitted that the therapy was unregulated and lacked either a defined training program or the oversight of a professional body. Ernst writes that this makes the therapists practising CST "less regulated than publicans."

Cranial osteopathy, a forerunner of CST, was originated by Sutherland in 1898–1900. While looking at a disarticulated skull, Sutherland was struck by the idea that the cranial sutures of the temporal bones

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where they meet the parietal bones were "beveled, like the gills of a fish, indicating articular mobility for a respiratory mechanism."

From 1975 to 1983, Upledger and neurophysiologist and histologist Ernest W. Retzlaff worked at Michigan State University as clinical researchers and professors. They assembled a research team to investigate the purported pulse and further study Sutherland's theory of cranial bone movement. Later independent reviews of these studies concluded that they presented no good evidence for the effectiveness of craniosacral therapy or the existence of the proposed cranial bone movement.

Practitioners of both cranial osteopathy and CST assert that there are small, rhythmic motions of the cranial bones attributed to cerebrospinal fluid pressure or arterial pressure. The premise of CST is that palpation of the cranium can be used to detect this rhythmic movement of the cranial bones and selective pressures may be used to manipulate the cranial bones to achieve a therapeutic result. However, there is no evidence that the bones of the human skull can be moved by such manipulations.

The fundamental concepts of cranial osteopathy and CST are inconsistent with the human skull, brain, and spine's known anatomy and physiology. Edzard Ernst has written "to anyone understanding a bit of physiology, anatomy etc. [CST] looks like pure nonsense."

In common with many other varieties of alternative medicine, CST practitioners believe all illness is caused by energy or fluid blockages which can be released by physical manipulation. They believe that the bones of the skull move in a rhythmic pattern which they can detect and correct.

The therapist lightly palpates the patient's body, and focuses intently on the communicated movements. A practitioner's feeling of being in tune with a patient is described as History Conceptual basis entrainment.

### CRANIAL OSTEOPATHY VS CRANIOSACRAL THERAPY

Comparing it to cranial osteopathy Upledger wrote: "Dr. Sutherland's discovery regarding the flexibility of skull sutures led to the early research behind CranioSacral Therapy— and both approaches affect the cranium, sacrum and coccyx— the similarities end there." However, modern-day cranial osteopaths largely consider the two practices to be the same, but that cranial osteopathy has "been taught to non-osteopaths under the name CranialSacral therapy."

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### **4.7 Origins and History of Chiropractic <sup>w</sup>**

The word 'chiropractic' comes from the Greek words cheir (meaning 'hand') and praktos (meaning 'done'), i.e., done by hand. Manual healing methods can be traced back to ancient times; however, it was not until the late 19th century that the chiropractic profession in the United States began to take shape.

Daniel David Palmer is widely credited with giving the first chiropractic adjustment in 1895. He also established the first chiropractic school in 1897 in Davenport, Iowa. From that point forward, Palmer and others continued to refine chiropractic manual adjusting techniques as well as study how manual manipulation can relieve pain and improve function. While spinal manipulation continues to be a centerpiece of chiropractic care, modern chiropractors have developed a variety of practice styles, featuring different therapies and modalities, to address patients' needs. They practice a holistic approach to health care that generally excludes drugs or surgery.

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As the new profession was getting on its feet in the early 20th century, chiropractors began organizing into professional societies. These groups launched efforts to standardize education and support research. Today, there are almost 20 chiropractic colleges in the United States accredited by the Council on Chiropractic Education, which was officially recognized in 1974 by the U.S. Department of Education as the accrediting agency for chiropractic schools. In 1996, the U.S. government began funding chiropractic research through the National Institutes for Health and over the years the profession has received millions in federal funding for scientific research thanks to robust research programs at several of the colleges.

Chiropractic is a regulated healthcare profession in the United States and has been for more than 100 years. Before being granted a license to practice, doctors of chiropractic (DCs) must meet stringent educational and competency standards set forth by the National Board of Chiropractic Examiners and individual states. Kansas was the first state to license chiropractic in 1913. Today, all 50 U.S. states, the District of Columbia, all U.S. territories, and more than 40 countries worldwide license chiropractors.

With an increasing body of research supporting its approach, the chiropractic profession has over time become integrated into many healthcare systems, hospitals, and public and private health and managed care plans. Spinal manipulation was first included in Medicare in 1972 (efforts continue to expand the services that chiropractors can provide to Medicare beneficiaries), and two years later in 1974 chiropractic care became a benefit in the Federal Employee Health Benefits Program. Chiropractic is also a benefit in most state workers' compensation programs.

Nondrug pain relief has been especially important to active-duty members of the military as well as veterans, many of whom experience chronic musculoskeletal pain as a result of their service. Congress passed legislation in 1993 to include chiropractic in the U.S. Department of Defense healthcare system. Today Chiropractic services are available to active-duty personnel at more than 60 military bases in the United States, Germany and Japan.

Legislation to include chiropractic in the U.S. Department of Veterans Affairs (VA) healthcare system was passed in 1999. Chiropractic is now available at 70 major VA medical facilities in the United States. In addition, in 2014 the VA launched a chiropractic residency program—the first of its kind in the country—where chiropractors train alongside their medical counterparts at VA medical systems around the country. The residency is a full-time one-year program in integrated clinical practice emphasizing the delivery of chiropractic care in hospitals and other integrated healthcare settings.

In recent years, the epidemic of opioid overuse has prompted many respected health organizations to recommend the use of nondrug approaches for pain relief as a first line of defense, potentially helping patients to reduce or avoid the need for prescription pain medications. Notably, the American College of Physicians (ACP) updated its guideline for the treatment of acute and chronic low back pain in 2017 to recommend first using noninvasive, nondrug treatments—including spinal manipulation—before resorting to drug therapies. A host of other organizations have since endorsed ACP's guideline or issued similar recommendations.

The chiropractic profession continues to grow and evolve. There are more than 70,000 chiropractors licensed today in the United States—practicing in solo practices, multidisciplinary clinics and major hospital systems. It is estimated that more than 35 million people visit a chiropractor each year.

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#### 4.8 Immunology and Homeopathy. 1. Historical Background <sup>v</sup>

Paolo Bellavite<sup>1</sup>, Anita Conforti<sup>2</sup>, Valeria Piasere<sup>1</sup> and Riccardo Ortolani<sup>3</sup> 2005

Homeopathy was born as an experimental discipline, as can be seen from the enormous amount of homeopathic data collected over more than two centuries. However, the medical tradition of homeopathy has been separated from that of conventional science for a long time. Conventional scientific wisdom dictates that homeopathy should have no effect above placebo but experiments on ultra-high dilutions of solutes together with some clinical data suggest the intriguing possibility that it might do in some circumstances. Today, an osmotic process between disciplines, previously seen as in conflict, is facilitated because over the last few decades' homeopathy has initiated the methods of current medical science and a substantial number of experimental studies—at molecular, cellular and clinical levels—are available. One area of dialogue and of common progress is that of inflammation and immunity, probably because these are closely related to the traditional 'vital force' of the body's self-healing power. In a series of papers, we review the historical origins of homeopathy, the laboratory and animal models related to the field of immunopharmacology, the clinical evidence in favor and against the use of homeopathy in the inflammatory diseases and the hypotheses regarding its action mechanism(s). Finally, we will enlighten the specific characteristics of the homeopathic approach, which places great emphasis on identifying a cure for the whole organism.

Keywords: Hahnemann – Hippocrates – history of medicine – homeopathy – immunotherapy – isotherapy – nosodes – Paracelsus – similia principle

The majority of substances have more than one action; the first is a direct action, which gradually changes into the second, which I call its indirect secondary action. The second is generally the opposite of the first  
C.F.S. Hahnemann, 1796

#### INTRODUCTION

The main principle of homeopathy, a unique scientific system of medicine established by Samuel Hahnemann two centuries ago, is that of 'similia' or 'simile' (similarity), which means 'let likes be cured by likes'. In other words, when a substance is capable of inducing a series of symptoms in a healthy living system, low doses of the same substance can cure these symptoms under certain circumstances ('similia similibus curentur').

About 200 years have passed since the original interpretation of the principle of similarity. During this period, medicine evolved as never before and homeopathic theories and pharmacopoeias have also been scientifically investigated, albeit slowly with considerable delay in comparison with those of conventional medicine. However, the fundamental nucleus of homeopathy has been little discussed. Similarity is frequently considered unscientific because the statements of Hahnemann or other homeopaths are not supported by documentary proof. The various principles of similarity, Hahnemann as a scientist, Hahnemann's homeopathy, various 'homeopathic' innovations such as electro-homeopathy and various types of alternative therapy including herbal medicine have been indescribably confused, and this has led to conclusions being drawn on the basis of summary subjective judgments.



Figure 1. Jenner vaccinating a child with cow smallpox.



Figure 3. E.A. Von Behring (1854–1917).



Figure 2. C.F.S. Hahnemann (1775–1843).

Unless these sources of confusion are constantly and completely acknowledged and corrected, little progress can be made in clarifying the concepts of homeopathy or the principle of similarity.

Immunology is the study of the structure and function of the immune system, the complex and integrated group of organs, tissues, cells and cell products such as antibodies that, by differentiating self from non-self, defend the body against infection or disease and neutralize potentially pathogenic cells or substances. This branch of biomedicine initially found resistance in differentiating from more traditional medical disciplines such as pathology and physiology, recent decades have witnessed an extraordinary development.

Western immunology and homeopathy both began at the end of the eighteenth century: the first of Jenner's smallpox vaccinations (Fig. 1) were given at the same time that the German physician Samuel Hahnemann (Fig. 2) was conducting his first homeopathic 'provings'. The first organic enunciation of the fundamentals of homeopathy was made by Hahnemann in 1796: 'One imitates nature, which sometimes cures chronic diseases by adding another disease, and then uses in the (preferably chronic) disease a drug that is capable of exciting another artificial disease as similar as possible to the natural disease to be cured: *similia similibus*'.

The profound analogies between homeopathic thought and immunology are due to the fact that the whole of homeopathic theory is substantially based on the principle of regulating endogenous systems of healing, the best known of which is certainly the immune system and its neuroendocrine integrations.

A significant example of a pioneer of immunology with an open mind towards the new homeopathic theories was Emil Von Behring (Fig. 3), who wrote:

The mechanisms of action of my anti-toxin therapy are still unclear, although many authors say that the diphtheria and tetanus anti-toxins can be clearly understood on the basis of Ehrlich's lateral chain theory. (. . .) Despite all of the scientific speculations and experiments of anti-smallpox vaccinations, Jenner's discovery remained a relatively isolated episode in medicine until Pasteur connected its origin with a principle that cannot be better characterized than by Hahnemann's word: homeopathic. What else causes

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epidemiological immunity in a sheep vaccinated against anthrax, if not the influence previously exercised by a micro-organism having similar characteristics to those of fatal anthrax? And what Figure 1. Jenner vaccinating a child with cow smallpox.

Homeopathy and immunology technical term appropriately defines this influence exercised by a similar micro-organism if not the word of Hahnemann: homeopathy?

In 1912 he wrote 'Hahnemann principle, according to our present way of thinking, was not bad at all' and 'The concept that the sick person reacts differently to medications than the healthy one, which had to be established empirically by therapeutic trials, also played a role in Hahnemann's thinking'.

Hahnemann's principles of homeopathy were not totally new as traces of them can be found throughout the history of medicine.

### THE 'MAGICAL' SIMILE

The principles underlying homeopathy can be traced to roots dating back even further than those of immunology.

Mankind has always wondered how to identify remedies capable of curing diseases. In the pre-scientific era, empiricism based on chance observations, and trial and error, was probably the most widely used approach, accompanied by various forms of oral or written tradition. In many other cases, the sick relied (and still do among some primitive people) on the intuition of individuals judged to be particularly endowed with divine or natural powers: healers, shamans, witchdoctors and so on. However, there was also another line of thought that, often in a marginal manner, has accompanied various medical cultures in different epochs: the identification of particular 'resemblances' between remedies and the diseases they were thought to be able to cure. The first examples of treating 'like with like' can be found in the papyrus of Ebers (1500 BC): ear diseases treated with ear extracts, headache with fish heads, blindness with the eyes of a pig.

Attempting to treat a disease by administering the agent capable of causing it or transmitting it is one of the most general acquisitions of empirical medicine. Numerous primitive medicines used to cure the effects of snake venoms by repeatedly inoculating them or materials extracted from the venom apparatus of snakes. In the Far East the Chinese practiced a form of preventive smallpox vaccination both by wearing the clothes worn by a smallpox victim in the full suppuration phase of the disease and by inhaling dried smallpox pustules after storing them for 1 year. Pliny claimed that the saliva of a rabid dog can afford protection against rabies. Dioskurides of Anazarbo recommended that hydrophobia sufferers eat the liver of the dog that bit them. Aetius of Antioch recommended eating the meat of the viper that had just bitten you. In the seventeenth century the Irishman Robert Fludd cured the victims of consumption with dilutions of their own sputum after suitable preparation.

Equally primitive and often elaborate applications of the same principle could be found in many pharmacopoeias until the last century. The reasoning is sometimes elementary: swallow human stones in cases of calculosis but, also here, the connection is obscure in the light of current knowledge. It is well known that King Mithridates VI (132– 163 BC) is said to have taken small quantities of poisons and toxins to protect himself against the repeated attempts made to poison him. Native Americans wear a headdress of eagle feathers partly to underline their prowess as hunters and partly for decorative purposes, but the custom is also based on a belief that the sight, speed, courage and other desirable characteristics of the eagle can be magically acquired. The magical transfer of the courage of a killed enemy to the victor by means of the ingestion of organs (the heart) also explains some aspects of cannibalism.

### THE 'SIMILE' OF HIPPOCRATES

By means of highly acute observations made without sophisticated instruments but still valid today, the school of Hippocrates understood that many of the phenomena of a disease are attempts at cure and suggested imitating them: this is the Hippocratic 'simile' (Fig. 4). The most frequently cited assertions are:

The pains (complaints) will be removed by means of their opposite, each according to its own characteristics.

Thus, heat corresponds to a hot constitution that has been made ill by the cold, and so on for the others.

Another way of removing pain is the following: a disease develops by means of its like and is cured by means of the use of its like. Thus, what causes urinary tenesmus in health cures it in disease. Cough is caused and cured by means of the same agent, as in the case of urinary tenesmus. Another method: the fever causing the development of inflammation will be caused and cured by the same agent. At other times, it will be cured by the opposite of its cause.

It is particularly worth mentioning that Hippocrates did not adopt a dogmatic or ideological position, but saw both approaches ('similarity' and 'opposition') as potentially useful. Prognostic interest, a great capacity for controlled observation, the rejection of fanciful tendencies and other characteristics unmistakably distinguish this from magic.

Without going into the whole of Hippocratic medicine, it must be said that his doctrine is permeated by the concept of natural healing. Nature ('physis') is the healer of disease.

'Physis' is an expression of life, not a special energy; it is unconscious or similar to instinct; it prevails over physiological and mechanical processes; it combats disease; it is frequently incomplete and must be assisted by a doctor. It is likely that no thought has had a more profound effect on medicine than Hippocrates' observation that the manifestations of disease consist of two groups of events: the first being the direct effects of the damage, the second the reaction of repair. The corollary to this is that the direct effects must be removed whenever possible, but the reparative reaction must be promoted in order to imitate nature. Hippocrates considered many pathophysiological phenomena as being fundamentally 'defensive': fever, skin eruptions and others. In line with this pathophysiological conception, physicians must make a distinction between useful and harmful symptoms by stimulating the former and blocking the latter. Using typical Greek conciseness,

Hippocrates formulated what can legitimately be considered one of the fundamental rules of therapy: nature is the primary physician and the first duty of medicine is 'to do no harm'.

### THE 'SIMILE' OF PARACELSUS

One further representative of this line of thought was P.T. von Hohenheim, also known as Paracelsus (Fig. 5). His works, which were first published in Basel in an almost complete version of 11 volumes between 1589 and 1591, contain a mixture of genial intuitions and ingenuities; profound clinical observations and strange affirmations concerning the influence of celestial bodies; new pharmacological observations and convinced assertions as to the truth of alchemical and magical concepts. Among other things, Paracelsus proposed the 'doctrine of signatures' ('signa naturae') according to which the therapeutic properties of different remedies were 'similar' to—and could be deduced from—the external appearance of plants and minerals: red remedies for blood diseases, sharply pointed leaves for the pain caused by stab wounds, iricolored Eufrasia for eye diseases, topaz against jaundice (because both are yellow) and so on. In this

way, 'magical similarity' was re-exhumed in an empirical and intuitive manner without any scientific understanding or experimental proof.

However, not all of the work of Paracelsus was 'magical': he had many important intuitions and made a number of empirical observations that were to form the basis for a large number of medical applications in subsequent centuries. For a long time, the following citation was considered one of the most significant anticipations of the 'simile' as seen by homeopathy: 'What causes jaundice also cures jaundice. That is, the good and the bad lie in the same thing: the bad causes jaundice but, if you separate the good, it becomes an efficacious remedy against jaundice. . . Since the drugs that cure paralysis must come from the substances that cause it. . . This is the way to understand the curative powers of minerals. . . What may be harmful in our hands can be transformed into a medicine'. There is also a certain harmony with the concepts concerning drug doses that were subsequently adopted by homeopaths, since according to Paracelsus medicines must be administered not on the basis of their weight, but according to criteria that go beyond simple weight.

In the post-Paracelsian period, the 'simile' was often mentioned, but usually in reference to magical practices. Typical authors are Porta, who attempted to apply the doctrine of signatures to the whole botanic world (examples include the use of hairy plants for scalps, beautiful plants to improve personal appearance, 'happy' plants, 'sad' plants, etc.), and Schroder who presented related ideas, such as the fact that the leaves of *Hepatica triloba* resemble the liver. One true predecessor of Hahnemann was Stoerck (1731–1803), who in the 1760s published a series of works on the treatment of diseases with poisons according to the principle of similars. This author made a highly significant statement:

'If stramonium causes illness in someone who is sound in mind by inducing mental confusion, why should we not try to establish whether it can give mental health to someone who is confused or whose senses are altered by disease?

If it cures someone affected by spasms, why should we not investigate whether it causes the spasms?'



Figure 5. P.T. von Hohenheim (Paracelsus) (1494–1541).

Christian Frederick Samuel Hahnemann was born on April 10, 1755 in Meissen, Germany, graduated in Medicine from Erlangen University in 1779, and died in Paris in 1843 after a long and adventurous life. Although he worked in many fields of chemistry, pharmacology and medicine, he has passed into history as the founder of homeopathy, of which he is still unanimously acknowledged as being the greatest authority.

The first reflection of Hahnemann concentrated on the fact that two diseases may interact in very particular ways in the same individual, with one temporarily or permanently taking the place of another. One example is the well-known alternation of eczema and asthma as chronic expressions of an allergic constitution. Hahnemann studied the less known lasting replacement of one disease by another and, for example, observed that a chronic skin rash disappeared after the onset of measles. He wondered what it was that led to this difference between temporary and permanent replacement, and became convinced that the latter occurred when the two diseases had similar symptoms.

His next step was to try to apply this finding in a systematic and therapeutic manner. As he was also an expert in chemistry, he was familiar with many of the symptoms caused by toxic agents and aware of the fact that a number of naturally occurring diseases closely resemble symptoms owing to intoxication:

e.g. the intoxication induced by Belladonna resembles scarlet fever; that induced by quinine resembles malaria; and that induced by arsenic resembles cholera. It did not take him long to combine the idea of the replacement of similar diseases with that of the replacement induced by 'artificial' intoxication:

for example, he tried to use low doses of Belladonna to treat patients with scarlet fever and of arsenic to treat cholera.

He intuitively understood that it was possible to discover specific remedies for a number of diseases, and therefore sought other potentially advantageous drugs and tested their 'pathogenetic' power in healthy volunteers. After a long series of experiments on himself, his family and the medical students

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who followed his ideas, Hahnemann arrived at the first generalization of his thought in 1796 and then its overall description in the treatises called 'Organon', 'Chronic Diseases' and 'Materia Medica', which were published in various editions during the first decades of the nineteenth century.

Little by little, Hahnemann refined his homeopathic ideas.

For example, he discovered that diseases other than cholera could be cured by small doses of arsenic provided that they had other common 'characteristics of arsenic'. However, not all cholera patients responded to arsenic, but required another remedy depending on their individual symptoms. He thus changed the current nosological schema of medical thought by introducing the concepts of drug-specific pathogenesis and disease-specific individual status. He then noted that patients apparently cured by means of homeopathy could suffer a recurrence of the same disease or be affected by another, and drew the conclusion that permanent cure could only be achieved by selecting the remedy on the basis of other criteria, including the patient's constitutional and psychological characteristics, as well as previous diseases.

Hahnemann interpreted his 'simile-based' therapy as the result of a reactive process that we would now call homeostatic or, better, homeodynamic: 'If, in the case of a chronic disease, you give a medicine whose primary direct action corresponds to the disease itself, its secondary indirect action exactly represents the state of the body it is desired to obtain. . . '.

The fundamental points of Hahnemann's 'simile' can be summarized in Table 1. In other words, according to Hahnemann the 'vital energy' alone is not sufficient to combat the disease.

By giving a remedy that resembles the disease, this instinctive natural force (in analogy to the hippocratic 'physis') is driven to increase its energy to a point at which it becomes stronger than the disease itself, which finally disappears.

Hahnemann also claimed that diluting the remedies in a particular manner ('potentiation' obtained by the extensive succession of serial dilutions) not only reduced or abolished their toxic effects, but also paradoxically increased their curative power, which is still one of the most controversial aspects of homeopathy. Another highly criticized aspect is the theory of the 'psora' and the 'miasmas', by means of which Hahnemann tried to describe the diseases of his time.

However, it is necessary to point out that Hahnemann never claimed that homeopathy was the only guide to therapy, but often said that the primary method of treatment ('the highest to be pursued') is to remove the fundamental cause of the disease.

He called this the 'real way' or 'causal therapy' and, rather than contesting its value, doubted the possibility of applying it. It must be remembered that he lived between the end of the eighteenth and the beginning of the nineteenth century.

The application of Hahnemann's theory of 'simile' not only requires a scrupulous study of 'Materia Medica' (a compendium of the symptoms caused by the various substances in normal human beings), but also of the symptoms and pathophysiological characteristics of each individual patient:

We must, on the one hand, first precisely understand the essential characteristics and incidental manifestations of the diseases of the human body and, on the other, the effects purely due to the use of drugs: that is, their essential characteristics and the incidental symptoms of the specific artificial diseases they induce (as a result of differences in dose, form, etc.).



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In this way, by choosing a remedy capable of causing an artificial disease that is very similar to a given natural disease, we will be able to cure the most obstinate of diseases.

As we have already mentioned and as is only logical, further discoveries and applications have gradually added themselves to the initial concepts and ground rules. Among these, particularly worthy of note are 'isopathy' and the introduction of the use of the so-called 'nosodes'.



Table 1. Essential principles of classical homeopathy

- \_ Potentially therapeutic substances must be tested carefully in healthy subjects in order to document their 'pure', direct effects: this is the basis of the medical matter
  - \_ The remedy capable of causing a similar state in a healthy subject causes a counter-reaction in a patient that is stronger than the pathological stimulus of the disease itself
  - \_ The disease must be studied as a whole (and not only in terms of its main symptom or pathology) in order to ensure that it and the drug interact in a global manner; the choice of the remedy must be based on the complex of individual symptoms rather than on the name of the disease
  - \_ The dose must be the minimal effective dose and therefore adjusted on the basis of individual sensitivity
  - \_ Homeopathy empirically maintains that the dose should be higher in the case of acute diseases affecting specific organs, whereas chronic diseases that are more sensitive to pharmacological stimulation should be treated with high dilutions ('potencies') separated by much longer intervals
- Isotherapy and Nosodes

One of the earliest and most notable innovations of homeopathy, mentioned even in the later editions of the Organon, is isopathy or isotherapy. The term was probably coined by the veterinarian Wilhelm Lux somewhere around 1831–33:

after starting to treat his animals with the homeopathic method, he became convinced that every contagious disease bears within itself the means whereby it can be cured. He observed that the technique of dilution and dynamization of a contagious product (bacterium, virus or infected secretions, and organic

material) would put such a product in a position to exert a therapeutic action on the disease resulting from the contagion.

The law of similars 'Similia similibus curentur' thus becomes 'Aequalia aequalibus curentur' or the law of sameness.

Three authors dominate the history of isopathy, and all three were homeopaths: Constantine Hering, Wilhelm Lux and Denys Collet. Constantine Hering (Fig. 6) was born in Saxony in 1800 and became an assistant to the surgeon Robbi, who entrusted him with the task of writing a book for him confuting homeopathy once and for all, as had already been requested by the publisher Baumgartner. After taking a closer look at Hahnemann's works, Hering was not only intrigued, but ended up by defending Hahnemann and coming out in favor of the new method. Hering contributed a great deal to homeopathy, but above all it is to him that we owe some drug provings and the preparation of homeopathic remedies from pathological excretions and secretions, which he terms 'nosodes'. Originally this term denoted any remedy extracted from pathological excretions or secretions obtained from human subjects or animals. Animal poisons were included in this definition, so much so indeed that Hering was the first to 'prove' 'Lachesis' (venom of the bushmaster snake, the first nosode in history, later to become a homeopathic remedy to all intents and purposes) and the rabies 'poison'. Convinced that every disease contains within it its own remedy and prophylaxis, he extended his studies to the scabies 'virus', extracting the alleged 'virus' from blisters from a subject with well developed scabies.

Hering also maintained that products of the human body and the various parts of the body in the healthy state all have a preferential action on the corresponding diseased parts, and as early as 1834 he advised the use of diluted and dynamized homologous organs ('iso-organotherapy'). Finally, he assumed that the chemical elements exerted a particular action on those organs in which they were mainly contained. His studies and papers on minerals and salts preceded the work of Schüssler on biochemical salts.

The second great isopath was the veterinarian Joseph Wilhelm Lux, born in Silesia in 1776. Lux was appointed Professor of Veterinary Science at the University of Leipzig in 1806, and his work constituted a landmark in the history of veterinary medicine. From 1820 onwards he was familiar with Hahnemann's works and applied the new method in veterinary medicine, becoming a staunch advocate of veterinary homeopathy. In 1831 Valentin Zibrik asked him for a homeopathic remedy for distemper and anthrax. As he knew of no homeopathic remedies for these epidemics at the time, his advice was to replace the homeopathic 'similar' (i.e. the drug prescribed on the basis of the symptoms) with a 30c dilution of a drop of nasal mucus from an animal with distemper and a 30c dilution of a drop of blood of an animal with anthrax, and get all the animals suffering from distemper and anthrax, respectively, to take them. He was thus the first to create the strain called Anthracinum. In 1833 Lux published the results obtained in a booklet entitled *Isopathik der Contagionen*, in which he claimed that all contagious diseases bear within their pathological phenomena and products their own means of cure. Moreover, Lux also extended the principle to substances that had become iatrogenic as a result of abuse, so that a method which was originally used only in contagious diseases was also applied to non-contagious illnesses. Isopathy Table 1. Essential principles of classical homeopathy Potentially therapeutic substances must be tested carefully in healthy subjects in order to document their 'pure', direct effects: this is the basis of the medical matter The remedy capable of causing a similar state in a healthy subject causes a counter-reaction in a patient that is stronger than the pathological stimulus of the disease itself

The disease must be studied as a whole (and not only in terms of its main symptom or pathology) in order to ensure that it and the drug interact in a global manner; the choice of the remedy must be based on the complex of individual symptoms rather than on the name of the disease

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The dose must be the minimal effective dose and therefore adjusted on the basis of individual sensitivity. Homeopathy empirically maintains that the dose should be higher in the case of acute diseases affecting specific organs, whereas chronic diseases that are more sensitive to pharmacological stimulation should be treated with high dilutions ('potencies') separated by much longer intervals.



Figure 6. C. Hering (1800–80).

provoked endless arguments in the homeopathic circles: other nineteenth century relevant physicians who employed isopathy were Stapf, Rademacher (founder of 'organotherapy'), Brown-Se'quard, Arnold, Veith, while Griesselich, Berridge and others disapproved this method because the isopathic substances were rarely subjected to proving and were not prescribed on the basis of symptom similarity as in the original Hahnemann's method.

After this early period of expansion, the new method ran into continuous and increasingly severe criticism, so much so that isopathy went into decline for several years, even within the homeopathic community. Only a few solitary practitioners went on using isopathic remedies. It was Father Denys Collet, a doctor and Dominican friar born in 1824, who eventually brought isopathy back onto the scene. In 1865 he witnessed a homeopathic healing which convinced him to devote himself to the new method. He rediscovered isopathy alone and after several decades of practice published a book entitled *Isopathie, Me'thode Pasteur par Voie Interne* at the age of 74. According to Collet, there are three ways of healing, namely allopathy, homeopathy and isopathy, all of which are useful depending on the clinical indications. In addition, he distinguishes between three types of isopathy: (i) 'Pure isopathy', which uses secretion products from the patient to cure the same disease. (ii) 'Organic isopathy', which cures the diseased organs with dynamized derivatives from healthy organs. (iii) 'Serotherapeutic isopathy' or 'serotherapy' (dilutions of hyperimmune serum). The book also contains 42 personal observations and the rules of isopathic pharmacopraxis, which is the starting point for a substantial renewal of the method.

In the twentieth century two works devoted entirely to nosodes have been published: the first in 1910 by H.C. Allen, entitled *The Materia Medica of the Nosodes*. The second is by the Frenchman O.A. Julian, who first published *Materia Medica der Nosoden* in German in 1960, later to come out in two French versions, one in 1962 entitled *Biothe'rapiques et Nosodes* and the other in 1977 entitled *Traite' de Micro-*

Immunothe´rapie Dynamise´e. The above-mentioned book by O.A. Julian in 1960 was a success in Germany, where it revived the study of nosodes.

In particular, R. Voll accorded therapy with nosodes a central role in his diagnostic–therapeutic procedure called electroacupuncture-organometry, and H.H. Reckeweg, the founder of homotoxicology, made extensive use of nosodes and immunomodulators in his biotherapy. The use of the nosode *Meningococcinum* as prophylaxis of meningitis was suggested by others.

#### SUBSEQUENT DEVELOPMENTS OF HOMEOPATHY

The rapid initial spread of homeopathy was probably due, on the one hand, to the fact that the orthodox medicine of Hahnemann’s day and age was still extremely backward and lacked truly effective therapeutic remedies, and, on the other, to the distinct superiority of homeopathy in treating the various epidemics of typhoid fever, cholera and yellow fever which raged across Europe and America in the 1800s.

Homeopathic medicine has undergone substantial ups and downs in its historical development. The rapid early boom throughout the world in the nineteenth century and its immense popularity were due to the fact that the other modes of medicine practiced at that time often used rather crude and painful means for a cure. A survey of the periodicals and other literature of the first decades of the nineteenth century reveals that in the medical practice among physicians of the orthodox persuasion the most common methods of treatment were bloodletting, sulfur, camphor, calomel and mineral medicines, mostly mercurial salts.

However, this rapid spread was followed by a head-on clash with orthodox medicine, which stopped homeopathy in its tracks and then led to its progressive decline, particularly in Western countries, where in some cases it all but disappeared.

Over the past few decades, however, we have been witnessing a steady recovery of homeopathic practice, even in very advanced countries such as France, Germany, and Italy.

Hahnemann, right from the outset, found himself faced with stern opposition from colleagues and even more so from the apothecaries, who felt that he was undermining the foundations of their profession: since he was recommending the use of small doses and was against multiple prescriptions, this new medicine was perceived as a serious threat to their profits.

Moreover, he was accused of dispensing his own medicines and administering them to his patients, which was illegal at the time. He was thus arrested in Leipzig in 1820, convicted and forced to leave the city. He then obtained special permission from Grand Duke Ferdinand to practice homeopathy in the town of Ko¨then, where he continued to work, write, and instruct his followers who were swiftly increasing in numbers and spreading their wings further afield. At his death (1843), homeopathy was known in all European countries (except Norway and Sweden), as well as in the United States, Mexico, Cuba and Russia, and not long after his death it reached India and South America. It was first introduced into Italy in 1822 thanks to G. Necker who founded the Neapolitan School.

By the middle of the nineteenth century, there were a large number of homeopathic journals, clinics, hospitals, societies and pharmacies; homeopathic physicians could be found throughout the world; and more than 20 faculties of homeopathic medicine were founded in the United States. However, there were many controversies between the Hahnemann school and the other trends of twentieth century medicine, particularly in Germany. Furthermore, homeopathy itself also began to develop different tendencies and conflicts, such as that between physicians who used albeit diluted ponderal doses and those who insisted on extremely diluted/dynamized preparations; that between those who gave only single medicines and

those who gave combinations; or that between those who combined homeopathic and conventional medicines and those who relied exclusively on homeopathic remedies.

Homeopaths had separated into two groups even before the death of Hahnemann: one group considered itself the representative of pure Hahnemann homeopathy, and recognized the founder as the ultimate authority; the others formed a group of 'scientific homeopaths' who acknowledged Hahnemann as a brilliant innovator, but did not consider him infallible or hesitate to question his opinions. The 'scientific' conception of homeopathy that developed during the nineteenth and early twentieth century was largely due to the efforts of this second group of homeopaths, who encouraged the greatest theoretical and experimental progress.

Early attempts to investigate the principle of similarity on the experimental ground can be traced back to the years around the end of nineteenth century, when H. Schulz published a series of papers that examined the activity of various kinds of poisons (iodine, bromine, mercuric chloride, arsenious acid, etc.) on yeast, showing that almost all these agents have a slightly stimulatory effect on yeast metabolism when given in low doses. He then came into contact with the psychiatrist R. Arndt and together they developed a principle that later became known as the 'Arndt-Schulz law', stating that weak stimuli slightly increase biological responses, medium and strong stimuli markedly raise them, strong ones suppress them and very strong ones arrest them.

Similar observations were reported by several other authors in the 1920s and from their findings one can conclude that the occurrence of inverse, or biphasic, effects of different doses of the same substance was known before the era of molecular medicine.

This phenomenon is now well recognized in cell biology, with a number of explanation at the molecular level (e.g. different receptors for the same substance having different ligand affinities and triggering transduction pathways) and in immunology, where the systemic and local responses are known to depend on the dose in a complex way (e.g. foreign antigens may sensitize the host but low doses of the same substance may suppress the system if administered by oral route). We will go back to these concepts in a subsequent paper dealing with the scientific models of the similia principle. The delayed recognition of the possible contribution of homeopathic ideas to mainstream medical science and, insistent attacks of some homeopaths against allopathy are at least partially responsible for the rejection of homeopathy by the majority of modern physicians and academic circles.

It is generally agreed that one of the greatest physicians in Germany at the time of Hahnemann was Christoph Wilhelm Hufeland (1762–1836), a rich and magnanimous physician who was a friend of Goethe and Schiller (Fig. 7). He was a pioneer of medical journalism and dedicated his *Journal der Praktischen Arzneykunde* (which he edited for 40 years and which subsequently took his name) to the correction of the medical deviations of his time. Although being a leading representative of 'official' medicine, he also dealt extensively with the developments of homeopathy. His works include



Figure 7. C.W. Hufeland (1762–1836).

many references indicating his openness to homeopathic ideas, such as:

The first reason inducing me to write is the fact that I considered it incorrect and unworthy of science to ridicule or persecute the new doctrine of homeopathy.

. . . I find suppression and despotism in science repugnant; here, the only rule should be freedom of spirit, basic research, the confutation of hypotheses, the comparison of observations, adherence to facts and not to personalities. (. . .) Homeopathy must necessarily be contested if it intends to present itself as a general principle of every therapy. In fact, if this affirmation were to be taken literally, it could seem to be the grave of all sciences and human progress.

(. . .) But homeopathy is valid as a field of observation and, instead of being repudiated, should be used as a special method of cure, subordinate to the higher concepts of rational medicine. On the basis of my personal observations, I am convinced that it can render a service not rarely, but sometimes in a highly striking manner, particularly after the failure of other treatments. (. . .) I am not in favor of homeopathy, but of the inclusion of a homeopathic method in rational medicine. I would not speak of homeopathic physicians, but of physicians that use the homeopathic method at the right time and in the right place.

Unfortunately, the history of medicine during the second half of the nineteenth and, particularly, the twentieth century was characterized by bitter struggles between the 'official' and Figure 7. C.W. Hufeland (1762–1836).

'alternative' medical worlds that made vain these hopes of Hufeland. As a result of an irrational policy of reciprocal excommunication, the two disciplines failed to develop any common points for a long time and continued along their own separate and often conflicting ways. With some exceptions (e.g. the German school), homeopaths have failed to scrutinize homeopathic concepts and theories in relation to conventional biology and immunology, possibly because they feel that any reductionist scientific approach is incapable of interpreting the greatness of their 'art'.

## OPPOSITION TO THE DEVELOPMENT OF HOMEOPATHY

In the nineteenth century homeopathy was immensely popular in the United States where major figures such as Hering, Kent and Farrington were practicing. Homeopathy was taught at Boston University and at the Universities of Michigan, Minnesota and Iowa. By the turn of the century as many as 29 homeopathic journals were being published. The year 1844 marked the founding of the American Institute of Homeopathy, which thus became the first American national medical society.

Despite this, strong organized opposition was soon forthcoming from 'orthodox' medicine, which viewed the growth of homeopathy as a major threat: homeopathy was calling into question the very philosophical basis, clinical methodology and official pharmacology of orthodox medicine. Right from the very beginning the new approach embodied a strong critical attitude towards the use of conventional medicines, which were judged to be harmful, toxic and counterproductive for the practice of homeopathy, in that they were all based on suppression of symptoms. What is more, good homeopathic practice called for a long apprenticeship and individualization of treatment, both of which demanded more time than physicians were normally prepared to give their patients.

The year 1846 marked the foundation of the American Medical Association (AMA), one of the first objectives of which was to combat homeopathy: homeopaths could not be members of the AMA, and AMA members were not allowed even to consult a homeopath, the penalty for this being expulsion from the Association; legal recognition was denied to graduates with diplomas from universities with full professors of homeopathy on their academic boards. In 1910, a classification of American medical schools was drawn up (the Flexner Report) on the basis of criteria which assigned high ratings to schools which placed the emphasis on a physicochemical and pathological approach to the human body and strongly penalized the homeopathic approach. The homeopathic colleges obviously obtained poor ratings, and as only the graduates of schools with high ratings had their qualifications recognized, this was a mortal blow to the teaching of homeopathy.

Of 22 homeopathic colleges operating in 1900, only two were still teaching homeopathy in 1923. By 1950 there was not a single school in the United States teaching homeopathy and it was estimated that there were only about a hundred practicing homeopaths, almost all over 50 years of age, throughout the United States. For similar reasons, there was also a parallel decline in homeopathic practice in Europe in the early decades of the twentieth century.

We should not conclude, however, that the decline of homeopathy was due to only political and economic reasons.

At least two other factors played a decisive role, namely the internal struggles within homeopathy itself and the new major scientific and pharmacological discoveries. As regards the splits in the homeopathic world, there were disputes between the various schools over dilutions (high or low potencies), over single or multiple prescriptions, and over whether prescribing should be based on total symptoms or on the main disease present. The various different schools developed their own organizations, hospitals and journals, thus making it very hard even for doctors seriously interested in learning about homeopathy to get their bearings in this field.

A severe blow to homeopathic theory was delivered by the chemical sciences and in particular by the law formulated by Amedeo Avogadro (Fig. 8), that was published initially as a hypothesis in 1811 and then tested experimentally by Millikan in 1909: as is well known, this law establishes that one mole of any substance contains  $6.02254 \cdot 10^{23}$  molecular or atomic units. As a result, a simple calculation demonstrated that dilutions of any substance beyond  $10^{24}$  (24c or 12c in homeopathic terms) presented

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an increasingly remote chance of containing even only a single molecule or atom of the original compound. From this it was obviously but a short step to ridiculing the use of homeopathic medicines, and homeopaths were branded by their adversaries as being on a par with some kind of esoteric sect. Such opinions have continued to be voiced virtually unaltered up to the present day.

The decisive factor, however, permitting conventional scientific medicine to prevail over homeopathy was its own development as a science capable of identifying the causes of many diseases and as a source of effective techniques and technologies for curing them. Lister's discoveries in the antiseptic field and the development of anesthesiology greatly increased the success, indications and popularity of surgery. While chemistry, physiology and pathology were making giant strides in the theoretical sphere, the discovery of vitamin and hormone replacement therapies and, above all, the advent of antibiotics, analgesics and anti-inflammatory drugs enabled orthodox therapy to demonstrate its practical superiority. The possibility of interpreting pathological phenomena rationally on the basis of a scientifically validated model of the human body and the availability of chemical, physical or technological means capable of repairing defects detected with the utmost precision by increasingly sophisticated and reliable instruments was (and is) altogether too attractive and convincing a prospect to allow scope for exploring alternatives based on outdated and mysterious theories.

### HOMEOPATHY REVIVAL

As we have already stated, the enormous progress of conventional medicine in this century has reinforced the opinion that allopathic treatment by means of 'opposites' is the only effective form of treatment and, generally speaking, has also strengthened the view that it is only a question of time before a treatment is found for every disease. The great epidemics of infectious diseases have been defeated by a combination of improvements in living conditions, hygiene, vaccinations and antibiotics. Our knowledge of disease due to vitamin, enzyme or hormone deficiencies has furnished new weapons in the struggle against diseases such as pernicious anemia, dwarfism and diabetes. If it were not for the problem of finding donors, transplants would already be routine therapy for a sizeable number of diseases. Cortisone and its derivatives are solving many problems of immune hypersensitivity. Recent developments in molecular biology give us good reason to believe that not even the genetic sphere will be able to escape our manipulative capability.

Against this background, one cannot see any real scope for homeopathy, though at present its use is still spreading. This spread of homeopathy is happening in countries such as Italy, France and Germany, and parallels the renewed interest in homeopathy in many other countries throughout the world.

Homeopathy is even more popular in Asia, most notably in India, Pakistan and Sri Lanka. In the United States, too, we are witnessing a revival of homeopathic practice: sales of homeopathic medicines in the USA have been growing at an annual rate of 20–25% during the 1990s.

These considerations alone should be enough to justify a greater commitment of official scientific institutions towards monitoring and clinically verifying the efficacy of therapeutic agents and measures adopted. A need is also felt for at least some teaching of the basics of homeopathy to doctors trained in universities, since, at general practitioner level particularly, patients often tend to be keenly interested in homeopathy and to ask their general practitioners for information and advice on the subject.

There may be any number of reasons for the revival of homeopathy, despite the lack of university teaching in the field and of support on the part of public health authorities (homeopathic drugs are not available on the NHS), but it can hardly be accounted for merely on commercial grounds. The main reason for the success of the so-called 'alternative' medicines lies in the fact that they offer something which today's



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physician is unable to provide. This can be traced, on the one hand, to the greater degree of individualization of the treatment, attention being paid to the human and psychological elements, which are becoming increasingly neglected in this era of ultra-high-tech medicine; on the other hand, it is due to the awareness that many of the challenges still facing us today in the fight against disease call for a different approach from that adopted to date.

In fact, the public at large and also the medical profession itself are becoming increasingly aware that modern medicine must come up with new means and new ideas for tackling problems. These include contamination of the environment by toxic agents, ever-growing numbers of diseases induced by increasingly potent drugs themselves, degenerative diseases to which errors of diet or life-style contribute, allergies, autoimmunity and immune deficiency, large numbers of neurological and psychiatric diseases, psychosomatic disorders, and tumors. Despite undoubted progress made over the past decades in these crucial fields of medicine, despite the fact that we so often hear of new 'major breakthroughs' paving the way towards achieving a definitive cure for this or that disease, and despite the fact that our knowledge of the intimate mechanisms of the various diseases has increased enormously as a result of techniques of molecular biology, it has to be admitted that, as far as general practice and the vast majority of patients suffering from the above-mentioned diseases are concerned, the actual practical benefit of such knowledge is not exactly spectacular!

That this is not merely a commercial phenomenon is also suggested by the fact that we are witnessing a renewed interest on the part of scientists in experimental trials in this field.

Studies are beginning to appear on the biological effects of homeopathic drugs, as well as studies on the so-called 'highdilution effect', or double-blind placebo-controlled clinical trials.

The debate in scientific circles is becoming increasingly heated, and many researchers are setting themselves the objective of developing reliable methods for tackling the problem.

Reilly's group has published a series of trials describing randomized and double-blind studies of patients with chronic allergic rhinitis or bronchial asthma treated with homeopathic immunotherapy (HIT). The studies involved administration of a 30c potency of the main allergen or (in the control group) an indistinguishable placebo. Results demonstrated a significant improvement of symptoms in the treated patients in comparison with those receiving placebo ( $P \frac{1}{4} 0.0001$ ). This study offered proof that high homeopathic dilutions of antigens cannot be assimilated to a simple placebo. However, as underlined by the authors themselves, this does not mean that their proposed therapy is an efficacious homeopathic therapy for chronic rhinitis (also because homeopathy requires individualized treatment).

These results have not yet been confirmed by independent groups; on the contrary, a paper recently published by Lewith and coworkers in the *Br Med J* describes apparently opposite results (the homeopathic medicine caused a slight but statistically significant worsening during the early phases of treatment than placebo). This latter study sparked a considerable discussion in the same Journal. The reply of Reilly, the author of previous (positive) studies on HIT, stated that the Lewith's study was not actually a reply of their work, because the patient population, the drug administration, and the outcome measures were different. The debate on the clinical effectiveness of homeopathy is still quite hot.

We now have the results of studies that have used homeopathic remedies under well-known experimental conditions, as well as conventionally produced experimental evidence indirectly explaining homeopathic phenomena. The current scientific literature contains a substantial body of evidence and examples that may provide new insights improving our understanding of the principle of similarity and the action of small (or highly diluted) doses of medicines, particularly on the immune system and host

## History of all Medicine

defenses. These studies document and may clarify some of the specific aspects of the biochemical regulatory mechanisms possibly underlying the observed paradoxical phenomena. The 'simile'—brought back to its biological meaning of the inverted, or paradoxical, effects of the same or similar compounds—can operate under a number of experimental and reproducible conditions. Within the framework of our current knowledge of living systems and modern investigational techniques, it will be possible to reformulate the ancient principle with the aim of constructing reasonable models that can be tested at different biological levels, from cells to human beings.

Anyone who adopts an unprejudiced position will discover that immunology and the whole of modern biology in general can offer a considerable contribution to the understanding of homeopathy in a framework that is not very different from the conventional context. In other words, although it is true that some of the most reductionist molecular lines of modern science are ultimately incompatible with the systemic nature of homeopathic thought, it is equally true that many others are perfectly compatible.



Figure 8. A. Avogadro (1776–1856).

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### 4.9 Electrohomeopathy <sup>w</sup>

Electrohomeopathy, Electrohomoeopathy, or Mattei cancer cure is a derivative of homeopathy invented in the 19th century by Count Cesare Mattei. The name is derived from a combination of electro (referring to an electric bio-energy content supposedly extracted from plants and of therapeutic value, rather than electricity in its conventional sense) and homeopathy (referring to an alternative medicinal philosophy developed by Samuel Hahnemann in the 18th century).

Electrohomeopathy has been defined as the combination of electrical devices and homeopathy.

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Lucrative for its inventor and popular in the late nineteenth century, electrohomeopathy has been described as "utter idiocy". Like traditional homeopathy, it is regarded by the medical and scientific communities as pseudoscience and its practice as quackery.

Electrohomeopathy was devised by Cesare Mattei (1809–1896) in the latter part of the 19th century. Mattei, a nobleman living in a castle in the vicinity of Bologna, studied natural science, anatomy, physiology, pathology, chemistry and botany. He ultimately focused on the supposed therapeutic power of "electricity" in botanical extracts. Massei made bold, unsupported claims for the efficacy of his treatments, including the claim that his treatments offered a nonsurgical alternative to cancer. His treatment regimens were met with scepticism by mainstream medicine:

### HISTORY AND CRITICISM

The electrohomeopathic system is an invention of Count Mattei who prates of "red," "blue," and "green" electricity, a theory that, in spite of its utter idiocy, has attracted a considerable following and earned a large fortune for its chief promoter.

Notwithstanding criticisms, including a challenge by the British medical establishment to the claimed success of his cancer treatments, electrohomeopathy (or Matteism, as it was sometimes known at the time) had adherents in Germany, France, the USA and the UK by the beginning of the 20th century; electrohomeopathy had been the subject of approximately 100 publications and there were three journals dedicated to it.

Remedies are derived from what are said to be the active micro nutrients or mineral salts of certain plants. One contemporary account of the process of producing electrohomeopathic remedies was as follows:

As to the nature of his remedies we learn...that...they are manufactured from certain herbs, and that the directions for the preparation of the necessary dilutions are given in the ordinary jargon of homeopathy. The globules and liquids, however, are "instinct with a potent, vital, electrical force, which enables them to work wonders." This process of "fixing the electrical principle" is carried on in the secret central chamber of a Neo-Moorish castle which Count Mattei has built for himself in the Bolognese Apennines...The "red electricity" and "white electricity" supposed to be "fixed" in these "vegetable compounds" are in their very nomenclature and suggestion poor and miserable fictions.

According to Mattei's own ideas however, every disease originates in the change of blood or of the lymphatic system or both, and remedies can therefore be mainly divided into two broad categories groups to be used in response to the dominant affected system. Mattei wrote that having obtained plant extracts, he was "able to determine in the liquid vegetable electricity".

Allied to his theories and therapies were elements of Chinese medicine, of medical humours, of apparent Brownianism, as well as modified versions of Samuel Hahnemann's homeopathic principles. Electrohomeopathy has some associations with Spagyric medicine, a holistic Philosophy medical philosophy claimed to be the practical application of alchemy in medical treatment, so that the principle of modern electrohomeopathy is that disease is typically multi-organic in cause or effect and therefore requires holistic treatment that is at once both complex and natural.

A symposium took place in Bologna in 2008 to mark the 200th anniversary of the birth of Cesare Mattei, with attendees from India, Pakistan, Germany UK, and the USA. Electrohomeopathy is practised predominantly in India and Pakistan (although it is not a recognised healthcare discipline in India), but there are also a number of electrohomeopathy organisations and institutions worldwide.

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## 4.10 The History of Magnetism in Medicine <sup>w</sup>

Urs Haefeli

### 1.1.1 ORIGINS

Although magnetic effects such as the “northern lights” in the northern hemisphere have been observed for thousands of years, it was not until the discovery of iron smelting, at around 1200 BC, that a body of knowledge on magnetism began to develop. The first effects of magnetism were observed when the smelted iron was brought close to the iron oxide in the chemical form of  $\text{FeOFe}_2\text{O}_3$  ( $\text{Fe}_3\text{O}_4$ ), a natural iron ore which came to be known as lodestone or magnetite.

The origin of the term “magnetite” is unclear, but two explanations appear most frequently in the literature. In one of these, magnetite was named after the Greek shepherd Magnes, who discovered it when the nails on the soles of his shoes adhered to the ore. In the other explanation, magnetite was named after the ancient county of Magnesia in Asia Minor, where it was found in abundance.

The first treatise on magnetized needles and their properties (see Fig. 1.1) was presented by Petrus Peregrinus in 1289 (Peregrinus, 1269). This treatise clearly documented a number of magnetic properties including that: (1) magnetic forces act at a distance; (2) magnetic forces attract only magnetic materials; (3) like poles repel and unlike poles attract; and (4) north poles point north, and south poles south. Equipped with this knowledge, the medieval Europeans navigated the globe, discovering and conquering countries as they went.

Peregrinus, however, failed to note that the Earth itself is a magnet. Yet it was not until 1600 that this discovery was finally made by William Gilbert, a physician of Queen Elizabeth I. In order to arrive at this conclusion, Gilbert performed numerous experiments that separated hearsay from truth, documenting them in his book *De magnetibus* along with a summary of the knowledge of the time about magnetism and electricity (Gilbert, 1600). Gilbert’s systematic and scientific treatise is considered by many to be one of the first great works in science (Butterfield, 1991) (see Fig. 1.2).

1.1 THE HISTORY OF MAGNETISM IN MEDICINE



Fig. 1.1. One of Petrus Peregrinus' inventions is this "Astrolabium", an oval lodestone mounted inside a wooden box. The four points of the compass and 360 subunits were painted on the inside of the box. This instrument was placed in a bowl of water to determine the azimuth of the sun, for example, and the angle was read after the astrolabium had stopped moving.

1.1.2 FIRST MEDICAL USES OF MAGNETS

Thales of Miletus, the first Greek speculative scientist and astronomer (ca. 624–547 BC) was also the first to make a connection between man and magnet. He believed that the soul somehow produced motion and concluded that, as a magnet also produces motion in that it moves iron, it must also possess a soul. It is likely that this belief led to the many claims throughout history of the miraculous healing properties of the lodestone.

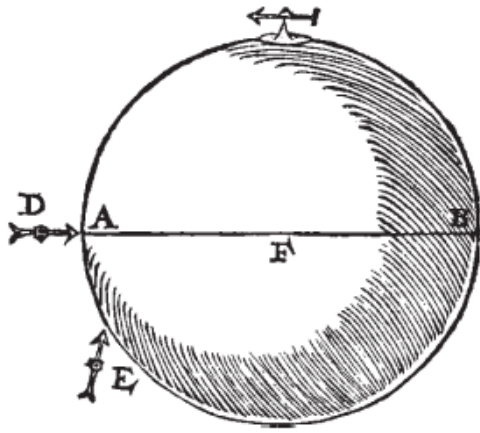


Fig. 1.2. The terrella (spherical lodestone), and the location of its poles from Gilbert's book *De Magnete*. The magnetic versorium (compass needle) on top of the sphere is pointing along a meridian circle; the versorium at D points directly to the center of the sphere and hence to the pole A, in contrast to the versorium at E.

Medical references to magnetism were made by Hippocrates of Cos (ca. 460–360 BC), who used the styptic iron oxides magnetite and hematite to stop bleeding and to control hemorrhage (Mitchell, 1932). Unraveling the true early medical applications of magnetite as described by Hippocrates and his scholars is, unfortunately, complicated by the two meanings of the same term. In particular, magnetite overlaps with the older term “magnesite”, a magnesium carbonate with laxative properties.

In the first century, Pliny the Elder (23–79 AD), a Roman scholar, collected and condensed the entire knowledge of the time into a thirty-seven-volume encyclopedia, which was used for the next 1700 years. Amid its wealth of information lies a description of the treatment of burns with pulverized magnets. Pliny, however, failed to discriminate fact from fiction, and included much folklore and superstition in his writings. He also theorized that “sympathies and antipathies” were the cause of magnetic phenomena, a viewpoint which was shared by Galen of Pergamum (129–199 AD). Galen compared the lodestone to cathartic drugs which attract certain “qualities” such as bile and phlegm, to drugs which remove thorns and arrow-points or draw out animal and arrow-tip poisons, and to “corn”, which is better able to draw water into itself than the sun's heat is to draw water out of it (Brock, 1916). The same attracting properties of lodestone were advocated by Dioscorides of Anazarbos in the first century in his encyclopedia of medical matter. He recommended their external use for “drawing out gross humors” (Gunther, 1934).

When magnetite was applied externally, this was either as the unbroken lodestone or in pulverized form, compounded with other ingredients, under the name of *Emplastrum Magneticum*. The usual practice seems to have been to bind the lodestone or magnetic plaster directly to the affected body part. This technique was thought to be efficacious in treating diseases such as arthritis, gout, poisoning, or baldness. Lodestones were even thought to have strong aphrodisiac potency (Mourino, 1991).

Although most ancient medical uses of magnetite were external, it was also promoted for internal applications by the Egyptian physician and philosopher Avicenna (980–1037 AD). Avicenna recommended using the magnet in doses of one grain as an antidote for the accidental swallowing of poisonous iron (rust). The pulverized magnet was often taken with milk, and the magnetite was believed to render the poisonous iron inert by attracting it and speeding up its excretion through the intestine. This remedy may have worked as a consequence not only of its intended mechanism but also because it induced vomiting (Stecher, 1995).

Albertus Magnus (1200–1280), in his book *Mineralia*, recommended the same milk/magnetite mixture for the treatment of edema (Magnus, 1890).

### 1.1.3 USE OF ATTRACTING FORCES OF MAGNETS IN MEDICINE

The earliest known account of the surgical use of lodestone is believed to be found in the writings of Sucruta, a Hindu surgeon who lived around 600 BC (Hirschberg, 1899). Sucruta wrote in his book *Ayurveda* that the magnet which is in Sanskrit called “*Ayas Kanta*” – the “one loved by iron” – can be used to extract an iron arrow tip. Sucruta specified that the extraction works best if “. . . the piece of iron is embedded parallel to the fibers of the tissue, does not contain any ears (barbs), and the opening is wide”.

Sucruta’s applications were not explored again for almost 2000 years. Gilbertus Anglicus wrote around 1290 in his earliest medical work that “. . . certain surgeons apply adamant or magnet, if iron is concealed in the flesh” (Anglicus, 1290). This concept was described in a publication from 1640 which suggested that iron in the form of iron filings should be fed to a patient with a hernia (Kirches, 1640). The appropriate placing of an externally attached magnet was then expected to attract the iron, thus drawing in and restoring the protruding intestine. The successful employment of this treatment was reported some years later by surgeon Ambrose Pare`, a claim which he asked doubters to take at face value “. . . on the faith of a surgeon” (Johnston, 1678)!

Other accounts of successful magnetic extractions also appeared, including the description by G. Bartisch. In 1583, he wrote: “A good cream, in case iron, steel or stone had leaped into your eyes, is made from 3 lots of rabbit fat, 1 lot of wax, 1 quint of yellow agstone and 1/2 a quint of lodestone. Such a cream, if applied over your eyes in form of a plaster, helps.” Hirschberg, who cited this description (Hirschberg, 1899), added: “Of course, it doesn’t help at all!” A similar dose of skepticism may be appropriate in the case reported by Andry and Thouret (Andry, 1779) who reported that around 1635 surgeons succeeded in bringing the point of a knife that had been swallowed accidentally to the integuments with the aid of the *emplastrum magneticum*. The point was then surgically removed from that location.

Gilbert cited such claims at the end of the 16th century, and categorically denied them: Lodestone ground into a plaster would not be strong enough to extract large iron objects; the same plaster applied to the head could not cure headaches; if lodestone were used with incantations it would not cure insanity; magnets applied to the head would not cause unchaste wives to fall out of bed; and lodestones would draw neither the pain out of gout nor poisons from other parts of the body (Butterfield, 1991). Gilbert believed that the only effect of this plaster was to heal ruptured tissues by drying them out. What magnetite (or iron) was good for, Gilbert maintained, was chlorosis, as patients with this disease were thought to benefit from small doses of iron filings mixed with strong vinegar. Gilbert found that this mixture also helped older patients with splenomegaly, chronic malaria and anemia – diseases not uncommon in the East Anglian swamps of England at that time.

More believable accounts of the applications of magnetic forces – at least in terms of present-day standards – began to appear in the 17th century. For example,

Andreas Frisii described a case in which a needle accidentally lodged in the side of a person’s throat was removed by a traveling mountebank, as “. . . fools rush in where wise men fear to tread” (Frisii, 1670):



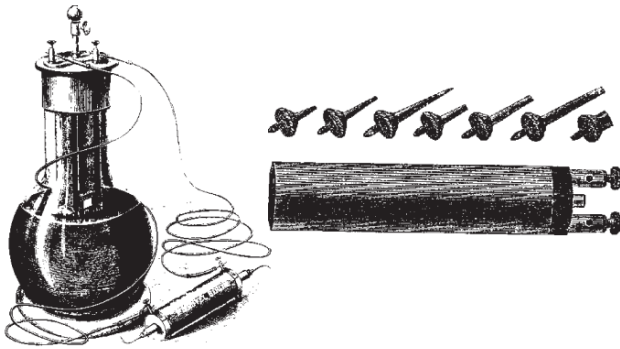


Fig. 1.3. Hand-held electromagnets used for the removal of magnetic objects from the eye. Left: The original Hirschberg magnet. Right: A further development of Dr. Hubbell. The needle-like tip is placed, preferably through the entry wound, as close as possible to the foreign iron or steel particle. The magnet is then turned on and the foreign body pulled out.

iris of the eye, which I endeavored to push out with a small spatula, but could not.

But on applying a lodestone, it immediately jumped out.” Again more than 80 years later, the use of lodestone for eye surgery was reported by Dr. Morgagni in a case involving the cornea (Morgagni, 1761). A more spectacular case involving the removal of iron fragments from behind the iris was reported by Dr. Nicolaus Meyer of Minden, Germany, in 1842. According to Hirschberg, one of the great experts in the field, this was the first case on record for the removal of pieces of iron from the interior of the eye (Hirschberg, 1883). The first case in America, was performed by Dr. Alex. H. Bayly of Cambridge, Maryland (Bayly, 1886). The magnet used in this case was an “artificial” or horse-shoe magnet.

Since 1879, the use of magnets has become the established procedure for the removal of magnetic objects from the interior of the eye (Tost, 1992). In that year, Dr. Julius Hirschberg reported the first ophthalmic use of electromagnets (Hirschberg, 1880). His magnet had the shape of an “electric handmagnet” and was used like forceps, in close proximity to the foreign metallic objects (see Fig. 1.3). Further developments in electromagnets by the Swiss ophthalmologist Otto Haab led to extractions in which the magnet was placed at greater distance from the eye (Haab, 1892). He used Ruhmkorff’s apparatus, a 130-kg heavy electromagnet with a small pointed horizontal protruding tip, designed at the Federal Institute of Technology in Zurich. The patient sat in front of the tip with their head fixed in a cone.

The cone was then moved by the physician into the extraction position. This magnet produced forces of 11.3 mT (@105 dyne) at a distance of 5 mm from the tip.

Due to the size of this magnet, it was later termed “the giant magnet” (Fig. 1.4).

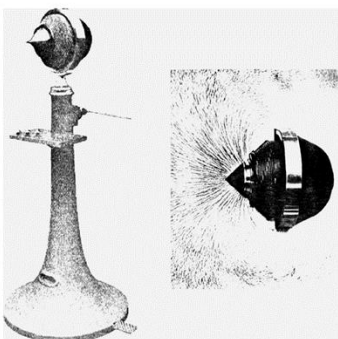




Fig. 1.4. Dr. Haab's giant magnet for the removal of iron or steel foreign bodies from a patient's eyes. The magnetic field lines around the tip of the instrument are shown to the right.

Haab and Hirschberg's different approaches to the removal of magnetic objects from the eye resulted in a 22-year-long (from 1892 to 1914) scientific battle waged through letters and articles. Their views differed with respect to the type of magnet to use, the position of the patient, and the route of removal of the foreign objects.

Haab favored the direct removal of small objects through the front of the eye, "der vordere Weg", while Hirschberg preferred removal through the back of the eye, "der hintere Weg". Both methods were known to be associated with peeling of the iris, a serious side effect, although it was not until 1970 that both techniques were shown to be equally risky (Springer, 1970). It is no longer necessary to establish the superiority of either method since the use of magnets to remove objects from the eyes is currently declining, due to advancements in modern eye surgery.

Magnets have been employed to remove iron or steel objects not only from the eyes, but also from other body parts. Swallowed pins and nails are commonly extracted magnetically from the stomachs of unlucky children, and shrapnel drawn from the surface wounds of war, bomb or crime victims. The extraction of a safety pin from a child's stomach is illustrated in Figure 1.5 (Luborsky et al., 1964).

Another interesting approach to render ingested and potentially dangerous metallic objects harmless is seen in the application of magnets in veterinary medicine.

Grazing cows often swallow sharp steel objects such as the barbs from barbed wire,

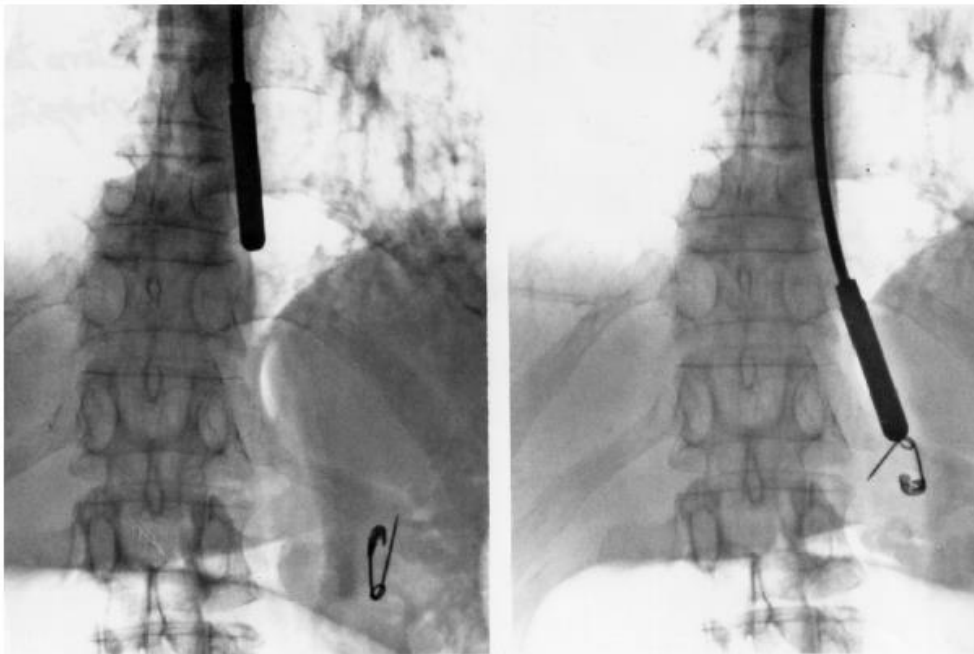


Fig. 1.5. Removal of an open safety pin from a patient's stomach. A probe is "swallowed" by the patient (left) and maneuvered by the physician until the tip is near the rounded end of the pin. When the tip of the probe is magnetized, it attracts the pin (right). With the pin in position, the point is less likely to do damage to the digestive tract as it is pulled out. (Photograph courtesy of F.E. Luborsky; Luborsky et al., 1964).

## History of all Medicine

or pieces of wire from bales of hay. In order to prevent these sharp objects from damaging the stomach and intestinal walls, the cows are forced to swallow a “cow magnet”, a 7 cm-long and 1 cm-diameter rod Alnico magnet covered with an anticorrosive plastic coating. The cow magnet remains in one of the cow’s stomachs, where it attracts any steel or iron objects that pass by, rendering them nondangerous and preventing the so-called “hardware disease”. The magnets can be easily retrieved when the cow is slaughtered, and do not appear to have any adverse side effects (Livingston, 1996).

### 1.1.4 TREATMENT OF NERVOUS DISEASES AND MESMERISM

The first person to mention the topical application of a magnet in nervous diseases was Aetius of Amida (550–600 ad), who recommended this approach primarily for the treatment of hysteria, and also for gout, spasm, and other painful diseases.

Some five centuries later, abbess Hildegard of Bingen (1098–1179) – who was said to have received the words for her books directly from God – described the use of plants and minerals (stones) for medical purposes and devoted a whole chapter to the lodestone. Her method of using the lodestone was somewhat new, in that the magnet had to be held in the patient’s mouth to remedy fits of anger or rage, to make fasting bearable, and to keep lies and maliciousness at bay (Riethe, 1961).

Several hundred years later, the Swiss Theophrastus Bombast von Hohenheim (1493–1541), a doctor and alchemist, reasoned that since magnets have the mysterious power of attracting iron, they should also be able to attract diseases from the body. He was often criticized for his beliefs and was mockingly called “Paracelsus”, which means “greater than Celsus” (Celsus was a famous Roman doctor who lived around 25 BC to 50 AD); he finally adopted the name Philippus Aureolus Paracelsus.

In his work, *Volumen Medicinae Paramirum*, Paracelsus described exact procedures to transplant diseases from the body into the earth by using a magnet. The choice of magnetic pole was important for these procedures. In his treatment of epilepsy – a disease in which there is “. . . more nervous fluid in the brain”, “. . . the repulsing pole of a magnet” was “. . . applied to the head and the spine”, and “. . . the attracting pole to the abdominal region”. Paracelsus further extended the use of magnets to leucorrhea, diarrhea and hemorrhages, for which his procedures were often successful. However, the effectiveness of his methods could probably be attributed more to the amazing powers of human imagination than to magnetism.

Reports from England during the 1740s regarding the production of strong artificial (not lodestone) magnets led to renewed interest in the use of strong magnets for healing purposes. It is unclear who was responsible for the introduction of steel magnets, but evidence points to it being either Gowin Knight, a physician; John Canton, a schoolmaster and amateur physicist; or John Michell, an astronomer.

The term “horse-shoe magnet”, however, came from Michell. One of the people who experimented with the new magnets was Father Maximilian Ho“ll (1720–1792), a Jesuit priest and astronomer at the University of Vienna. In 1774, Ho“ll became friends with the then 40-year-old physician Franz Anton Mesmer, to whom he gave some of these magnets. By applying them to his patients – who mainly had symptoms of hysterical or psychosomatic origin – Mesmer achieved many seemingly miraculous cures.

Mesmer first conjectured that the magnets worked by redirecting the flow of the universal “fluidum” from the atmosphere or the stars to the patients’ bodies. He soon discovered, however, that magnets could be replaced by nonmagnetic objects such as paper, wood, stone, and even humans and animals. This led Mesmer to coin the term “animal magnetism” for the fundamental biophysical force he considered responsible for the free flow of fluidum. Disease originated from an “obstructed” flow, which

could be overcome by “mesmerizing” the body’s own magnetic poles and inducing a “crisis”, often in the form of convulsions. The patients’ health and “harmony” could thus be restored (Mourino, 1991). A graphic account of the treatment of Mesmer’s first patient was given by Macklis (1993).

Mesmer’s theories and, probably even more so, his rapidly gained fame soon enraged the medical faculty of Vienna. In 1777, they used the case of Maria Theresia von Paradies as the reason to expel him both from the fraternity of medicine and from the city of Vienna. Maria Theresia was a blind child piano prodigy who regained her sight after being treated by Mesmer. Unfortunately, she simultaneously lost her equilibrium as well as her musical talents. Her parents were angered and demanded that Mesmer stop the treatment. The child’s reaction to the suspension of treatment was spectacular, in that she dropped immediately to the floor in convulsions, blind once again.

#### 1.1.4 TREATMENT OF NERVOUS DISEASES AND MESMERISM 11

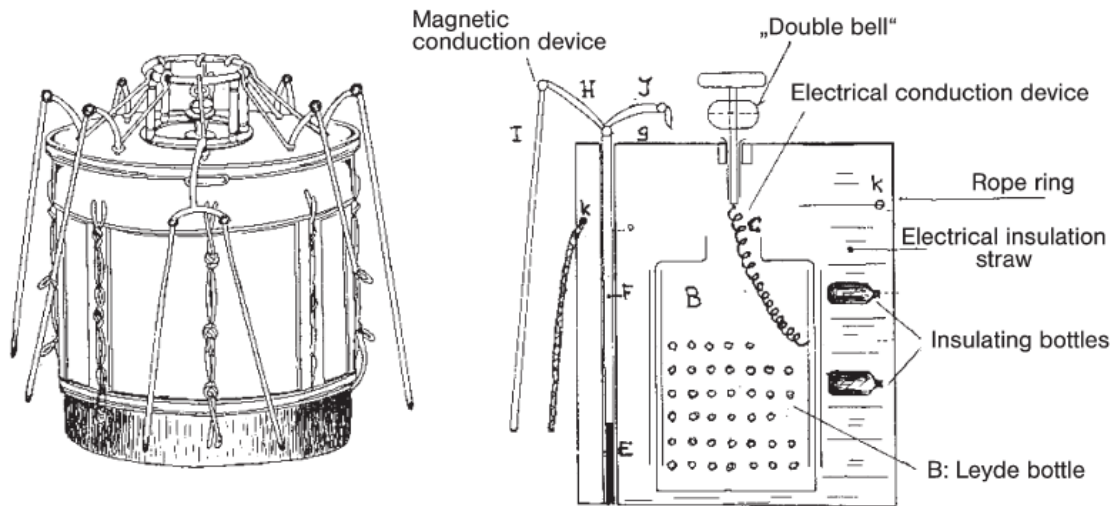


Fig. 1.6. Mesmer’s tub, the first medical device from 1780 designed for the biomagnetic treatment of men and women. (Illustration courtesy of Dr. A. Dittmar, Lyon).

Evicted from Vienna, Mesmer went to Paris, where his theories of “animal magnetism” were eagerly embraced. He used his many talents in a curative, psychological way (Darnton, 1972), and his clinic soon became famous for spectacular spiritualistic sessions. In one of his best-known treatments, patients bathed in magnetized water in an oval vessel called the “Baquet de Mesmer” (Mesmer’s tub) (see Figs. 1.6 and 1.7).

With time Mesmer’s theories evolved from his initial teachings, developing into an empirical psychological healing science, a mix of hypnotism and psychotherapy, imaginative and psychosomatic medicine. Taken up by many healers and quacks, Mesmer’s ideas were promoted in many books, and periodicals were soon crowded with reports of the successful treatment of nervous maladies. King Louis XIV of France was skeptical about these reports of animal magnetism and requested an investigation from Benjamin Franklin and Antoine Lavoisier. After having performed 16 different experiments – many of them in a blinded setup – the two scientists showed in 1784 conclusively that magnetism had nothing to do with the reported healings (Shermer, 1997). Many of the beneficial effects attributed to the use of magnets in the treatment of nervous diseases were evidently due to the increased suggestibility of the subjects to whom this novel remedy was applied. In such cases, with the necessary amount of faith, almost anything is a remedy.

## History of all Medicine

Even today, magnets continue to be advertised as health-promoting, and are sold in amazing numbers and in many different forms and shapes for all purposes. Recent advertisements, for example, claim that magnetic bracelets cure headaches, and that magnetic mattresses, shoe inserts, and belts have beneficial health effects by influencing the body's magnetic field. The use of supermagnets (neodymium-iron-boron magnets) is advocated as a pseudo-scientific cancer cure. Some of these interesting claims are described in more detail by Livingston (1996).

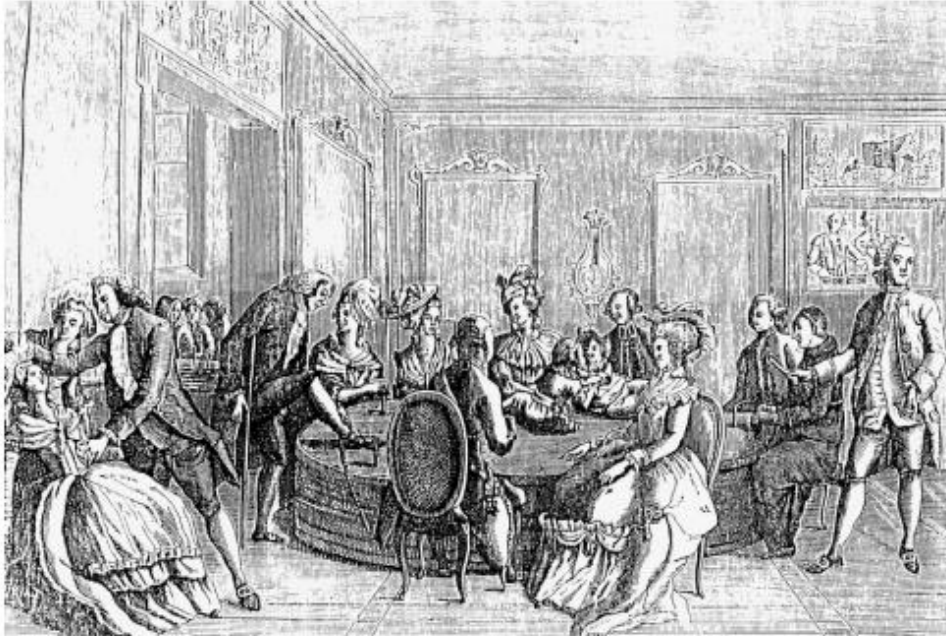


Fig. 1.7. Mesmer's tubs existed in different sizes, with large versions in great demand by the high society and the court of King Louis XVI from France during the 18th century. (Illustration from an engraving from 1779, collection of M. Gaston Tissandier; courtesy of the Lyon Historic Museum of Medicine, University Claude Bernard, Lyon).

### 1.1.5 OTHER MEDICAL USES OF MAGNETS AND MAGNETISM

During the past 20 years, the medical use of magnets has spread to fields as diverse as dentistry, cardiology, neurosurgery, oncology, and radiology, to mention only a few. The scientific advancements that made these new applications possible include the evolution and miniaturization of electromagnets, the development of superconducting electromagnets at Bell Laboratories in 1961, and the introduction of strong permanent magnets made of samarium-cobalt between 1960 and 1970 (McCaig and Clegg, 1987) and of neodymium-iron-boron (NdFeB) in 1983 (Kirchmayr, 1996; Goll and Kronmüller, 2000).

The new, much stronger magnetic materials allowed the construction of miniaturized magnets and electromagnetic coils, the smallest of which is so tiny that it could fit into the tip of a vascular catheter (Hilal et al., 1974). These small catheters permitted intravascular guidance from outside of the body with a strong magnetic field, and have been used clinically both for monitoring intracranial electroencephalograms and for producing electrothrombosis of inoperable arterial aneurysms.

Furthermore, with the help of such a catheter, a discrete embolus or an intravascular adhesive can be deposited for the selective occlusion of vascular lesions.

In 1979, a magnetically fixable catheter that electrically stimulated the heart was clinically tested in patients with bradycardic arrhythmia, providing temporary pacemaker therapy (Paliege et al., 1979). The design included an electrode almost identical to those of the stimulation catheters, except that its 18 mm-long and 0.9 mm diameter tip was made from soft iron coated with gold rather than from platinum or iridium-coated NiCr-steel. It was thus ferromagnetic. Using this catheter together with an external magnet, a stable stimulation position was reached in the



Fig. 1.8. (a) The Niobe3 system, a magnetic navigation system built by Stereotaxis Inc., St. Louis, Missouri, USA. The system is based on two large permanent magnets that, upon proper rotation and movement, are able to precisely direct a magnet-tipped guide wire (b) or electrophysiology mapping catheter (c) within the patient's vascular system. This system was approved by the FDA in the USA in 2003 for multiple interventional cardiology and electrophysiology procedures.

right auricle of 17 out of 19 patients, and in the right ventricle of 28 out of 32 patients.

A more recent report described the successful diagnosis of a complex congenital heart disease through the use of a catheter magnetically guided through a neonate's heart (Ram and Meyer, 1991). As the distance from a baby's heart to the skin above is relatively small, an appropriately placed magnet was able to direct the magnetic catheter tip into the right ventricle, thus allowing for the injection of a contrast agent.

The magnetic guidance of catheters and similar devices in adults requires the use of higher magnetic fields and field gradients than those employed with children.

One system which attains the required fields is the magnetic-implant guidance system developed for stereotactic neurosurgery (McNeil et al., 1995a, b). This system made use of very strong superconducting magnets to deliver a small magnetic NdFeB capsule within the brain with an accuracy of 2 mm. The capsule was moved by six independently controlled superconducting coils mounted in a helmet, and described to be used, in the future, to deliver radioactivity, heat, or chemotherapeutic drugs to a tumor in the brain.

During the early 2000s, the company Stereotaxis Inc., in St. Louis, Missouri, USA, further developed this system by replacing the superconducting electromagnets with easier to maintain NdFeB permanent magnets. In this new setup, the magnets are placed in a housing a few meters away from the surgical table. When the patient is ready to undergo the navigation of surgical guidewires and catheters

(Fig. 1.8b and c), the two magnets in their housing are rotated into place for magnetic navigation (Fig. 1.8a). The magnetic force vector established under computer

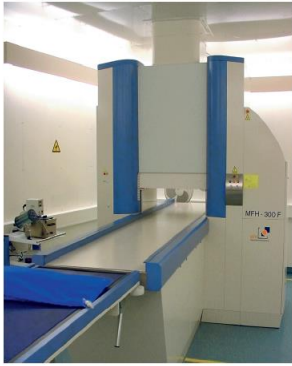


Fig. 1.9. Using an alternating magnetic field of 100 kHz, the magnetic field applicator MFH 300F (MagForce Applications GmbH, Berlin, Germany) is able to induce hyperthermia in tumors containing magnetic nanoparticles. Clinical trials are currently being performed (Jordan et al., 2001; Gneveckow et al., 2005).

and joy stick control by the surgeon then guides a catheter with a magnetic tip to chosen positions in the heart or coronary vasculature. For this purpose, the two magnets can be rotated independently and turned from one side to the other inside their housing, thus establishing precise force vectors with a 360-degree control over the catheter tip and an accuracy within 1 mm. With this system, the company hopes to improve on cardiovascular care through the performance of more complex intravascular procedures. Since 2003, when the FDA approved the Niobe1 System, multiple interventional cardiology and electrophysiology procedures can now be performed. These include the placement of a catheter against the wall of a beating heart in order to record its electrical activity and to identify heart tissue that is the source of the arrhythmia. Future applications currently being investigated by Stereotaxis Inc. include the ablation of atrial fibrillation, the repair of chronic total occlusion, the placement of percutaneous cardiac bypass grafts, the repair of mitral valves, and the drug delivery of angiogenic factors to diseased areas in the heart.

Rather than using the magnetic field of a magnet to move ferromagnetic substances to a target location, a patient's own blood flow can accomplish this task.

An externally applied magnet which produces a strong local magnetic field can then be employed to stop these magnetic substances at or in the target organ (e.g., a tumor). The magnetic substances – preferentially in the form of nanospheres or microspheres – thus become concentrated in the target area. The spheres, which can be filled with either chemo- or radiotherapeutic drugs, then produce their effects either by releasing the drug or by blocking the vessels and capillaries (embolization) (Poznansky and Juliano, 1984).

In addition to the embolization effect, the application of selective radiofrequency heating (similar to a microwave) to the area containing the magnetic microspheres can increase the tumor cell killing even further. First results of this approach using ferrosilicone were reported in 1976 by Rand et al. The systemic toxicity of this method is very low (Barry et al., 1981); furthermore, it can be combined with chemoembolization, as carried out by Sako for the treatment of liver tumors (Sako et al., 1985).

Developments by Jordan and Chan led to the current “magnetic fluid hyperthermia” (MFH) application of single domain, dextran-coated magnetite nanoparticles in tumors (Chan et al., 1993; Jordan et al., 1993). Since 2003, Jordan has been conducting a clinical Phase II trial of a combined magnetic

hyperthermia and radiation therapy (Jordan et al., 2001; Gneveckow et al., 2005) using the magnetic field applicator MFH 300F built by his company MagForce Applications GmbH in Berlin,

Germany (Gneveckow et al., 2004). The magnetic field applicator (Fig. 1.9) runs at 100 kHz and produces a magnetic field strength of up to 18 kA m<sup>-1</sup> in a cylindrical treatment area of 20 cm diameter. The first clinical results were presented in 2004 at the 5th International Conference on the Scientific and Clinical Applications in Lyon, France. Eight patients had been treated for cervix (n = 2), rectal, and prostate (n = 2) carcinoma, chondrosarcoma, rhabdomyosarcoma, and liver metastasis. The magnetic particles were injected locally directly into the tumors.

The treatment, which increased the tumor temperature to 43–50 C, took 60 min per session and was repeated from two to eleven times. No additional applications of magnetic particles were necessary after the initial injection. The magnetic fluid hyperthermia was very well tolerated, and none of the patients stopped the treatment. There was no pain and no burns, but some discomfort was felt due to excessive tumor heating (transpiration, heat sensation). Of the eight patients, six showed local control with no recurrent growth of the tumor, while the other two showed complete remission (at 9 and 14 months after treatment, respectively).

These results are very promising, however, and this topic will be discussed further in Chapter 4, Section 4.6.

In the field of dentistry, magnets are most commonly applied to aid in the retention of oral and maxillo-facial prostheses. The first treatment in orthodontics was reported in Holland in 1953 by Dr. Crefcoeur (Duterloo, 1995), since when magnets have been used for the treatment of unerupted teeth and tooth movement, as well as for the expansion, fixed retention, and correction of an anterior open bite. It seems that a prolonged constant force exerted by implanted rare-earth magnets provides effective tooth movement (Daskalogiannakis et al., 1996).

Other retention applications include the use of small rare-earth magnets to keep eyelids closed during sleep in patients suffering from facial paralysis or, conversely, to keep lids open during waking hours in patients with drooping eyelids, such as those with muscular dystrophy.

Magnetic intrauterine devices (IUD) for use in contraception have recently been developed (Livesay, 1987). The nonmagnetic versions of such devices often have a

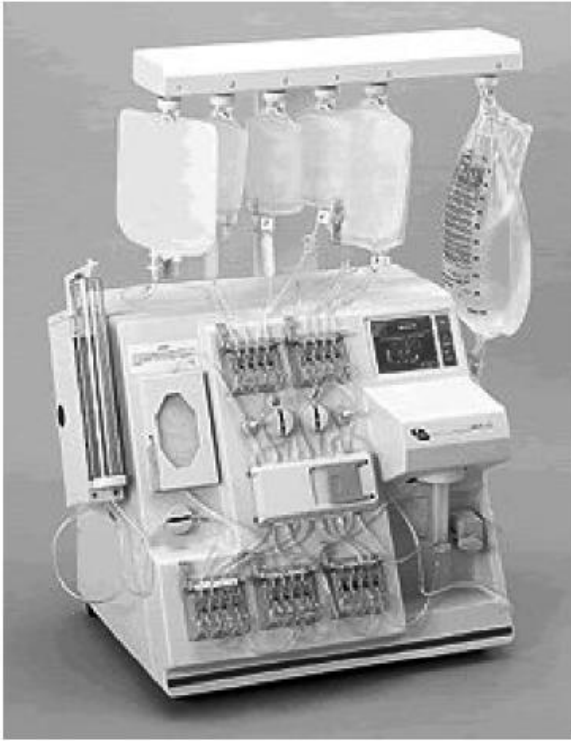


Fig. 1.10. The Isolex4 300i Magnetic Cell Selection System is the only FDA-approved product in the USA specifically for removing tumor cells in stem cell transplants.

string which extends from the uterus into the vagina; this is used by the gynecologist to remove the device. However, some studies have suggested that this string provides an entry path for bacteria and other organisms, and increases the chances of uterine infections. The addition of a small rare-earth magnet to the IUD allows for the string to be omitted. The IUD's correct position can be detected magnetically from the outside and removed using an extractor.

A recent ex-vivo application of magnetism in medicine is the purification of bone marrow from tumor cells with magnetic microspheres. In this procedure, the bone marrow is extracted from the patient prior to the use of conventional cancer therapy.

Following high-dose treatment with radiotherapy and/or chemotherapy, the patient is rescued with an autologous bone marrow transplantation. In order to ensure that the patient's own bone marrow is free of cancer cells at the time of transplantation, a purification procedure is performed. This procedure, which was developed during the early 1980s and uses monoclonal anti-tumor antibodies conjugated to magnetic polystyrene microspheres, has now become standard (Treleaven et al., 1984; Treleaven, 1988). An initial purification system based on this technique, the Isolex 300i from Baxter (Fig. 1.10), was approved by the FDA and introduced into general therapy in 1999.

The medical use of magnets is not confined to treatment approaches, but also extends to the most powerful modern diagnostic methods such as positron emission tomography (PET) and magnetic resonance imaging (MRI). In PET, magnets are used in a cyclotron to produce short-lived radioisotopes such as  $^{15}\text{O}$ . These radioisotopes, when injected into a patient and imaged with the PET system, allow determination of the biodistribution and biochemical functioning of different organs and tissues. In



contrast, MRI utilizes the magnetic properties of the elements, and is used extensively for three-dimensional, noninvasive scans of the patient's body; indeed, it is currently the most important diagnostic method available. The history, principle and applications of MRI are covered extensively in Chapter 3.

#### 1.1.6 THE INFLUENCE OF MAGNETIC FIELDS ON MAN

The human body is composed of atoms of different elements surrounded by water molecules. These atoms react to magnetic and electric forces and fields, and this may lead to, for example, a net-nuclear magnetization of a person when placed in a clinical MRI machine. It is therefore easy to imagine that magnetic and electromagnetic forces could alter physiologic functions, induce effects, or influence the organism in either a positive or negative way. Although the extent and importance of these phenomena has been under investigation for the past 100 years, the effects observed have generally been minimal and seldom statistically significant. A report of the American National Research Council which examined more than 500 studies spanning 17 years of research concluded, in 1996, that "No conclusive evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects" (National Research Council, 1997). A more succinct overview, but with the same conclusions, was provided by Tenforde (2003).

When investigating magnetic effects on humans, two different magnetic field "types" are generally distinguished: (1) a static magnetic field, which exists around a large magnet; and (2) a magnetic field that is pulsed at frequencies higher than 10 Hz, often abbreviated as EMF (electromagnetic fields). The study of these effects is termed "biomagnetism", some sub-fields of which are highly controversial, while others have already been established in medical applications.

Most scientists agree that static magnetic fields of up to 10 Tesla have no obvious effects on long-term plant growth, mouse development, body temperature, or brain activity (Barnothy et al., 1956; Barnothy and Barnothy, 1958; Maret et al., 1986).

Such conclusions echo findings made more than a century ago, at which time, Mr. Kennelly – the chief electrician at the Edison Laboratory – wrote, after exposing a volunteer to 27 000 times the magnetic field of the Earth, that, ". . . the human organism is in no wise appreciably affected by the most powerful magnets known to modern science; neither direct nor reversed magnetism exerts any perceptible

influence upon the iron contained in the blood, upon the circulation, upon ciliary or protoplasmic movements, upon sensory or motor nerves, or upon the brain."

(Peterson and Kenelly, 1892) (Fig. 1.11).

The lack of any apparent effects of strong magnetic fields on humans placed near powerful magnets does not imply that there are no effects at all. It would

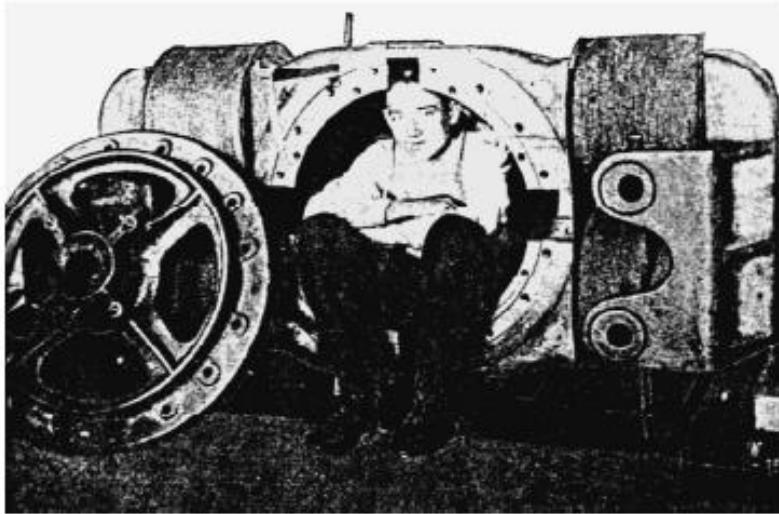


Fig. 1.11. Field magnet used in the studies of magnetic effects on dogs at the Edison laboratory (humans were not mentioned in the original legend!). The powerful attraction of bolts and chains is noticeable. The circular door at the side was made from brass.

also be foolish to conclude that humans have no magnetosensitive organs. During the past years, evidence has been mounting that not only do pigeons (Keeton, 1971), bees (Kirschvink et al., 1992a) and fin whales (Walker et al., 1992) possess magnetic receptors, but humans might also (Kirschvink et al., 1992b). Chains of magnetite particles similar to those known from magnetic bacteria and algae have been found – chains which supposedly are either a part of, or form the magnetosensitive organ itself. Several research investigations have been conducted in an attempt to show that humans have a “magnetic sense”. One study reported an experiment in which students were driven around blind-folded and then asked to point in the direction of their dormitories. Those students who used only their natural “magnetic sense” had a higher success rate than those whose “magnetic sense” had been deceived by the field of a magnet attached to their heads (Baker, 1989).

Clearly, further research is needed in this area as the results are often contradictory and suggest several interpretations.

Research indicates that humans are sensitive to small changes in magnetic field gradients, but not to the overall magnetic field (Rocard, 1964). Evidence supporting this has come from studies of the dowser reflex. A dowser, a person holding firmly onto a divining rod (see Fig. 1.12) will, under certain physical conditions, experience a force which results in an involuntary upward or downward movement of their rod. To skeptics the movement appears illusory, to believers it appears magical, but the effect has been consistently reported over the past 70 years by a number of authors. In the most-often performed experiment, a group of dowsers was made to walk along the same stretch of street. At points within 1 or 2 m of each other, they all had their divining rods pulled down to the earth.

Magnetic field measurements have shown that the dowser reflex occurs when the dowser passes through a region where the Earth’s magnetic field is not entirely uniform. This field anomaly produces a magnetic field gradient, which must exceed  $0.1 \text{ mOe m}^{-1}$  ( $8 \text{ mA m}^{-2}$ ) to be detected. The speed with which the dowser



Fig. 1.12. Dowser holding a divining rod while searching for underground water. (Illustration from Abbe' de Vallemont's Treatise on the divining rod, Paris, 1693).

passes through this field gradient also influences their magnetic reception. The dowser must pass through a  $0.1 \text{ mOe m}^{-1}$  field gradient within at least 1 s in order to detect it. Furthermore, the detection level can be increased by adding up the small differences in field gradients. Higher magnetic field gradients, however, lead to saturation and can only be detected by moving faster. Of additional interest is Rocard's notion that although most people are sensitive, a good dowser has a more accurate and rapid reflex than the bad dowser.

Physiological explanations of the dowser reflex have included the physiological induction of magnetic moments, electromagnetic currents, and nuclear magnetic resonance. None of these possibilities has, however, been able to account convincingly for the phenomenon, and thus the search for an explanation continues.

## History of all Medicine

Electromagnetic machines produce fields and field gradients which are constantly changing and which have been found to influence humans. The earliest experiments to test the effects of these fields using humans were performed at the end of the 19th century. D'Arsonval's experiments were among the most spectacular (Rowbottom and Susskind, 1984). In one of these experiments, a person was completely enclosed in a large solenoid resembling a cage, and insulated from all contact with it (Fig. 1.13). Owing to the high-frequency oscillating magnetic field within the solenoid, strong currents were induced within the subject's body, and

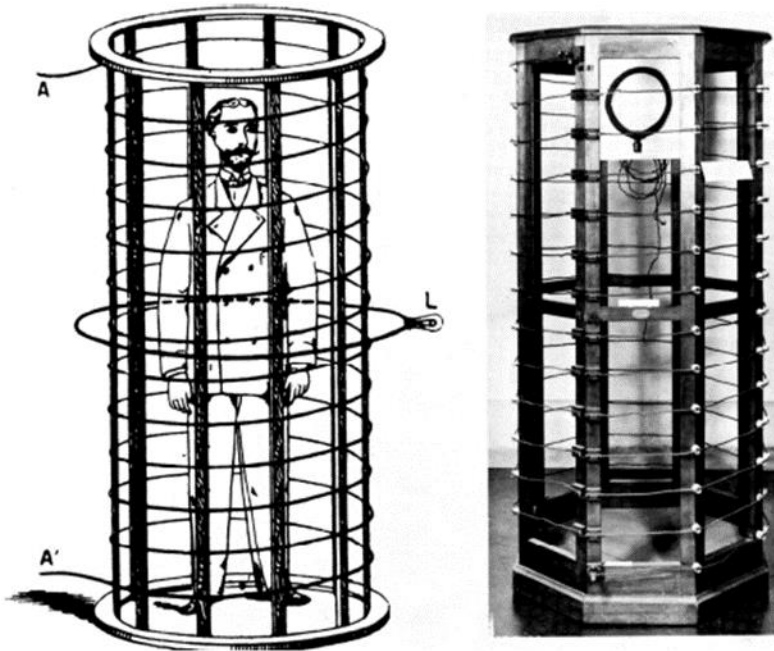


Fig. 1.13. D'Arsonval's great solenoid or cage for auto-conduction in which the person is insulated from all contact with current carrying wire. The photograph shows the cage actually used by D'Arsonval in 1893 for his experiments.

although neither pain nor any other sensation was felt, a lamp held in the person's hands became incandescent during the procedure. D'Arsonval called this method of applying high-frequency currents to man "autoconduction".

As the 20th century began, the serious investigation of the physiologic consequences of electromagnetic fields became tainted by association with quack science and the pseudo-technology of electromedicine. Dr. Albert Adams (1863–1924), one of the controversial therapists applying electromedicine, was named "Dean of 20th century charlatans" by the American Medical Association. Adams postulated that each organ system and each patient were tuned to a characteristic electromagnetic wavelength. It should therefore have been possible to diagnose medical conditions and to deliver therapy to individuals hundreds of miles away simply by using a properly tuned, radio-based device. This therapy was called "physiologic frequency manipulation", and it aroused public interest in bioelectricity and electromagnetic physiologic effects. The science community gradually lost interest in bioelectricity, but before its fall from grace, the groundwork was laid for such major clinical applications as electroconvulsive therapy, cardioversion, and transcutaneous nerve stimulation.

Between 1930 and 1960, the physiological and biological effects of electromagnetic fields were studied only minimally. Research accomplished by the small group of investigators who continued working in this

## History of all Medicine

area was reviewed comprehensively by Barnothy during the late 1960s (Barnothy, 1964, 1969). Although the design of many of those studies performed up to this time was flawed, some of their results have been confirmed by more stringent research. For example, results recently endorsed in a report by the National Research Council (1997) support previous findings that electromagnetic fields induce changes in the brain's electroencephalographic (EEG) activity (Bell et al., 1991), produce measurable changes in polypeptide synthesis in salivary glands (Goodman and Henderson, 1988), and are able to influence the levels of calcium and melatonin in cells exposed to high-level fields (Graham et al., 1996). Additionally, recent double-blind studies have confirmed the effects of low-frequency pulsed electromagnetic fields greater than 0.5 mT on growth induction in bone. Indeed, their use is now the treatment of choice for certain recalcitrant problems of the musculoskeletal system, including salvage of surgically resistant nonunions in children and adults and chronic refractory tendinitis (Bassett, 1989).

Available data indicate that humans are susceptible to alternating electromagnetic fields. Epidemiological studies even suggest health effects attributable to relatively small magnetic fields such as those found underneath a high-voltage line (Jauchem, 1995). The report of the National Research Council, for example, acknowledged a 1.5-fold higher incidence of childhood leukemia in homes situated close to high-voltage power lines, though the examined studies failed to show a statistically significant association between exposures and disease (National Research Council, 1997). Unless new theories for these effects are proposed on the grounds of molecular mechanisms, it will be very difficult to either prove or disprove any association between disease and the small magnetic fields produced near electric devices, machines and power lines. Even the electromagnetic fields in heavily industrialized regions amount only to a few tenths of one mTesla, which is less than 1% of the ambient terrestrial magnetic field. Most experts would not anticipate any serious effects related to these additional magnetic fields.

Current laboratory investigations employ more sophisticated techniques, more sensitive instruments and more refined statistical methods than ever before. When combined with our deeper understanding of magnetic resonance patterns in tissues (see Chapter 3), this vastly improved instrumentation should provide a strong base from which to improve our understanding of the electromagnetic field effects at the cellular and molecular levels. In time, this will likely lead to the introduction of new, magnetism-based medical techniques for diagnosis and therapy.

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### **4.11 A Brief History of Aromatherapy<sup>w</sup>**

Available evidence suggests that humankind recognised the power of aromatics as early as the Neolithic Period, which ended some 4,000 years ago. Aromatic herbs may have been used in cooking and medicine, as indicated by the discovery of medicinal plant deposits found in graves dating from some eight thousand years ago.

Egyptian culture used resins, balms and fragrant oils for medical, magical and religious ceremonies, for embalming, and as an offering to their gods. Other ancient cultures recognised the physical and psychological benefits of scented ointments and oils, including China and India, during the same period as ancient Egypt. Greek and Roman cultures refined and added to this knowledge. Hippocrates, known as the father of modern medicine, maintained 2,500 years ago that "the key to good health rests on having a daily aromatic bath and scented massage".

Dioscorides wrote about aromatics in his *Materia Medica* about 100 AD.

## History of all Medicine

With the fall of the Roman Empire and the expansion of Christianity, Roman physicians fled to Constantinople with the books of Galen, Dioscorides and Hippocrates. These were translated into Persian and Arabic and passed into the Arab world.

Most aromatic oils used (prior to about 1600 AD) were not distilled, as we know today, but were produced by macerating plants in hot vegetable oils or more commonly in animal fats.

However, distillation of some sort is an age-old process, which may have begun as early as 2000 BC. This suggests that the Arabs revived or improved upon the process that had been known but perhaps little used for over four thousand years.

Between the 7th and the 13th centuries Alchemist Arabic philosophers devoted themselves to the old hermetic art of alchemy, the purification and concentration of spiritual forces.

Reviving the use of aromatics in medicine and perfumery, they perfected the techniques. Alchemists optimistically searching for the "elixir of life" and "the philosophers' stone" made many chemical discoveries.

### HISTORY

800-870 AD - Al-Kindi is known to have written a volume called The Book on Chemistry of Perfumes and Distillation. Avicenna, the Great Physician, lived between 980-1037 AD and has been credited with the discovery of the refrigerated coil (a breakthrough in the art of distillation) and wrote the Canon of Medicine, a standard text until the mid-sixteenth century.

16th CENTURY - 16th Century - By the 16th century the printing press made possible the spread of aromatic and herbal knowledge, resulting in many herbal books; and "waters" and "chymical oils" could be bought from the local Apothecaries' shops. A German physician, Hieronymus Braunschweig, wrote several books on essential oil distillation. In 1597 he referenced 25 essential oils included rosemary, lavender, clove, cinnamon, myrrh and nutmeg.

17th & 18th CENTURY - By the beginning of the seventeenth century, with the isolation of Artemisia, bergamot, cajeput, chervil, cypress, mustard, orange-flower, pine, savin, thuja and valerian along with others, most of the useful essentials of Europe and the Near East had been discovered. The 17 18th centuries saw the beginnings of the common use of essential oils and aromatics for health. During the great plague of Toulouse (1628-1631), a formula was revealed by four thieves caught red-handed, thus began the story of the origin of the "Four Thieves Vinegar" which used herbs and spices in vinegar. The next few centuries saw the medicinal properties and applications of essential oils analysed and recorded. These included such oils as cedar, cinnamon, frankincense, juniper, rose, rosemary, lavender, sage, Artemisia, cajeput, chervil, orange flower, valerian and pine.

19th CENTURY - With the arrival of technical chemistry and modern science in the 1800s the scientific revolution of the early 19th century began and aromatics were investigated more scientifically; and attempts were made to control the adulteration of essential oils from the eighteenth century onwards. This science revolution had two important effects on the study of essential oils. By 1887 we saw the first recorded laboratory tests on the anti-bacterial properties of essential oils thus spurring natural practitioners and herbalists to continue to use essential oils widely in herbal preparations. But the mainstream medical profession became firmly fixed on isolating the active principles of natural substances and producing chemicals as drugs, which remains today.

## History of all Medicine

As research on essential oils continued, Drs. Gatti and Cajola, (Italy, 1923) published "The Action of Essences on the Nervous System", explaining how odours influence mood and emotion and defining two opposing states of anxiety and depression. They demonstrated that, by reflex action, the sense of smell has influence on the function of the central nervous system. Their work also included information on medicinal and skin care properties. Paolo Rovesti (1973), Professor and Research Director of the Instituto Derivati Vegetali, Milan University, Italy, showed antiseptic properties and psychological properties (stimulant/ sedative). Citrus (bergamot) was first clinically proven to be beneficial to anxiety and depression.

### PEOPLE IN HISTORY

#### 1920's - RENE M. GATTEFOSSE

In 1928, the French perfumer and cosmetic chemist Rene M. Gattefosse, was researching the cosmetic uses of essential oils. He was badly burnt in an explosion and he began to use lavender when the wound was not healing; he was surprised when the skin healed at a phenomenal rate with no sign of infection or scar. He published his book *Aromatherapie* showing the use of essential oils as antiseptic, antibacterial skincare and coined the term "Aromatherapy". In an article, he said: "The French cosmetic chemists are concerned that the natural complexes should be utilized as complete building units in the instance without being broken up. Dermatological therapy would, thus, develop into "Aromatherapy" or a therapy employing aromatics in a sphere of research opening enormous vistas to those who have started exploring it". (i)

#### 1940's - 1970's - JEAN VALNET

Jean Valnet, a French doctor and researcher/scientist, had a background in using herbs therapeutically and began using essential oils for treating patients during his time in French colonial Vietnam. He realised the potential of essential oils as part of treatment for specific medical and psychiatric disorders and by 1954, had established doses; the results were published in the book *Practice of Aromatherapy* (1964). This became our first *materia aromatica* of recent times and was a consolidation and expansion of the therapeutic applications of essential oils. He not only integrated essential oils as treatment into herbal medicine again, but also brought essential oils full circle back to the way they were originally used during the Renaissance. Considered the father of modern essential oil medicine, his students include Belaiche, Lapraz, Duraffourd, Penoel, and Mailhebiau. They have continued to develop his approach from the 1960s to the present day.

#### MARGUERITE MAURY

Marguerite Maury, a nurse, surgical assistant with an interest in biochemistry, explored the therapeutic use of oils in the 1940s and wrote *The Secret of Life and Youth*. She combined essential oils and massage producing a medico cosmetic therapy based on massage. She conceived the notion for the "individual prescription" (or IP), which is a blend to operate on physical/ psychological/ spiritual levels, to normalise the unbalanced functions of the whole person. In describing the effect of essential oils on the psyche, she said: "But of the greatest interest is the effect of fragrance on the psychic and mental state of the individual. Powers of perception become clearer and more acute and there is a feeling of having, to a certain extent, outstripped events. They are seen more objectively and therefore in truer perspective." (ii)

Maury is responsible for the type of non-medical aromatherapy that developed in England in the 1950s. Madeline Arcier carried on Maury's work, operating a clinic and school in London. Danielle Ryman, a



## History of all Medicine

student, is responsible for the reprinting of Maury's book. Robert Tisserand, a massage therapist from the UK, influenced by both Valnet and Maury wrote the very first aromatherapy book in English in 1977 entitled, 'The Art of Aromatherapy'. This book became the inspiration and reference for virtually every future author on the subject for almost two decades. This holistic approach is the foundation of what is globally generally called 'aromatherapy'.



## AROMATHERAPY TODAY

### United States

Today aromatherapy as a modality is practiced by licensed body workers, massage and beauty therapists, and other holistic practitioners. Essential oils are also combined with massage, skincare, physical therapy, chiropractic, acupuncture, yoga, and other complementary therapies. Few medical doctors offer aromatic medicine at this time, but capsules for IBS and relaxation are available with a prescription. More hospitals are including essential oil training in wellness staff education.

Since there is no certification available nationally, independent schools have developed their own programmes and titles for graduates such as Certified, Clinical, etc. but there remains no standard and programmes range from a one-hour online to live year-long programmes of 425 hours. Practitioners are trained online or in live classes in everything from a one hour hand massage to full 425 hour programme including aromatic medicine treating serious illness. Several attempts have been made to organise therapists resulting in two active organisations, namely the National Association of Holistic Aromatherapists and the Alliance International Aromatherapy. At this time the Aromatherapy Registry Council is the only national testing body that can give the title Registered Aromatherapist or R.A.



Europe

France has an abundance of holistic practitioners who use or research essential oils such as Prof. Pradal, Dr. Girault, and Dr. Belaiche, in the medical circles and Dr. Lamblin, Prof. Raymond Lautie, D. Sc., Andre Passebecq, M.D., D.Ps., and Pierre Franchomme in the naturopathic movement. Dr. Jean- Claude LaPraz is a medical doctor responsible for developing phytotherapy training of doctors and pharmacists in Lille, Montpellier, Athens and Monastir (Tunisia), and created a National Diploma in Clinical Phytotherapy. Dr. Christian Duraffourd also lives in France and teaches phyto-aromatherapy to medical professionals. Many naturalistic doctors use and prescribe essential oils within their practice, along with other natural medicines, but aromatherapy is not used in the mainstream medical arena. Additionally, there are aromatherapists practicing (although slightly illegally) through, say a chiropractor's office, or under some other licensed professional.

The rapid growth of the number of companies offering essential oils, especially the massive multi level market companies, has created a massive growth in the last ten years. They have also contributed to a large overuse problem so that some oils become scarce. And because many give no safe use advice, and promote unsafe uses (e.g. undiluted on skin, oral use in water,) that we now have a rise in adverse effects occurring. Time will tell how this all plays out.

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**4.12 The History of Massage Therapy** <sup>s</sup>: 5,000 Years of Relaxation and Pain Relief

THE ORIGIN OF MASSAGE THERAPY AND ANCIENT METHODS

The history of massage therapy dates back to 3000 BCE (or earlier) in India, where it was considered a sacred system of natural healing. Used by Hindus in Ayurveda “life health” medicine, massage therapy was a practice passed down through generations to heal injuries, relieve pain, and prevent and cure illnesses. Promoters of Ayurveda believe that illness and disease are caused when people are out of sync with the environment. Massage is believed to restore the body’s natural and physical balance so that it can heal naturally.

As culture and history evolved, the healing methods of massage traveled to China and Southeast Asia about 2700 BCE. Chinese massage methods developed as a combination of skills and practices of traditional Chinese medicine, martial arts and the spiritual yoga training of Buddhists and Taoists. Their methods were very similar to those of the Indians, based on the belief that disease was caused by an imbalance or deficiency of energy of various pathways. The ancient Chinese developed a text called The Yellow Emperor’s Classic Book of Internal Medicine that is today considered a staple of massage therapy alternative medicine (acupuncture, acupressure and herbal remedies).

By 2500 BCE, massage therapy had made its way to Egypt, where it was depicted in tomb paintings. The Egyptians added their own bodywork techniques and are credited with developing reflexology, which involves applying pressure to specific points or zones on the feet and hands to effect healing.

Later, monks studying Buddhism in China brought massage therapy to Japan in 1000 BCE and put their own twist on it, calling it “anma,” later known as Shiatsu. This technique is designed to regulate and strengthen organs by rebalancing energy levels through the stimulation of pressure points in hopes of bringing natural resistance to illness.

## MASSAGE THERAPY IN ANCIENT GREECE AND THE ROMAN EMPIRE

The Egyptians influenced the Greeks and Romans who used massage therapy in different ways. In Greece, between 800 and 700 BCE, athletes used massage to condition their bodies before competitions, and doctors often applied herbs and oils in combination with massage to treat various medical conditions. Hippocrates, the “father of medicine,” treated physical injuries in the 5 Century BCE with friction, a massage technique, and was the first to prescribe a combination of massage, proper diet, exercise, fresh air and music to restore health imbalance – a remedy we hear of even today.

Roman physician Galen, in the 1 Century BCE, used massage therapy on emperors, echoing Hippocrates’ ideas of treating injuries and illnesses. The wealthy Romans would have massages in their homes, but the general public would flock to the Roman baths for “spa” treatments and full-body massages, to stimulate circulation and loosen their joints.

The popularity of massage therapy declined in the West until the 17 Century, when new discoveries in pharmacology and medical technology changed modern medicine. However, many doctors could see the health benefits of massage.

A Swedish doctor brought massage therapy out of retirement. In the early 1800s, Swedish doctor/gymnast/teacher Per Henrik Ling created a method that became known as the Swedish Movement Cure to help relieve chronic pain. As much medical gymnastics as massage therapy, it was the precursor to what we now know as Swedish massage – a style that involves stroking, pressing, squeezing and striking.

Whereas Ling’s method used massage in his movements, 19 –Century Dutchman Johan George Mezger is credited with incorporating techniques that are used today:

Effleurage, which uses long, gliding strokes from the extremities inward at various levels of pressure

Petrissage, a technique that is rhythmic and may include kneading, skin rolling, lifting or a push-pull movement  
Tapotement, a beating/tapping administered with the side of the hand, a cupped hand or fingertips used in Swedish massage  
Friction, a technique that is physically demanding, consisting of deep, circular or crosswise movements with the thumbs, fingertips, palms or elbows, designed to penetrate deep tissue  
America jumps on the massage therapy bandwagon

As early as the 1700s, “rubbers” (women hired by surgeons to treat orthopedic problems with manual rubbing and friction) were the massage practitioners of the day. By the 1850s, however, “medical gymnasts” used movement and manipulation, as developed by Ling, to do the same thing.

Their comprehensive training included anatomy, physiology, hygiene, pathology and movement perceptions that they practiced in hospitals and clinics.

By the late 1800s, the names “masseur” and “masseuse” became popular.

These practitioners were trained in soft tissue manipulation à la Mezger.

Hydrotherapy was used in conjunction with massage at this time and could be considered the origin of today’s spa services, like body wraps and scrubs.

Curiously, the full-body massage became part of the “rest cure” for the melancholy known as neurasthenia that was popular among society ladies who lived the wealthy life of the late 1800s.

Massage therapy in the 20 and 21 Centuries

## History of all Medicine

The demand for masseurs and masseuses increased in the early 1900s. By the 1930s, Swedish massage had evolved, and the physiotherapists who used it in regular medicine helped massage therapy to become a legitimate and respectable form of medicine.

Once physical therapy was licensed in the 1950s, massage therapy had its own category. The American Massage Therapy Association (AMTA) was established and laid the groundwork for today's massage practitioners by establishing ethics and education standards.

Between 1970 and 2000, massage therapy experienced a transformation, as people chose to live healthier lifestyles and preferred more holistic approaches to health care, pain management and restoring and maintaining healthy bodies. Today, many realize that "massage is good medicine."

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### 4.13 A brief history of spa therapy<sup>r</sup>

A van Tubergen, S van der Linden 2001

Bathing in thermal water has an impressive history and continuing popularity. In this paper a brief overview of the use of water in medicine over the centuries is given.

#### NOMENCLATURE

The word "spa" may be derived from the Walloon word "espa" meaning fountain. This, in turn, came from the name of the Belgian town Spa, where in the 14th century a curative, thermal spring was discovered. Spa may also originate from the Latin word "spagere" (to scatter, sprinkle, moisten) or may be an acronym of the Latin phrase "sanitas per aquas" (health through water). In Britain, the word spa is still used, whereas in the rest of Europe the term "thermal waters" is preferred. Bathing in thermal water for therapeutic purposes has several descriptions (for example, taking the waters, balneotherapy, spa therapy, hydrotherapy), which will all be used throughout this paper, and are more or less interchangeable.

#### ANCIENT GREECE AND THE ROMAN EMPIRE

Taking the waters used to be a popular treatment for a wide range of diseases in classical times. The Greeks preferred baths in fresh water from natural resources, although bathing in the sea (thalassotherapy) was also applied. Initially, bathing was confined to the more wealthy people in private baths, but soon public baths were opened. The baths were considered sacred places and were dedicated to several deities.

In Homeric times, bathing was primarily used for cleansing and hygienic purposes. By the time of Hippocrates (460–370BC), bathing was considered more than a simple hygienic measure; it was healthy and beneficial for most diseases. Hippocrates proposed the hypothesis that the cause of all diseases lay in an imbalance of the bodily fluids. To regain the balance a change of habits and environment was advised, which included bathing, perspiration, walking, and massages.

The baths were often combined with sports and education, the precursors of the gymnasium.

Influenced by the Greeks, the Romans built their own thermal baths at mineral and thermal springs. A military presence was often the key to development of such a spa resort. Spas served not only for recuperation of wounded soldiers but also as rest and recreation centres for healthy soldiers. In contrast

## History of all Medicine

with the Greeks, who took the waters after intensive physical exercises, the Romans considered the baths more important than the gymnastics alone.

Besides cleansing, exercises, socialising, relaxation, and worship, medical treatment was also applied extensively. Spa treatment consisted of application of water to afflicted parts of the body, immersion of the whole body in the water (especially for rheumatic and urogenital diseases), and drinking excessive quantities of water.

Asclepiades (c 124 BC), a Greek physician who practised in Rome, introduced general hydrotherapy and drinking cures as treatments.

He recommended bathing for both therapeutic and preventative purposes. Pliny the Elder (AD 23–79) assigned different properties and indications for cure to different types of waters. Galen (AD 131–201) also advocated the use of water for the treatment of a variety of diseases.

He preferred cold water, a concept that was reconsidered periodically throughout the following ages.

In Rome three different types of baths developed: baths at home (*balnea*), private baths (*balnea rivata*), and public baths (*balnea publica*) that were run by the state.

With the introduction of aqueducts, the public baths later developed into huge and impressive edifices (*thermae*) with a capacity for thousands of people. During the heyday of the Roman bathing culture, the inhabitants of Rome used 1400 litres of water per person per day, mainly for bathing.

The Roman legions, far away from their homeland, built their own baths at mineral and thermal springs in the newly conquered lands.

Examples are found all over Europe.

Throughout the years the Roman bathing culture gradually changed towards a place for relaxation and pleasure, rather than for medical treatment, although this was still provided.

The Romans preferred to use the baths and very hot waters for renewing their appetites and thirst, and the baths became, rather, centres for various sexual practices.

Deterioration of morals became manifest, the hygienic and medical indications for bathing disappeared, and baths as a haunt for pleasure ruled.

## THE DARK AND MIDDLE AGES

With the fall of the Roman Empire in 476 and the rise of Christianity, the bathing culture fell into disrepute and bathing was officially prohibited. Faith in cure through worship and praying was regarded as more important than a medicinal bath.

Baths were redeveloped as churches, although some remained available for the aristocrats who were not affected by the church's decrees.

The aversion to bathing remained for many centuries. People abstained from bathing as long as possible, sometimes for years.

“People abstained from bathing, sometimes for years”

From the 13th century onwards, baths gradually came into re-use, particularly in southern Europe under the influence of the Moors. Public baths were rebuilt and the entrance was usually free. The baths were

## History of all Medicine

often crowded and people bathed for hours, sometimes days in the same bath. Blood letting, enemas, and drinking cures (up to 10 litres a day) were prescribed, although relaxation and pleasure were most often the reasons for bathing.

### RENAISSANCE

In the 16th century the image of the public baths again deteriorated in many countries, which led to the closure of many public baths. They were considered to be a source of contagious diseases such as syphilis, plague, and leprosy, and the baths became dangerous meeting places for political and religious dissidents.

In addition, owing to a shortage of firewood, public baths became more expensive for a population that had already become impoverished by many wars.

Nevertheless, the gentry continued to visit the baths, although they preferred to go to baths from natural sources with warm, mineral water instead of the public baths.

Taking the waters was now no longer a spontaneous activity, but it was increasingly prescribed under medical direction.

Several famous Italian doctors recovered lost texts on medical treatment from the ancient world, and the value of balneology as a therapeutic modality was reconsidered.

By this time, the first attempts to analyse the waters for their mineral components were made, although the results were often controversial.

It was equally important to recognise the quality of each mineral and its effect on the body, as to know which parts of the body might be influenced by taking the waters.<sup>8</sup> In 1553 an encyclopaedic work, *De balneis omniae qua extant*, was published, containing an overview of ancient and modern literature on the use of medicinal water. In 1571, Bacci published *De thermis*, in which he taught the art of the baths from Galen and the Aristotelians. According to Bacci, taking the waters was not a matter of empiricism, but a sound discipline with its own rationale, institutes, and doctrine, which the learned physician alone was qualified to understand.

Minardo published in 1594 a compendium on the two baths of Caldiero in Verona. The first bath was used for drinking and bathing, the second was used by bathers with skin conditions, for bathing of animals, and for washing off therapeutic mud.

Seventy-eight conditions that might benefit from these baths were listed. The treatments consisted of drinking cures, bathing, purging, and application of mud. It was advised to follow this type of treatment for 15 days, and repeat it every year.

According to Bacci, essential to the cure was a quiet orderly life in pleasant surroundings with good food and wine, and a maximum of comfort.<sup>8</sup> Therefore, he argued, the baths would do no good to the poor. Other, practical obstacles also restrained the poor from attending the baths: they had no time for leisure and the baths and mud were usually not free.

The new bathing culture that had developed in Italy gradually spread over other parts of Europe, and was particularly popular with the elite. The development of spa treatment north of the Alps was mainly provided by the Paracelsians.

By the turn of the 17th century, many spas were rediscovered in France. Two types of spas existed: hot springs for drinking and bathing, and cold springs for drinking cures only.

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Taking the waters in French spas was a serious activity and quite sober.

Doctors created centres for treatment, not for leisure. Much attention was paid to purging, drinking cures, eating well balanced diets, and bathing. In the afternoons some indoor leisure activities were provided. Late in the afternoon, people walked about on the promenade, and went to bed early in the evening.

This was in contrast with many other European countries, where in the evenings diverse leisure activities were offered such as theatre and dance.

### 19TH AND 20TH CENTURIES

Around 1800 interest in the bathing culture grew. Further attempts to analyse the mineral water were made, aiming at improving its use in medicine, and at preparing mixtures of water identical to those mineral waters famous for their curative properties.

Doctors were convinced that for each disease Mother Nature possessed an appropriate medicinal spring, which could be discovered through chemical analysis of the waters.

Priessnitz and Kneipp further developed the principles of balneotherapy (medicinal use of thermal water) and hydrotherapy (immersion of the body in thermal water for therapeutic purposes).

Individual treatments were prescribed, based on the composition and temperature of the water. Also, combinations of treatments were developed consisting of hot and cold baths, herbal baths, mud packs, active physical exercises, massages, and diets. Kneipp advocated a holistic approach to the treatment of a disease. In contrast with the spa resorts, which aimed at the elite, Kneipp directed his attentions to the common man.

The use of mineral waters and the development of hotels and guesthouses at the springs became prevalent throughout Europe and North America.

Every spa resort had its own theatre, casino, and promenades besides the bathing buildings.

In Britain, Germany, Austria, and Belgium much importance was attached to ostentation. Grand hotels arose with casinos and dancing establishments surrounding the spa resorts. The spa resorts became not only a meeting centre for the elite but also a place of creativity for painters, writers, and composers.

The baths were again crowded. Baden Baden (Germany) became the most glamorous resort in continental Europe. It was the place to see and to be seen.

“The medical significance of bathing is acknowledged by many rheumatologists”

However, in Britain use of the spa declined. The English spa resorts were run by amateurs, and the medical hydrology was poorly organised.

The resorts aimed more at pleasure, rather than medical treatment, and were exploited by estate developers with commercial interests.

Competition from seaside and foreign resorts, and an economic depression in the 1930s led to a further decline. Eventually, spa therapy was excluded from the National Health Service, which meant that many spa resorts in Britain closed down.

After the second world war and with the rise in welfare, spa treatment became available for the common man in many European countries, mainly owing to reimbursement by state medical systems.

## History of all Medicine

Other activities and new treatments were introduced, and balneology, hydrotherapy, and physiotherapy underwent major developments.

In the past decades, a large change in the use of mineral water for the treatment of several diseases has taken place in continental Europe.

The medical significance of bathing is now acknowledged, especially by many rheumatologists and dermatologists, and this aspect is considered more important for a number of spa resorts than prestige and leisure. Bathing is usually combined with many other treatments, such as physical exercises, hydrotherapy, and mud packs. The spa resorts are differentiated according to their location (for example, seaside, mountain area) and the chemical composition of their mineral water (for example, sulphurous, bicarbonated, or sulphated).

Each spring has its own characteristics and related therapeutic properties.

However, a substantial number of spa resorts also direct more attention towards leisure. Steam baths, saunas, whirlpools, and solariums are standard equipment of many such spa resorts, with the main objective being to relax and strengthen the body and mind, and to prevent development of disease. In Britain, a revival of the spa culture may be expected, with the re-opening of the hot springs in Bath in 2002. This spa will offer facilities for medical treatment, but, in addition cater for a growing number of so-called health tourists, who combine their holidays with an investment in wellbeing.

### SCIENTIFIC EVIDENCE FOR THE EFFICACY OF SPA THERAPY

Despite the popularity of spa therapy, reported scientific evidence for its efficacy is sparse. A decade ago, Heywood reviewed well documented records on spa treatment for lead poisoning in the 18th and 19th century in Bath.

Paralysis occurring as a result of chronic lead intoxication (colica pictonum) was a common problem in those days owing to the widespread use of lead in household ware, cosmetics, food colorants, wine, and salts for medicinal use. Already at the beginning of the 16th century, Bath was famous for curing paralysis, even in those patients who were regarded as incurable.

The treatment consisted of bathing, drinking cures, diet, and purges. Patients admitted to the Bath Hospital came from all over England, and often had already been treated for their paralysis elsewhere, without success. However, many of these presumed incurable patients were cured after their (months) stay in Bath.

An example can be found in the comparison of medical records of Bath and Exeter Hospitals between 1762 and 1767.

During these five years, 285 patients with colica pictonum were admitted in Exeter and 281 patients in Bath.

Seventy-three per cent of the patients from Exeter were cured or improved, whereas the figure was 93% from Bath. Moreover, the group in Bath included some 80 patients referred from Exeter who had not been cured by treatment in Exeter.

From 1760 to 1879, 3377 patients were admitted in Bath for paralysis due to lead intoxication. Forty-five per cent were cured and 93% had at least improved.

## History of all Medicine

The high cure rates for paralysis by spa therapy in Bath may be attributed to several factors. Sitting in warm water produces diuresis, with increased excretion of sodium, potassium, calcium, and also lead. Also the good food, exercises, removal from the source of lead, and the large quantities of water rich in calcium and iron contributed to the success of spa therapy in Bath.

In the past decade several randomised controlled trials have studied the effects of spa therapy in rheumatoid arthritis and osteoarthritis. Patients were randomly allocated to receive spa therapy or sham/no therapy. The authors of a recent systematic review on the effects of spa therapy in rheumatoid arthritis and osteoarthritis stated that a definite judgment about its efficacy is impossible because of methodological flaws in these studies. Overall, the results showed positive effects lasting for three to nine months. Recently, a randomised controlled trial has shown that spa therapy is clearly effective in ankylosing spondylitis.

Two intervention groups followed a three week course of spa therapy at two different spa resorts, and were compared with a control group who stayed at home and continued standard treatment consisting of anti-inflammatory drugs and weekly group physical therapy. Significant improvements in function, pain, global wellbeing, and morning stiffness were found for both intervention groups until nine months after spa therapy.

### CONCLUSION

Throughout the ages the interest in the use of water in medicine has fluctuated from century to century and from nation to nation. The (medical) world has viewed it with different opinions, from very enthusiastic to extremely critical, and from beneficial to harmful. Today, spa therapy is receiving renewed attention from many medical specialties and health tourists, and having a revival. However, the exact therapeutic potential of spa therapy still remains largely unknown. Better and more profound scientific evidence for its efficacy is therefore warranted, in particular for its effects on the musculoskeletal system.

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## 4.14 A History of Kinesiology <sup>9</sup>

Jaime Schultz

### LEARNING OBJECTIVES

1. Understand the importance of context in understanding historical change.
2. Describe the difference between physical education as a profession and physical education as a discipline.
3. Explain why departments of physical education became departments of kinesiology.
4. Recognize the importance of integrating kinesiology's subdisciplines.

### INTRODUCTION

What we call ourselves matters. The discipline we know today as kinesiology has gone through several different names, and with each change came debate, contention, and a particular emphasis that gives the field its current meaning. We are now well into the second century of kinesiology's many evolutions, and



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a brief historical analysis is important to understanding where we came from, who we were, who we are, and where we might be going.

To appreciate the history of kinesiology requires recognizing its key precursor—physical education. In this case, physical education does not refer to the classes you took in elementary or high school, or even the skill or lifestyle classes you may take in college. Instead, it represents academic departments of physical education in higher education, many of which are now called departments of kinesiology. These are units dedicated to creating and sharing knowledge about physical activity and human movement, and as you will find in this chapter, these departments now include a variety of subdisciplines—specialized domains of study within the broader subject.

### The Embryonic Period: 1880s–1900s

Sport studies scholar Joan Paul (1996) classifies the era between 1880 and 1900 as the embryonic period for physical education. In other words, the field was in the very beginning stages of development. During this time, advocates recognized the value of activities such as gymnastics (which then referred to a series of precise and regimented exercises), calisthenics, physical culture, and physical training to encourage health and physical fitness.

However, physical education did not have a central mission, and multiple, competing philosophies and exercise systems created a lack of organization and coherence.

What encouraged the need for formalized physical education? Historical understanding requires situating the phenomenon in question within its historical context. It is important to ask what the larger social, cultural, political, and economic issues were at the time, how those issues affected physical education and, in turn, how physical education influenced those historical circumstances. For example, the modernization and industrialization of society in the 19th century reduced the amount of physical activity required in the average American's day. Activists therefore worried about the lack of "vigor" in people's lives, and promoted exercise as the antidote to a "soft" life. At the same time, lingering concerns about military preparedness resulted in the establishment of physical training programs. And with the large increase in immigration during this time, reformers turned to sport and physical activity to address their anxieties about health, assimilation, and Americanization. Thus, physical education developed within the context of great historical change and was designed to meet numerous social needs.

In the 1880s and 1890s, most programs aimed at training physical educators were located in private normal (or teachers') colleges. Instructors of these programs were often physicians, illustrating the close ties between the field and medicine and the biological sciences. Accordingly, the curriculum included aspects of anatomy and physiology, physics, and anthropometry (the scientific study of the measurements and proportions of the human body), as well as educational theory.

Physicians made up the majority of the first members of the Association for the Advancement of Physical Education, established in 1885 as a way to begin to institutionalize and legitimize the area of study. The following year, the organization (which had changed its name to the American Association for the Advancement of Physical Education, or AAPE; see Table 3-1 for a series of name changes that offer historical insight) published the *American Physical Education Review* (now the *Research Quarterly for Exercise and Sport*), a journal that disseminated and encouraged professional knowledge.

At the 1890 AAPE conference, physician Luther Halsey Gulick declared physical education a "new profession" that involved "a profound knowledge

Table 3-1 The Evolution of SHAPE America

|   |
|---|
| 1885 Association for the Advancement of Physical Education                  |
| 1886 American Association for the Advancement of Physical Education         |
| 1903 American Physical Education Association                                |
| 1937 American Association for Health and Physical Education                 |
| 1938 American Association for Health and Physical Education and Recreation  |
| 1974 American Alliance for Health, Physical Education and Recreation        |
| 1979 American Alliance for Health, Physical Education, Recreation and Dance |
| 2013 Society of Health and Physical Educators (SHAPE) America               |

of man [sic] through physiology, anatomy, psychology, history and philosophy". Although many think that the subdisciplinary movement of kinesiology is something that originated in the mid-20th century, it is clear that it has deeper roots (Park, 1989).

#### The Profession of Physical Education: 1900–1960

In the early 1900s, physical education also included elements of nutrition and hygiene, which originally signified elements of exercise, but later aligned more with what we think of today as health education. Before long, however, physical educators began to emphasize the value of play, games, and sport, leaving behind the gymnastic tradition. This happened in both men's and women's programs, which were almost always separate from one another.

Men's intercollegiate sport grew evermore popular during this time, and physical education programs extended their training to the preparation of coaches. After a brief period of intercollegiate sport for women, the majority of women physical educators advocated intramural and interclass athletics and, more often, dance, instruction in posture, hygiene, and "play days." These activities were supposed to promote cooperation, instead of the type of competition that would damage participants' bodies and minds.

The "play attitude" promoted the "ideal of universal opportunity for participation in athletic activities" (Sefton, 1941). In this way, physical educators kept tight control over the development of women's sport, a situation that lasted throughout much of the 20th century.

Initially, many programs, for both men and women, operated under the name "physical culture," but in the late 1920s and early 1930s, the term physical education became the dominant title for the field. Most faculty "did not carry active programs of research in any area of specialization," but instead focused on teaching and advising their students (Massengale & Swanson). Education "was dedicated to acquiring motor skills and methods of teaching these skills, planning curriculum, and the organization and administration of programs in athletics, health, and recreation as well as physical education" (Corbin, 1993).

Times of war offer occasions to assess the physical fitness of the nation and often highlight the importance of physical education. This happened during World War I, when military officials rejected an alarming number of young men drafted into service due to "lack of fitness." As a result, many states enacted

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mandatory physical education instruction in public schools, which, in turn, created a need for trained and qualified teachers.

It happened again during World War II, when physical assessments deemed many potential draftees unfit to serve. Events in the postwar era also pointed to the need to bolster national health. The 1953 Kraus-Weber tests demonstrated that American youth were less fit than their European counterparts. President Dwight D. Eisenhower suffered a heart attack, which directed greater attention to the benefits of exercise for both health and rehabilitation. For these and other reasons, in 1956 President Eisenhower initiated the President's Council on Youth Fitness (now the President's Council on Physical Fitness, Sports, and Nutrition—once again, what we call ourselves matters). This high-profile, government-sanctioned program boosted the profession of physical education.

The end of World War II marked the beginning of Cold War hostilities between the United States and the Soviet Union. In the absence of “hot war” (or actual fighting), political and ideological tensions spilled over into symbolic arenas in which the two sides could compete for dominance.

Sport was one such arena. In fact, the Cold War helped convince women physical educators and others to revise their views on women's sport and begin to promote elite-level training and competition. During this same time, administrators of high-profile men's athletic programs began to move into separate units and away from their historical homes within physical education. As coaches left physical education, it became possible for administrators to hire faculty dedicated to teaching and research.

Like sport, scientific innovation provided another place where Cold War opponents could compete. In 1957, the Soviets successfully launched Sputnik 1, the first artificial satellite, sparking a great deal of concern about the status of science education in the United States. This affected physical education and incited calls to “scientize” the field.

Physical educators added their voices to these calls.

Some of this impulse came on the heels of James Conant's 1963 book, *The Education of American Teachers*. Conant, the former president of Harvard University, was critical, writing, “I am far from impressed by what I have heard and read about graduate work in the field of physical education ... To my mind, a university should cancel graduate programs in this area”. As you might imagine, this alarmed physical educators, who already felt as though their work did not receive academic respect (see Twietmeyer, 2012).

The year after Conant published *The Education of American Teachers*, Franklin Henry, a professor at the University of California at Berkeley, pushed the idea that physical education should be an academic discipline, or a branch of knowledge designed to produce and disseminate expert knowledge, as opposed to a program that trained future physical educators and coaches for a profession. Henry (1964) claimed “that the proper academic study for physical education would only come by grounding the discipline in theory.” He continued:

An academic discipline is an organized body of knowledge collectively embraced in a formal course of learning. The acquisition of such knowledge is assumed to be an adequate and worthy objective as such, without any demonstration or requirement of practical application. The content is theoretical and scholarly as distinguished from technical and professional.

Henry defined the “scholarly field” of physical education as one that includes “anatomy, physics and physiology, cultural anthropology, history and sociology, as well as psychology”. No matter the students'

career goals, he argued, they should be educated in these areas that would provide a broad-based understanding of human physical activity.

The academic Discipline of Physical Education:

1960–1980

In the early 1960s, prodded by the words of Conant and Henry, members of the American Academy of Physical Education sought to determine what should constitute the discipline’s “body of knowledge.” The subsequent Big Ten Body-of-Knowledge Symposium identified six areas of specialization: (1) administrative theory in athletics and physical education, (2) biomechanics, (3) exercise physiology, (4) history and philosophy of physical education, (5) motor learning/sport psychology, and (6) sociology and sport education. These subdomains, along with several others, are currently recognized within kinesiology.

Consequently, the 1960s and the 1970s fostered specialization within physical education (Table 3-2). Members of the various subgroups formed their own organizations, journals, texts, and specialized courses within the major. With this trend came greater respect for the field and the production of new knowledge, but “disciplinization” also had some negative consequences.

First, the move devalued the importance of physical education as it pertained to the preparation of teachers and coaches—suggesting that practitioners of physical education were somehow worth less than those who researched it.

Second, disciplinary specialization brought fragmentation, such that the subdomains too often acted independently, rather than in concert. Instead of integrating their knowledge for a more holistic understanding of human movement, scholars became isolated from one another. This lack of integration and unification troubled physical educators, who worried that students would fail to appreciate and, more important, assimilate the depth and

Table 3-2 The Evolution of Subdisciplinary Organizations

|   |
|---|
| 1953 American College of Sport Medicine                                       |
| 1967 International Society of Biomechanics in Sports                          |
| 1968 North American Society for the Psychology of Sport and Physical Activity |
| 1972 North American Society for Sport History                                 |
| 1972 Philosophic Society for the Study of Sport                               |
| 1973 International Society of Biomechanics                                    |
| 1974 The Association for the Study of Play                                    |
| 1978 North American Society for the Sociology of Sport                        |
| 1983 Sport Literature Association   |
| 1985 North American Society for Sport Management                              |
| 1985 Association for the Advancement of Applied Sport Psychology              |

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breadth of information in their respective programs. They also worried that researchers in the subdisciplines could just as easily belong in departments of physiology, physics, biology, history, sociology, philosophy, and psychology as they could in physical education, which might, in turn, render departments of physical education obsolete in the eyes of campus administrators.

The number of programs dedicated to teacher training, often called pedagogy, started to decline. Some departments even eliminated the programs altogether. In time, “physical education” no longer seemed an appropriate title for the discipline. One by one, different units began to change their names, becoming departments of exercise science, sport science, sport studies, human movement, human kinetics, and kinesiology, to name a few.

In the 1980s, colleges and universities used as many as 100 different names for the area of study once known as physical education (Corbin, 1993, p. 85). By 1990, wrote Karl Newell, it was not “an overstatement to suggest that physical education in higher education is in a state of chaos” (1990a, p. 228). One way to remedy this, Newell (1989) argued, was to bring everyone together under the umbrella of kinesiology. He offered the following rationale for this name:

- It was representative of the entire field.
- It sounded academic.
- It was succinct.
- It was neutral with respect to the major subdomain debates on each dimension.
- It was already established as the departmental title in a number of leading academic institutions.

Not everyone has agreed with the wholesale change to kinesiology, and several departments have resisted the trend.

As we consider the subdisciplinary movement, it is important to understand that kinesiology not only has a history—it also includes history. Sport history is an important subdiscipline that emerged in the late 1960s and early 1970s. Sport historians consider a range of fascinating topics, including organized athletics, physical education, physical culture, active leisure, dance, recreation, and other physical practices. Historians look at these topics as they relate to technology, media, education, religion, the military, race, ethnicity, class, sex, gender, sexuality, disability, popular culture, politics, the environment, public policy, geography, and ideas about the body. In the United States and Canada, the North American Society for Sport History has been the most important organization for work in this area, although sport historians are often involved with other organizations in kinesiology, sport studies, history, American studies, women’s and gender studies, and popular culture.

Kinesiology as a Unifying Title:

1990–Present

The word kinesiology can be broken down into the Greek words kinesis, which means “movement,” and ology, or “the study of.” Newell was certainly not the first to suggest the word. Within physical education, it has been used since at least 1886 (Paul, 1996). However, the 1990s brought a concerted quest for a common professional identity and, according to Newell (1990b), “kinesiology provides the best option in promoting a broad-based disciplinary, professional, and performance approach to the study of physical

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activity”. Debates about the title and focus of kinesiology continue to rage. Some critics contend that the word is too esoteric for the general population. Others find the term’s focus too narrow, aligned more with structural–functional research, particularly biomechanics, and divorced from practical application. Still others contend that guiding concepts, such as “movement” and “physical activity,” are too broad and will lead (indeed, have led) to topics of study that deviate far afield from the field’s roots in physical education. We continue to question what areas should constitute our collective body of knowledge.

Table 3-3 The Evolution of the National Academy of Kinesiology

1904 Academy of Physical Education

1926 American Academy of Physical Education

1993 American Academy of Kinesiology and Physical Education

2010 National Academy of Kinesiology

However, kinesiology is frequently, though not entirely, the overriding title for the many things we do, study, and promote. If you take a look at Table 3-3, for example, you can see that what was once the American Academy of Physical Education gradually added “kinesiology” to its title and eventually dropped the phrase “physical education” altogether to become the National Academy of Kinesiology (NAK). The organization’s dual purpose is to encourage and promote the study and educational applications of the art and science of human movement and physical activity and to honor by election to its membership persons who have directly or indirectly contributed significantly to the study of and/or application of the art and science of human movement and physical activity (NAK, 2016).

Embedded in this description is an appreciation of the field as both a profession and a discipline.

It bears mention that the need for unity also extends to work done within departments of kinesiology—not just among them. Kinesiology is composed of many subdisciplines; it is therefore multidisciplinary. But multiband even cross-disciplinarity falls short, argues Gill (2007): “Inter-disciplinary implies actual connections among subareas, and an interdisciplinary kinesiology that integrates subdisciplinary knowledge is essential”.

As you move forward in your studies, your challenge is to start to see the many ways that kinesiology’s subdisciplines inform one another—to see cross-disciplinary and interdisciplinary connections. Your ultimate goal is to take an integrative perspective to consider the many ways that knowledge from each area informs, enhances, and complements your understanding of human movement.

### Chapter Summary

From its humble beginnings in the 19th century, the field we know today as kinesiology has gone through many changes. From unorganized efforts to provide health and fitness opportunities for children, to the profession and eventual discipline of physical education, to the move toward kinesiology, physical activity and human movement have remained our core concerns. Kinesiology includes subdisciplines from the natural sciences, social sciences, and humanities, all of which help us understand how, when, and why people move.

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#### 4.15 Radiesthesia History °

Abbé Mermet

RADIESTHESIA seems to be a strange word to most people on both sides of the Atlantic. On the Continent, however, every educated man knows what it means and the literature on the subject is both extensive and popular, especially in France, Belgium and Italy, where masters of the art and science of Radiesthesia have been practising it successfully for the last few decades.

Abbe Mermet had the satisfaction of being acclaimed during his lifetime as the 'King of dowzers', not only in France but all over the continent of Europe. He was one of the few prophets who gained recognition in his own country. Wherever he went he made an unforgettable impression, not only by virtue of his amazing practical results, but also by his unfailing willingness to help those in need of such material things as water and coal, and those in distress about missing relatives whom he invariably traced. And he did it all with a modesty akin to saintliness. He was indeed a priest who had found his real vocation.

All kinds and conditions of men consulted him from various parts of the world. A poor distressed widow in France, whose son had been missing for some time; the chief engineer of the world-famous firm of Suchard in Switzerland; a missionary in South America; and even the Pope himself, who took a great interest in his work, all appealed to him for help and guidance to solve problems which had left experts and specialists completely baffled. And never did anyone appeal to him in vain.

Abbe Mermet almost invariably gave the final and true answer without any thought of pecuniary reward.

Not only did he establish Radiesthesia on a sound practical basis but he raised it to the level of a new science, making people realise, in the words of Shakespeare, that 'There are more things in heaven and earth than are dreamt of in our philosophy.'

Radiesthesia may be defined as sensitivity to radiations. And every one without exception is sensitive to them. It is only a question of degree. The word 'dowsing' is the nearest equivalent to Radiesthesia, but whereas dowsing is confined to searching for latent water or minerals with a divining rod or pendulum, Radiesthesia covers the whole field of radiations from any source, living or inert. Of late years, Teleradiesthesia, which is prospection at a distance, has made great strides and the subject is fully dealt with in the third part of the present work.

In this country, we have had some notable medical pioneers in Radiesthesia, who unfortunately are no longer with us. Special tribute should be paid to Drs E. W. Martin, W. Guyon Richards, E. T. Jensen, Hector Munro, Dudley d'Auvergne Wright, to mention but the leading ones. There are now quite a number of medical men who use Radiesthesia in their practice. Indeed, we have a Medical Society for the Study of Radiesthesia in London which publishes a quarterly journal.

This Society welcomes any qualified medical man with an open mind on the subject, who wants to become familiar with this fundamental approach to the nature of health and disease so that the knowledge now acquired may be used both for diagnosis and treatment.

Many important works on Radiesthesia have been written by Continental medical men, engineers and chemists. In this country, we have a few eminent medical radiesthetists and quite a number of distinguished amateurs. But none has ventured to write an authoritative work on Radiesthesia for the guidance of the medical profession and especially the general public.

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The translation into English of such a greatly needed work is indeed overdue, and the publishers have been fortunate in securing the rights of what is generally regarded as the great classic work on Radiesthesia, namely the present textbook written by the late Abbe Mermet. Not only is it a work indispensable to any student or practitioner of Radiesthesia, but it is also a perennial.

The first edition was published before the war and it has been constantly revised and reprinted ever since, the latest edition having appeared as recently as 1957.

In France, Abbe Mermet's work has been awarded a prize by the National Society for the Encouragement of Public Welfare.

His remarkable achievements have often been reported in the French Press and in particular his 'Psychic Radiesthesia' which enabled him to discover fields of petroleum in Africa, Galicia and other parts of the world by distant prospection. He was consulted by the Vatican authorities for important archaeological researches in Rome, all of which met with success. The records are in the Archives of the Vatican Library.

Over 50,000 copies of Abbe Mermet's work on Radiesthesia have been sold and it shows no sign of being in the least out of date. Abbe Mermet called it his testament and at long last we, in this country, are called to be its legatees.

The nature of Radiesthesia has not yet been finally elucidated but its practical results have been so firmly established by a host of reputable research workers that a sceptical attitude, or unwillingness to investigate, is no longer justified.

We do not understand the nature of electricity but we go on using it simply because experience has shown that it works.

Similarly, with Radiesthesia. Preconceived ideas and prejudices due to our present imperfect knowledge of scientific laws can only hinder human progress. We must approach Radiesthesia with an open mind for, after all, it is the results that count.

And here we have the finest possible opportunity of studying the most comprehensive work that has yet been written on Radiesthesia, based as it is on forty years' practical experience.

One of the greatest scientists of our time, Dr Alexis Carrel, Nobel Laureate, and perhaps the most famous research worker that the Rockefeller Institute in New York has ever had, realized the importance of Radiesthesia over thirty years ago, and expressed his opinion in the following words: 'The physician must detect in every patient the characteristics of his individuality, his resistance to the cause of the disease, his sensitivity to pain, the state of all his organic functions, his past as well as his future. He must keep an open mind free from personal assumptions that certain unorthodox methods of investigation are useless. Therefore, he should remember that Radiesthesia is worthy of serious consideration.'

This translation is the English version of the posthumous and definitive French edition, published in Paris in 1957, and includes all the essential data concerning experiments and prospections which appeared in the preceding editions.

Some technical and unusual words are fully explained in the Preface

NO man can give more than what he has and therefore one must not expect an author to impart more knowledge than he possesses. Thus at the outset of a new work it should be carefully specified what is involved and what is not. In this particular case we are dealing with the subject of Radiesthesia, often



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called the art of dowsing. I have not attempted to present a synthesis of other methods but only to give a detailed exposition of one method among others, namely my own.

The reader will not find any elaborate explanation in these pages. One's intelligence, ever eager to find out truth, and with good reason, concentrates on the causes of phenomena, and this may well prove misleading and deceptive. Rather must one admit that, in the present state of our knowledge, no theory appears to be satisfactory. The same applies to the phenomena of light, heat, electricity, wireless and others. If it is a question of undulations, what is the undulating substance?

One must have the wisdom to avoid coming to conclusions.

When an Indian fisherman first got an electric shock from a torpedo-fish, or numb-fish, he would have been utterly incapable of giving a true explanation of the phenomenon and his impressions would have been purely imaginary, not to say absurd. It is better to keep silent, rather than put forward chimerical theories with the risk of preventing the developments of science at the outset, by confining them to some preconceived hypothesis.

My intention in the present work has been to set out, in an orderly manner, the facts observed in the course of forty years' practice, to explain experiments with sufficient precision so that they may be repeated by anyone, to expound a method which has proved its worth, and to bring into relief some fundamental laws emerging from this somewhat limitless and disconcerting subject of Radiesthesia. Criticism made in a truly scientific spirit will be welcome.

In France, the pioneers in the field of Radiesthesia have been, in the majority of cases, Catholic Priests who invariably have a strong aversion to spiritualism, occultism and all kinds of magic. Is it conceivable that if, in the course of their experiments, they had discovered some suspicious element, they would have continued their researches? The constancy of physical laws, their neutrality in regard to any religious or philosophical question, constitute criteria showing that we are confronted with purely natural forces. Therefore, if there is no co-operation with any misleading influence, it is a question of pure science. It has always been a fatal mistake to oppose real progress in Science, affecting not only those responsible for such an attitude, which is of little importance, but also those whose authority was unquestioned and whose supporters they gratuitously decided to become. But this is not the first time that men with a religious vocation, like shrewd detectives, have shown the way to a discovery useful to humanity. There is no need to get alarmed in the present case. I am not to be held responsible for the occult practices, more or less unconscious, to which some people might become addicted under cover of my method.

I should like to make it quite clear that I submit my work to the judgment of those in authority in the Catholic Church who are not in the least likely to be led astray by unwarranted claims on the part of any individual.

In this work, it seems to me that I have written a supplementary chapter to the old textbooks of classical physics.

It may take many years before all the phenomena of Radiesthesia are elucidated and its nature completely understood including the range of wave-lengths involved, their periodicity, their influence on environment, and the best method of capturing them and controlling their effects so that they may be used to give beneficial results.

This work, therefore, is but an outline, an accumulation of material intended to build, one day, a cathedral. I hope it will also inspire other radiesthetists to reveal their own secrets and thus create a fraternal link between all those devoting their efforts, hitherto too individualistic, to the progress of Radiesthesia.

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I must also express my deep gratitude to all those who have helped me in this work, first to the members of L'Association des Amis de la Radiesthesie who have urged and encouraged me to write this book, and particularly to my friend Father de Belinay, s.j., whose great knowledge has guided me at all times and prevented me from falling into scientific heresies.

The reader will find here facts and experiments, and certain laws, or rather constant manifestations of radiesthetic forces, based on tentative hypotheses necessary for the explanation of facts. But he will find no theory accounting for them. This is quite intentional and the reason for it is obvious for no theory could account for all the facts. Any explanation would be more obscure than the particular fact to be explained. It is better, therefore, to remain silent and frankly admit that we do not know.

In Radiesthesia some discover various things while others discover explanations. In the practical field of discovery, we can distinguish those who find something from those who never find anything. But as far as discussion is concerned we are all equal and different views are often expressed in radiesthetic circles.

It is a natural tendency of the mind to find out the cause and explanation of any phenomenon. But when this is impossible, the scientific attitude should be one of benevolent curiosity, patient, obstinate; controlling one's work, repeating, varying and multiplying experiments in order to establish future theories on sound scientific foundations. Actually, in Radiesthesia, it is only facts that are of primary importance.

Aristotle differentiated physics from metaphysics. It would seem that Radiesthesia takes an intermediate place between the two. By reason of its obvious similarities with the elements and laws of classical physics, gravitation, light, heat, electricity, magnetism and Hertzian waves, Radiesthesia is closely linked up with the group of sciences which studies the laws and forces of Nature. On the other hand, owing to certain results which might be regarded as supernatural, the apparent disproportion of the means employed, and the mysteries associated with it which it is not yet able to elucidate, Radiesthesia appears to be concerned with the suspect domain of forces transcending those of Nature.

Among radiesthetists, I have observed two tendencies. Some, endowed with a really scientific temperament, see and seek in Radiesthesia a new branch of the physics of waves and radiations. Others, possessing psychic and metaphysical tendencies, attracted by the wonders\*of occultism, aim at linking up Radiesthesia with phenomena of abnormal hypersensibility or spiritism.

Personally, I must make my own position quite clear. I regard Radiesthesia as being purely scientific. If it had not been so, I should have given it up long ago. All the facts I have observed, whether explicable or not, appear to be purely natural and the mystery associated with them is of the same kind as that characteristic of luminous, calorific and Hertzian waves. Hence my endeavours have always been to discover the points of contact between these branches so closely akin to the same science and I hope that those more learned than I will continue to investigate on the same lines.

My own conviction is that those who try to associate Radiesthesia with occultism are doing a great deal of harm to it.

I formally decline any solidarity with them, any responsibility for their theories and explanations and terms they use. Of course, one cannot stop anyone calling himself a radiesthetist but it would be most unfair if the misconceptions of some misguided enthusiasts should bring discredit to Radiesthesia.

And now let us discuss the subject of distant prospection or Teleradiesthesia which is very topical. Having practised it for over twenty years I may venture to give a word of advice. A comparison may help us to see the subject in its proper light.

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Let us imagine the case of a surgeon who has discovered a new method of operating for cancer. In performing 100 operations, he achieved success in 80, leaving 20 failures. The president of a society of surgeons suggests that he should perform two controlled operations. Result: two failures. It would be fair to conclude: 102 operations, 80 successes and 22 failures. But the reckoning in this case is different: two operations, two failures. All the facts involved, confirmed by the cured patients themselves as well as by the professional staff, are ignored so that the final impression is falsified.

Where would science be today if only controlled experiments had been taken into account? And if, in the case mentioned above, a generalised statement condemning the operation in question had been made consequent upon two failures?

If students ^ Radiesthesia will only proceed to work as explained in Chapter XIII on a map or photograph, they will find that it is not more difficult to succeed at a distance than on location. Personally, after having surveyed a certain site, I never give a final opinion without having controlled my work on a map or plan in the quiet atmosphere of my own study.

There is a demand for results. In the first edition of the present work, we gave 20 results. It is easy for anyone to verify them. Dates, testimonies, references, are all there. Surely, that should be enough.

Practical conclusion: when you are asked to make a prospection, begin by making a study of the map or plan representing the site. If you find nothing, do not go on the site.

If you feel anything, you should go, if possible, in order to check up on the site. On returning, another control should be made on the plan, map or photograph. Later on, with greater experience, it will be unnecessary to go on the site but useful only to indicate to those concerned where digging operations should be done to obtain a good result.

It is, of course, understood that to achieve a successful prospection on a plan, it is essential that it should be properly made. An ordinary piece of paper is not a plan. In chapter XII the necessary conditions to be fulfilled for making a good plan are indicated. They may be briefly summarised here. The plan should be so detailed (altitude, water streams, forests, hedges, ditches, houses, etc.) that the teleprospector should feel he is actually on the site itself. Black or white lines which may stand for roads, paths, streams, tunnels, etc., are not sufficient indications.

Moreover, and this is also essential, one must choose to work on a favourable day and at a favourable time. Thus, to give an example, the teleprospectors who worked on the plans put forward for the Congress of Paris (June 1933) a fortnight before the date of the Congress must have encountered insurmountable difficulties as during that time the atmosphere was highly charged with parasitic radiations.

One day I had to go to the South of France to make a prospection but on that particular day parasitic radiations were so strong that from nine o'clock in the morning until five o'clock in the afternoon I found it impossible to detect a single stream.

For those who are feeling sceptical about these radiesthetic phenomena capable of disturbing and even preventing any kind of work, either on the site or on paper, I will mention a case in which I was both a witness and a victim. On 4th March 1933 I was called to make a prospection in the small town of Penthaz, near Lausanne (Switzerland) with a view to increasing the water supply. Accompanied by a pupil, I arrived on location at 1.30 p.m. We began to work right away. All was going well when suddenly the pendulum stopped and refused to function.

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I said that it must be due to fading and advised waiting for a while but at 5 p.m. we were still waiting for the end of the fading. In spite of all our efforts, and surveying the site at different points, sometimes with the rod and sometimes with the pendulum, we failed to detect anything at all. The pendulum remained motionless for three hours both in the hands of my companion and in my own. As this happened in the presence of the local council and the schoolmaster who had brought his pupils to witness a demonstration of our radiesthetic powers, our embarrassment may well be imagined.

When it was time to leave I said to my audience: 'There is something very serious happening in the atmosphere today. It may be an earthquake or a volcanic eruption but I do not know for certain.' The next day, I had a 'phone call from Penthalaz:

'Have you seen the papers this morning? You were right yesterday.'

And that morning the papers gave a full account of the terrible tidal-wave catastrophe in Japan.

It is also worth noting that as soon as I arrived home I tried to do my prospection on a plan with the same negative result.

It was only at 6.40 p.m. that suddenly the radiations reappeared and the pendulum began to move again.

This somewhat sensational example serves to stress the fact that there are certain times and days when the pendulum cannot be used.

And now little book, bearer of proven truths, go wherever you find welcome in the five parts of the world. Sustained by the indulgence of the learned, by the sympathy of colleagues, and by the sole desire of doing good, with a prayer, too, that Heaven may not withhold its blessing, go, teach all who seek with good will, to discover and use those treasures that the earth hides from us, and, through the observation of beneficent laws, to relieve the sufferings of humanity.

Abbe A. Mermet Recteur de la Chapelle de Sainte-Madeleine

President honoraire de l'Association des Amis de la Radiesthesie

Jussy, pres de Genkve, Suisse

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### **4.16 Bioresonance Therapy – a complementary medical method <sup>y</sup>**

Michael Galle 2006

#### **HISTORY**

The bioresonance method was developed in the 70s of the twentieth century by natural medicine oriented physician Franz Morell and electronics engineer Erich Rasche out of the medication test of electroacupuncture in accordance with Voll.

Using a sender for electromagnetic vibrations which was in electrically conducting contact with homeopathic medications and a receiver system which was connected to the electroacupuncture measuring circuit, Morell and Rasche obtained the same electrical skin conduction parameter changes on acupuncture points as if the original medications were present in the measuring circuit. They thereupon postulated that medicament information is marked by weak low-frequency electromagnetic vibrations in the range of 1 Hz to 106 Hz and that consequently – due to the physiological effects (resonances) on the

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acupuncture points - such weak electromagnetic vibrations are part of the information transmission system in human beings.

Therefore, based on the mode of the tests and on the determined biological effects on the wholeness of human beings, weak, coherent electromagnetic vibrations are postulated as information carriers. However, they are not explicitly measurable. When there is contact between a person and the unit, an electromagnetic white noise which is clearly above the electronic white noise of the unit is measured. This active electromagnetic white noise of human beings seems to provide the basis for the transmission of information in an as yet unknown manner. In order to obtain a first theoretical understanding of this phenomenology, Galle applied explanatory concepts of biophoton theory to the low frequency electromagnetic vibrations which are relevant in bioresonance therapy.

The therapeutic utilization of this knowledge led to the development of bioresonance therapy. In this method, the postulated electromagnetic vibrations are obtained via flat electrodes from specific skin regions of humans. After optical uncoupling, they are inverted in a phase constant manner in the unit (mirrored) and returned to the person as therapeutic input.

This can be selectively applied either throughout the entire frequency passage range (1 Hz – 20 0000 Hz) or with highly specific frequency passage range.

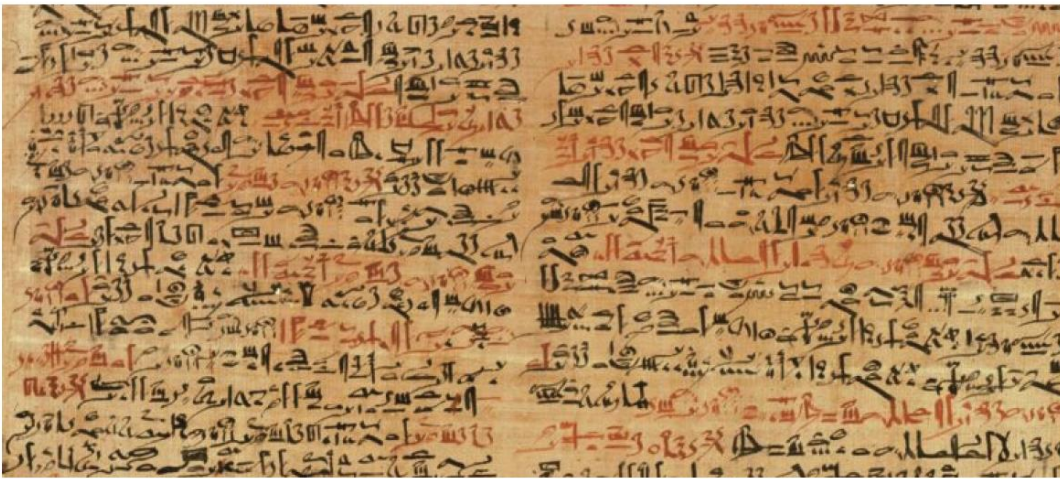
The methodological approach of Morell and Rasche was typical for experience healing. This method was developed by means of input-output research on the wholeness (black box) of human beings. Thus far, only relatively hypothetical explanatory models exist with regard to the physical and physiological interactions. In order to test the reproducible effect of a healing method, one does not, however, require reductionistic-materialistic explanatory concepts.

Theoretical explanation is a claim, but not a necessary criterion of natural science.

It is of historic interest that at the same time, Fritz-Albert Popp and Bernd Ruth discovered biophotons. These are weak coherent electromagnetic vibrations in the  $10^{14}$  Hz range which are emitted by living systems and to which, according to the theories of Popp and his co-researchers, fundamental regulatory functions within living systems are ascribed.

Bioresonance therapy has been successfully applied by natural healing oriented practitioners worldwide for 30 years. There are numerous positive documentations of individual cases regarding a variety of indications, including—among others - allergies and intolerances, functional disorders, psychosomatic illnesses and the rheumatic forms. Scientists have given more attention to Morell's theses and practices particularly in the last 10 years. Several work groups carried out clinical human studies as well as plant and animal studies to verify the bioresonance method (see below).

The BICOM unit, the IMEDIS unit and many other bioresonance units which work according to this method are built in the manner of the MORA III unit which was developed by Morell and Rasche.



The Edwin Smith papyrus: written in Egypt in 1600 BC, it is the oldest surviving surgical document.

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#### 4.17 Anthroposophic medicine <sup>w</sup>

##### HISTORY

Anthroposophic medicine grew out of the belief that health is a matter of the whole person, not merely an absence of injury or disease.

Anthroposophic medicine at its core is a response to a reductionism in medicine – that is, the idea that health can be understood by examining only isolated parts of a system, its chemical or cellular interactions and their resulting symptoms. Anthroposophic medical practitioners instead view their patients as whole people, with lifestyle, social and spiritual dimensions that contribute as much to their overall well-being as their physical symptoms or injuries.

Anthroposophic medicine has its origins in the wider Anthroposophic movement developed by Austrian scientist and philosopher Rudolf Steiner. Anthroposophy aims to expand scientific processes to increase understanding of the spiritual and social dimensions that it views as equally important to human beings. Anthroposophy has practical applications in several fields, including: Waldorf education (<https://www.freunde-waldorf.de/en/home/>), where analytical thinking is taught alongside activities to foster creativity, imagination and ethics; biodynamic agriculture (<https://www.sektion-landwirtschaft.org/en/>), which emphasises ecologically-friendly practices, such as using local plant varieties, crop diversification, and avoidance of chemical fertilizers and pesticides; architecture, most notably in the Goetheanum (<https://www.goetheanum.org/en/>) building in Switzerland; and, more recently, responsible banks and financial institutions that aim to achieve positive social and environmental returns alongside economic returns.



German scientist and philosopher Rudolf Steiner in 1905.

Dutch physician



Dutch physician Ida Wegman in 1899.

Anthroposophic medicine in particular was developed in 1920 through a collaboration between Steiner and Dutch physician Ita Wegman. Several small anthroposophic hospitals were set up in Switzerland and Germany in 1921, followed by further development of therapies, techniques, and medicines.

In 1925, Wegman and Steiner published the book *Fundamentals of Therapy* ([https://ivaa.thoughtlabs.be/wpcontent/uploads/2021/09/Fundamentals\\_of\\_Therapy.pdf](https://ivaa.thoughtlabs.be/wpcontent/uploads/2021/09/Fundamentals_of_Therapy.pdf))[pdf], which endorsed the scientific principles of conventional medical practice but laid out a way to glean additional insights and enhance health outcomes by understanding a patient as not merely a body, but also an individual with a life, a soul and a spirit [see *Therapeutic Approach* (<https://ivaa.thoughtlabs.be/about-anthroposophic-medicine/therapeuticapproach/>) for more detail].

Between 1925 and 2000, anthroposophic medical therapies continued to be developed and to gain popularity, primarily within Europe. The German Medicine Act of 1976 legally recognised anthroposophic medicine as a therapy system; it was later incorporated into the national health systems of other countries, including Switzerland and Brazil.

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Since 2000, anthroposophic medicine has begun to gain popularity worldwide, with interest increasing not only in clinical practice but also in scientific research and publication.

In 2009, the World Health Organization adopted a resolution (<http://apps.who.int/medicinedocs/documents/s21477en/s21477en.pdf>) [pdf] that recognized "traditional medicine" as a resource that could improve "health outcomes, including those in the Millennium Development Goals." A subsequently published 2014-2033 WHO strategy ([http://www.who.int/traditional-complementaryintegrative-medicine/publications/trm\\_strategy14\\_23/en/](http://www.who.int/traditional-complementaryintegrative-medicine/publications/trm_strategy14_23/en/)) noted that expanding access to traditional, complementary and integrative medical therapies (including anthroposophic medicine) could help combat escalating levels of illness and health care costs worldwide.

Currently, the IVAA and others are part of a growing global movement to further increase the recognition of anthroposophic medicine into national health systems, to improve access to anthroposophic treatments and therapies and to improve the health of their citizens.

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### **4.18 The Autogenic Training Method of J. H. Schultz <sup>w</sup>**

Wolfgang Linden

#### THE HISTORY OF AUTOGENIC TRAINING

In the practice of stress management, autogenic training (AT) is and remains a 'classic'. It is one of the oldest bio-behavioral techniques known and used. Although widely practiced all over Europe, in Russia, and in Japan, AT is less popular in North America, and may - undeservedly - have lost some of its luster given current advances and enthusiasm about mindfulness therapies (Davidson, Kabat-Zinn, Schumacher et al., 2003) which in many ways have overlapping rationales with AT.

The objective of this chapter is to describe AT, its rationale, practice and outcomes but also to place AT within the current trends of self-regulation therapies.

The German neurologist Johannes Heinrich Schultz (1884-1970) is credited with the development and promulgation of AT, which is considered a self-hypnotic procedure. During his medical training in dermatology and neurology, Schultz became fascinated with heterohypnosis, which, however, had a dubious image to many of his medical supervisors and peers at that time. Initially, Schultz worked with hypnosis only on his own time, outside of his regular clinic duties. The dominant therapeutic approach then for mental and psychosomatic problems was psychoanalysis but Schultz rejected analysis as a promising treatment for psychosomatic disturbances. In a brief biography, Schaefgen (1984) cites Schultz as having said that "it is complete nonsense to shoot with psychoanalytic guns after symptom-sparrows."

The breakthrough of AT came after Schultz opened his own medical practice in neurology and psychiatry in Berlin in 1924, where he promulgated AT without the constraints of medical superiors who did not share his vision. His first formal presentation of his experiences with AT was in 1926, in front of his colleagues in the Medical Society; his first book followed 6 years later (Schultz, 1932). In all he is accredited with over 400 publications, numerous books, and translations of these into six languages. His ground-breaking book on AT had seen 18 editions by 1984.

The development of AT has two sources: Schultz's own experiences with clinical hypnosis, and Oskar Vogt's observations in brain research. Schultz himself noted that his hypnotized patients regularly



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reported two distinct sensations—a strange heaviness, especially in the limbs, and a similarly unfamiliar sensation of warmth. He was convinced that hypnosis was not something that the hypnotist actively did to the learner but that individuals did to themselves. For the patient to enter this state, there had to be a "switch," a point of change. Activating this switch—placing the control in the hands of the patient—was what Schultz wanted to achieve. Oskar Vogt's experiences further strengthened Schultz's belief that it was possible to reliably trigger an autogenic state, because Vogt, a brain researcher, had observed that his patients could volitionally produce the sensations of heaviness and warmth and could switch into selfhypnotic trance. Herein lay the seed for autogenic formulas which represent a set of mental self-instructions to seek out particular physical sensations. Over several years, Schultz further developed the idea of formulas to reliably achieve deep relaxation and its accompanying sensations in various parts of the body. The publication of his 1932 book on AT was the culmination of his efforts to standardize the procedure.

AT remained unknown on the other side of the Atlantic Ocean until one of Schultz's followers, Wolfgang Luthe, a physician, emigrated to Canada and began clinical work, teaching, and research about AT in English. A benchmark paper appeared in the *American Journal of Psychotherapy* (Luthe, 1963); and this was later followed by a hefty six-volume book series that Luthe coauthored with Schultz (Luthe, 1970a, 1970b, 1970c; Luthe & Schultz, 1969a, 1969b; Schultz & Luthe, 1969). These volumes provide extensive descriptions of supporting experimental research, case studies, and clinical success reports of AT for a wide range of clinical problems. For the reader with a strong empiricist bent, however, reading the original works will likely be a frustrating task because in the ultimate evaluation of AT's effectiveness no distinction is made by Schultz and Luthe among opinions, single-case reports, and controlled studies (of which there were precious few at the time). For a more detailed description of the background research and applications, I refer the reader to my book *Autogenic Training: A Clinical Guide* (Linden, 1990), and for diligent reports on outcome the reader may want to peruse Stetter and Kupper's (2002) work or Grossman et al's (2004) excellent meta-analysis, or a detailed review paper that combines a narrative with a meta-analytic review approach (Linden, 1994).

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### **4.19 A Historical Look at Rudolf Steiner, Anthroposophy, and Waldorf Education <sup>w</sup>**

Author(s): P. Bruce Uhrmacher  
Rudolf Steiner founded the first Waldorf school in Germany in 1919. Unique elements of Waldorf education include an arts-based curriculum in which students learn subject matter through a variety of forms of representation, a pedagogy designed to meet students' developmental growth, an administrative system in which teachers govern the school, an organization devoted to sustaining a sense of community, and an integrated conceptual approach to education generally—a place where the cosmic and the mundane are intertwined.

Rudolf Steiner's life and writings are the foundations on which Waldorf schools are built. Therefore, this article is devoted to an overview of his work, which should assist us in understanding what goes on in contemporary Waldorf schools. Also, because Waldorf schools in North America are based on the first Waldorf school, I have included an examination of elements of that school's educational program. However, I do not present a simple chronological account of Steiner's life or of the origins of Anthroposophy (an outgrowth of Theosophy and the term used to denote the path of spiritual development from which Waldorf education springs). Rather in the last section of this article, I focus on possible reasons why Anthroposophy has survived and continues to flourish many years after Steiner's death.

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The first idea was to provide an education for children whose parents were working in the Waldorf-Astoria factory, and as the Director was a member of the Anthroposophical Society, he asked me to arrange this education. .... And so, in the first place, the Waldorf School arose as a school for humanity as such, fashioned, it could in fact be said, out of the working class. ... Here then, we have an educational institution arising on a social basis, that seeks to found the whole spirit and method of its teaching upon Anthroposophy.'

-Rudolf Steiner A Modern Art of Education

Because Rudolf Steiner's life and writings are the foundation on which Waldorf schools are built, this essay is devoted to an overview of Steiner's work, which should assist us in understanding what occurs (or perhaps what should occur) in contemporary Waldorf schools. Rudolf Steiner (1861-1925) is not widely known among American educators. Perhaps this is because his ideas do not fit neatly into any one sphere of knowledge. He was neither full-time educator, nor philosopher, nor artist, nor critic. In addition, his pantheistic and angelological outlook rattles many contemporary scholars and makes him suspect among scientifically oriented communities. His understanding of human nature, which consists of physical, etheric, astral, and ego bodies, certainly demands a great deal of open mindedness from students trained in mainstream academia. Moreover, he expounded esoteric ideas, wrote obtusely, and often lectured with dogmatic conviction. Why is it then that anyone ought to be familiar with Dr. Steiner?

One reason is that oftentimes the best way to see one style of education is by examining others. Making the strange familiar and the familiar strange are two guiding slogans for cultural anthropologists. My point is that for anyone interested in understanding or improving public schools, one important place to start is with the investigation of other types of school systems. This argument is premised on the observation that alternative schools exist because of some dissatisfaction with mainstream schooling. In order to remedy the concerns, the alternative school will develop its own style of education. For example, teachers may teach differently or offer alternative types of curricula. Educational issues currently forgotten, dismissed, or simply unexamined may be addressed.

Another reason for examining the roots of Waldorf education is to understand the undergirding of current Waldorf schools and teacher training programs.<sup>2</sup> There are over 500 Waldorf schools worldwide and about 200 in North America (Canniff 1990). The United States also houses four major Waldorf teacher training institutions. The fact that there are many Waldorf schools spanning the globe from Germany, Scandinavia, and the United States to Brazil, Argentina, Japan, and India is noteworthy in itself.

Students of education should not ignore an educational movement that has generated 500 schools worldwide any more than zoologists should ignore a newly found species-if for no other reason than parents want to know about them. Yet, little scholarly research has been conducted on Waldorf schools, in the world at large or in the United States (Uhrmacher 1991). The topic is unlisted in the Encyclopedia of Educational Research, and a search for studies on Waldorf education through conventional resources provides little material.

Thus, educators ought to know about the impetus of Waldorf education. Where did it begin? For what reasons? With what methods? To these ends, let us examine Rudolf Steiner's ideas, in particular his ideas about Anthroposophy. In the last section of this article, I focus on possible reasons why Anthroposophy, the key to understanding Waldorf education, has survived seventy years after Steiner's death. My final point is not an empirical one. That is, I am not suggesting that Waldorf education or Anthroposophy will become a mass movement. Rather, my claim is that the themes generated from this movement have relevance for us all.

THE ORIGIN OF WALDORF EDUCATION

On 23 April 1919, Rudolf Steiner gave a lecture in the tobacco storeroom of the Waldorf-Astoria cigarette factory in Stuttgart, Germany (Carlgren 1981). Armistice had come into effect on 11 November 1918. People were tired of war, concerned about social upheaval, worried about the collapsing economy, and threatened by the possibility of a German civil war. Crowded on benches and chairs, sitting on large bags of tobacco, lining the walls in the back of the room, the workers listened as this philosopher, in his starched white shirt, immense cravat, and black frock coat, expounded on the themes in his newly published book, *The Threefold Commonwealth* (1919). Steiner argued that three spheres of social life—the spiritual-cultural, legal-political, and economic—must be decentralized within the modern state. Offering hope of a new social/world order, Steiner was suggesting that education could play an important role in shaping society.

In his view, constitutional states should limit themselves to the enactment and enforcement of laws to protect their citizens, and not become involved in economic or cultural affairs. Economic concerns, he said, should transcend political boundaries by building a sense of "fraternity" with producer and consumer associations. Why, he asked rhetorically, should national political concerns impede or obstruct economic considerations? In effect, Steiner was arguing for a common European market. Also, by separating the spiritual-cultural sphere from both government and industry, Steiner hoped to affect the technocratic order of the day. Rather than sustaining a system of tracking, whereby individuals were trained in a way that met the needs of the industrial world, Steiner believed that individuals should be encouraged to develop their own natural talents. Steiner said, "All of you, as you sit here, from the sixteen-year-old girl apprentice to the workers in their sixties, suffer from the fact that your real personality has been buried because from a certain moment there was only the hard school of life for you, but no longer any real education" (Carlgren 1981).

The workers were as impressed with this social philosopher as Emil Molt, the head of the firm, had hoped. After all, Steiner offered hope for a new society—one liberated from the powerful modern state. Steiner's views embraced strong antihierarchical notions. Following the lecture, Molt asked Steiner if he would create a school for the workers' children. No stranger to the field of education, Steiner said he would, if several conditions were met: the school should be open to all children regardless of social or economic background, it should offer a twelve-year curriculum (Barnes 1980), and it should be nondenominational in religious orientation. The conditions were agreed on, and the first Waldorf school, taking its name from the Waldorf-Astoria cigarette factory, opened five months later, in the fall of 1919.

Before his death in March 1925, Steiner would live to see the opening of four Waldorf schools, two in Germany and one each in the Netherlands and Great Britain. By 1938 there were nine Waldorf schools, but most of these closed during the war (von Baravalle 1967). The first Waldorf school in the United States opened in 1928 in New York City through the efforts of Irene Brown, who had heard Steiner lecture at Oxford. There were four American Waldorf schools in 1947 (Staley 1988), eighteen in 1975 (Ogletree 1979), and seventy-five in 1989. Today there are over 150 Waldorf schools in North America. In fact, in the United States some Waldorf schools are becoming part of the public school system. Why have Waldorf schools continued to proliferate long after their founder passed away? Why has a school that opened at the beginning of the twentieth century in Germany continued to flourish in the United States as we near the end of the century?

Just who was Rudolf Steiner? What ideas did he have about education?

## STEINER'S EARLY IDEAS

Rudolf Steiner was born in 1861 to Austrian parents in the small town of Kraljevec in Upper Austria. His father worked for the railroad and before Rudolf was eight the family had moved three times. Although several works examine the life of Rudolf Steiner (Easton 1980; Hemleben 1975; Shepherd 1954; Wilson 1985), his autobiography illuminates his early intellectual development most thoroughly. Clearly, what shaped Steiner's thinking most radically were numerous "supersensible" experiences. When Steiner was eight, an apparition is said to have appeared to him and asked for assistance. Bewildered, Steiner was not sure how to help, but he was certain of what he had seen. The next day Steiner learned that the woman who had come to him, one of his cousins, had died. This experience and others like it pointed Steiner to "undeniable truths." He remarked, "For the reality of the spiritual world was to me as certain as that of the physical. I felt the need, however, for a sort of justification of this assumption" (Steiner [1923] 1951).

As a result of his working-class origins and his father's desire that he become an engineer, Steiner attended the Realschule instead of the Gymnasium, and the Vienna Polytechnic (a working-class college) instead of a university (Hemleben 1975). His inquisitive nature and desire to make sense out of his uncommon experiences, however, led him to a passionate study of geometry ("Geometry seemed to me to be a knowledge which appears to be produced by man, but which, nevertheless, has a significance quite independent of him" (Steiner [1923] 1951)), of Kant ("In my boyish way, I was striving to understand what human reason might be able to achieve toward a real insight into the nature of things"), and of Fichte ("And yet I had my own views. So, I took the Science of Knowledge and rewrote it, page by page").

At the age of twenty-two Steiner, through the recommendation of his humanities teacher Karl Julius Schröder, was selected to edit and comment on Goethe's scientific works for the popular book series, *Deutsche National-literatur* (German National Literature). Goethe's scientific works were not taken seriously by most scholars; "in effect, Steiner was being tossed a scrap that no one else wanted" (Wilson 1985). Goethe's science, however, corresponded quite well with Steiner's viewpoint. Like Goethe, Steiner believed in understanding a living, whole world rather than a dead, dissected one. And like Goethe, Steiner believed in a spiritual world that interpenetrated the physical. In 1886 he published his first book, *Theory and Knowledge in the Light of Goethe's Weltanschauung*, and in 1890 Steiner moved to Weimar to edit Goethe's natural scientific writings for the Goethe and Schiller Archives.

Steiner stayed in Weimar for seven years. In addition to editing Goethe's works, he assisted in organizing the works of Schopenhauer and of the poet Jean Paul Richter. At the same time, Steiner received his Ph.D. from the University of Rostock with his dissertation, "The Fundamental Problem of the Theory of Knowledge, with Particular Reference to Fichte's Teaching." Also, he published ninety-one texts (essays, articles, or transcribed lectures) (Hemleben 1975) in addition to four books, *Truth and Science* (his dissertation), *The Philosophy of Freedom*, *Friedrich Nietzsche Battler Against His Time*, and *Goethe's Conception of the World* each is, in part, a philosophical assault on the materialistic thinking that pervaded common ideas of the time.

Between 1897, when he left Weimar for Berlin, and 1919, when he opened the first Waldorf school in Stuttgart, Steiner's writing began to change. Esoteric theological themes began to pervade his work. Although he edited literary magazines (*Magazin für Litteratur*, *Dramaturgische Blätter*), lectured at the Workers' Educational Institute (1899-1904), and published some texts that might be read by a general audience (e.g., *Riddles of Philosophy*, *Haeckel and His Opponents*, and *The Threefold Commonwealth*) he also wrote mystery plays (*The Portal of Initiation*, *The Soul's Probation*, *The Guardian of the Threshold*, *The Soul's Awakening*) and books disclosing the travel of the soul (*Theosophy*, *Occult Science: An Outline*),

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and developed a new spiritual art form called "eurythmy." Designed to make sound visible with the body, eurythmy expresses words or musical tones through specific movements.

In addition, Steiner designed and constructed the first Goetheanum (1913- 1920), in Dornach, Switzerland. The building was architecturally designed to enhance spiritual awakening through its seven varieties of wood, its utilization of clay, stone, glass, and other organic materials, and its overall structural form.

Steiner had probably become acquainted with Theosophy as early as 1888 (Wilson 1985); by 1900 he was giving lectures to Theosophical circles. Appealing to the intelligentsia throughout Europe, Theosophy combined a study of world religions, ancient mysteries, philosophy, science, and psychic investigation. According to one of the original founders, Helen Petrovna Blavatsky:

Theosophy is ... the archaic Wisdom-Religion the esoteric doctrine once known in every ancient country having claims to civilization. This "Wisdom" all the old writings shows an emanation of the divine Principle; and the clear comprehension of it is typified in such names as the Indian Budh (sic), the Babylonian Nebo, the Thoth of Memphis, The Hermes of Greece ... and finally the Vedas, from the word "to know." (Cooper 1979)

There was much in Theosophy that Steiner embraced.

In fact, some suggest that he borrowed more from Theosophy than he was later willing to admit (Clemen 1924; Wilson 1985). However, others perceive Steiner as a confused, opportunistic young man who was initially anti-Christian (his work on Nietzsche has an existential quality to it), but later became religious, in part because he could capitalize on the German religious revival. Numerous esoteric movements such as Ariosophy and Theosophy were becoming quite popular in Germany (Berman 1989). Steiner, however, defends his later works by noting:

I had to make a certain position for myself in the world first. People may say nowadays that my writings are mad, but my earlier work is there also, and they cannot wholly ignore it. And moreover, I had to bring things to a certain clarity in myself, to a point where I could give them form, before it was possible to talk about them. That was not so easy. And then-I admit it frankly--it needs courage to speak openly about such things. I had first to acquire this courage. (Clark 1970)

In any case, he became general secretary with the founding of the German section of the Theosophical Society in Berlin in 1902, and he participated in the society until 1912. At that time, when Theosophists declared Krishnamurti their new Christ, Steiner broke with the group, and took the German chapter with him to form the Anthroposophical Society.

## ANTHROPOSOLOGY

Although some critics dismiss Anthroposophy as "a hodgepodge of 19th century romanticism, Christianity, Eastern mysticism and various perplexing notions" (McGrath 1977), and others regard it as "a synthetic mixture, a surface barbarization of the Gospel by means of Indic, gnostic, and mystery elements" (Aulthaus 1962), adherents suggest that Anthroposophy's credibility should be tested by its results, and indeed, even the two critics mentioned here (McGrath and Aulthaus) admit that the results are impressive.

The word itself is derived from "anthropos" (man) and "sophia" (wisdom).

To delve into all of its tenets requires a dissertation (see Geoffrey Ahern 1984), but three key points should be understood. First, according to Steiner, intertwined with the visible world is a spiritual one. Steiner was

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arguing not only that a spiritual world exists, but that the spiritual world interpenetrates the sense world. All attempts to deny the existence of the spiritual world or to solve problems on a solely material level were doomed to fail. What was needed was the recognition of the larger spiritual reality that has an impact on the material world. Like Spinoza and Goethe, Steiner embraced what philosophers call "psychophysical double aspectism." That is, the mind and body are inseparable: What affects the body is experienced in the mind, consciously or unconsciously, through emotions or thoughts.

Moreover, according to Steiner, "knowing does not consist in a mirroring of something possessing essential being, but the soul's living entrance into this reality of being" (Steiner [1923] 1951). The goal of the process of knowledge is to raise one's consciousness so that one can experience (or inwardly see) ideas in addition to sense perceptions. In this way, concept and percept become one.

This last point leads to the second key tenet behind Anthroposophy: human beings have the potential to perceive and enter into the spiritual world. Here, Steiner was arguing against Kantians who admit things-in-themselves, but suggest that there are limits to knowledge. Within us, said Steiner, are latent organs of perception that can penetrate the spiritual world. In order to develop such organs, however, people must first develop themselves, a difficult and formidable challenge. In addition to numerous recommended meditation exercises (described in Steiner's *Knowledge of the Higher Worlds and Its Attainment* ([first published in German in 1904] 1947) and *An Outline of Occult Science* ([first published in German in 1909] 1972)), cultivating one's sense of the beautiful, sympathizing with fellow beings, thinking (i.e., studying geometry), and developing powers of observation are important preparatory stages. After years of patience and practice, one begins to develop spiritual organs that allow entry into the spiritual world.

In each of three stages, which Steiner called Imagination, Inspiration, and Intuition, the individual develops a different aspect of himself and is permitted greater access to the spiritual (Steiner [1904] 1947).

The third key principle behind Anthroposophy is that when spiritual investigators achieve the intuitive stage of apprehension they consciously enter into an objective spirit, the findings from which, to some degree, can be articulated and tested. Summarizing Steiner's viewpoint, Robert McDermott writes,

Steiner in effect says: let future spiritual scientists observe the validity of my spiritual perception, and let the scientist limited to empirical observation note the extent to which observable phenomena not only correspond to, but are illumined by, the insights of Spiritual Science. (McDermott 1984)

By meditating in the way that he did, Steiner suggested that anyone could see what he saw.

As a result of his spiritual research, Steiner offered comprehensive, complex, and spiritually based views of virtually every aspect of life. Several important results of his spiritual science influence Anthroposophical thoughts even today: Steiner's cosmology, his understanding of humankind, and his ideas on child development.

## STEINER'S COSMOLOGY AND UNDERSTANDING OF HUMANKIND

Steiner suggested that the universe condensed from spirit into matter through successive stages, and that it will become spirit again with human assistance. The midpoint in this general evolution occurred at the mystery of Golgotha. He also referred to this phenomenon as "the Christ event" and suggested that it represents the possibility of change in the evolution of the soul. The Christ event, said Steiner, allows free spiritual activity to be achieved by changing ordinary thinking into pure thinking: "This pure thinking then raises itself to the direct experience of the spiritual world and derives from it the impulses to moral behaviour" (Easton 1980).

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For Steiner, to accept Christ within is to open up one's powers of perception.

The evolution of the soul, as alluded to above, is a central element of Steiner's cosmology. In fact, Steiner thought that by explicating the operations of reincarnation to Europe he was offering a "Copernican revolution." Of course, this idea never reached revolutionary proportions in the West. Anthroposophists, however, embrace personal reincarnation as a fundamental truth. Summarizing Steiner's ideas, Stewart Easton writes:

What Steiner taught was that a human being brings with him into a subsequent life on earth a frame work of destiny that has been determined by previous lives on earth.... Man is thus given the opportunity to compensate for his previous evil deeds, while at the same time any spiritual progress that he has made in his earlier incarnations will also be reflected in the karma that he brings with him to his new life on earth. (P. 143)

Reincarnation allows individuals to develop their souls.

Anthroposophists not only accept Steiner's cosmology, but they use their esoteric knowledge in numerous ways. Waldorf teachers, for example, try to create harmony in their classroom by relating the microcosm to the macrocosm-the curriculum to the cosmos (Uhrmacher 1991). Moreover, many assumptions about education stem from Steiner's ideas about destiny, For instance, because Anthroposophists believe in reincarnation, the essence of the individual is preordained in the same way that a rose bush is. A rose bush will turn into a rose bush and not an apple tree. Still, a rose bush must be cared for and pruned. A rose bush can turn into a beautiful foliage or a scraggly shrub. Similarly, the kind of individual one turns into depends on many factors-especially education. Anthroposophists also believe in free will.

In addition to apprehending the workings of the universe at large through spiritual science, Steiner's visions also revealed to him the nature and development of humankind. He divided the human being into numerous categories. His full-blown account includes nine analytical divisions: physical body, ether body, soul body, sentient soul, intellectual soul, consciousness soul, spirit-self, life-spirit, and spirit-man (Steiner [originally published in German in 1904] 1971). More often, however, Steiner wrote about and lectured on the human constitution from triadic perspectives: body, soul, and spirit; head-man, chest-man, and limb-man; the organism as thinking, feeling, and willing; consciousness as waking, sleeping, and dreaming; and the physical constitution as nerve-senses, rhythm, and metabolism. Regardless of the way Steiner chose to speak about human nature, three points should be remembered. First, he acknowledged that his analysis is constructed, and pointed out that one should not confuse of Golgotha. He also referred to this phenomenon as "the Christ event" and suggested that it represents the possibility of change in the evolution of the soul. The Christ event, said Steiner, allows free spiritual activity to be achieved by changing ordinary thinking into pure thinking: "This pure thinking then raises itself to the direct experience of the spiritual world and derives from it the impulses to moral behaviour" (Easton 1980).

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Reincarnation allows individuals to develop their souls.

Anthroposophists not only accept Steiner's cosmology, but they use their esoteric knowledge in numerous ways. Waldorf teachers, for example, try to create harmony in their classroom by relating the microcosm to the macrocosm-the curriculum to the cosmos (Uhrmacher 1991). Moreover, many assumptions about education stem from Steiner's ideas about destiny. For instance, because Anthroposophists believe in reincarnation, the essence of the individual is preordained in the same way that a rose bush is. A rose bush will turn into a rose bush and not an apple tree. Still, a rose bush must be cared for and pruned. A rose bush can turn into a beautiful foliage or a scraggly shrub. Similarly, the kind of individual one turns into depends on many factors-especially education. Anthroposophists also believe in free will.

In addition to apprehending the workings of the universe at large through spiritual science, Steiner's visions also revealed to him the nature and development of humankind. He divided the human being into numerous categories. His full-blown account includes nine analytical divisions: physical body, ether body, soul body, sentient soul, intellectual soul, consciousness soul, spirit-self, life-spirit, and spirit-man (Steiner [originally published in German in 1904] 1971). More often, however, Steiner wrote about and lectured on the human constitution from triadic perspectives: body, soul, and spirit; head-man, chest-man, and limb-man; the organism as thinking, feeling, and willing; consciousness as waking, sleeping, and dreaming; and the physical constitution as nerve-senses, rhythm, and metabolism. Regardless of the way Steiner chose to speak about human nature, three points should be remembered. First, he acknowledged that his analysis is constructed, and pointed out that one should not confuse his constructs for reality. Second, he recognized the interdependence of categories and stressed that one should never become too rigid in thinking about the human being. Third, Steiner was aware that his perspective was unconventional. He commented,

It is all too easy for the world to laugh at our saying that the human being consists of a physical body, etheric body, astral body, and ego. As long as one judges these matters only with the yardstick of customary science, one cannot help laughing.... But considering the serious tangle in which our civilization finds itself, one would expect at least some readiness to seek for what cannot be found elsewhere. (Steiner [1923] 1988a)

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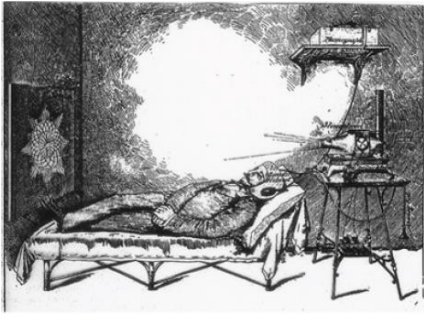
### **4.20 Music Therapy in Traditional African Societies: Origin, Basis and Application in Nigeria**

Charles O. Aluede

**ABSTRACT** The use of music in healing and healing rites in African traditional societies is as old as the origin of African Continent. This paper attempted a historical origin of this art, provides a theoretical basis for Music Therapy in Africa and concludes by specifically highlighting areas where the use of Music Therapy has yielded fruitful results in Nigeria.

History of Music Therapy | American Music Therapy Association (AMTA)





Concert at Blackwell's Island/Dr. Corning

The earliest known reference to music therapy appeared in 1789: an article in *Columbian Magazine* titled *Music Physically Considered*. The first recorded music therapy intervention & systematic experiments in music therapy were conducted in the 1800s.

#### ARCHIVES OF THE AMERICAN MUSIC THERAPY ASSOCIATION

The idea of music as a healing influence which could affect health and behavior is as least as old as the writings of Aristotle and Plato and in some cultures, long before that. The 20th century profession formally began after World War I and World War II when community musicians of all types, both amateur and professional, went to Veterans hospitals around the country to play for the thousands of veterans suffering both physical and emotional trauma from the wars. The patients' notable physical and emotional responses to music led the doctors and nurses to request the hiring of musicians by the hospitals. It was soon evident that the hospital musicians needed some prior training before entering the facility and so the demand grew for a college curriculum. A very brief historical glimpse of this fascinating profession follows, below.

#### EARLIEST REFERENCES

The earliest known reference to music therapy appeared in 1789 in an unsigned article in *Columbian Magazine* titled "Music Physically Considered." In the early 1800s, writings on the therapeutic value of music appeared in two medical dissertations, the first published by Edwin Atlee (1804) and the second by Samuel Mathews (1806). Atlee and Mathews were both students of Dr. Benjamin Rush, a physician and psychiatrist who was a strong proponent of using music to treat medical diseases. The 1800s also saw the first recorded music therapy intervention in an institutional setting (Blackwell's Island in New York) as well as the first recorded systematic experiment in music therapy (Corning's use of music to alter dream states during psychotherapy).

#### EARLY ASSOCIATIONS

Interest in music therapy continued to gain support during the early 1900s leading to the formation of several short-lived associations. In 1903, Eva Augusta Vescelius founded the National Society of Musical Therapeutics. In 1926, Isa Maud Ilsen founded the National Association for Music in Hospitals. And in 1941, Harriet Ayer Seymour founded the National Foundation of Music Therapy. Although these organizations contributed the first journals, books, and educational courses on music therapy, they unfortunately were not able to develop an organized clinical profession.

#### EARLY EDUCATIONAL PROGRAMS AND ADVOCATES

In the 1940s, three persons began to emerge as innovators and key players in the development of music therapy as an organized clinical profession. Psychiatrist and music therapist Ira Altshuler, MD promoted

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music therapy in Michigan for three decades. Willem van de Wall pioneered the use of music therapy in state-funded facilities and wrote the first "how to" music therapy text, *Music in Institutions* (1936).

E. T. Hayer Gaston, known as the "father of music therapy," was instrumental in moving the profession forward in terms of an organizational and educational standpoint. The first music therapy college training programs were also created in the 1940s. Michigan State University established the first academic program in music therapy (1944) and other universities followed suit, including the University of Kansas, Chicago Musical College, College of the Pacific, and Alverno College.

The American Music Therapy Association (AMTA) was formed in 1998 as a merger between the National Association for Music Therapy (NAMT) and the American Association for Music Therapy (AAMT).

AMTA united the music therapy profession for the first time since 1971. Currently, AMTA is the intellectual home for, and it serves member music therapists, students, graduate students and other supporters. AMTA's mission is to advocate and educate for the music therapy profession as a whole. AMTA publishes two research journals as well as a line of publications, serves as an advocate for music therapy on the state and federal levels, promotes music therapy through social media streams, and provides research bibliographies, podcasts, scholarships, and newsletters to its members.

AMTA is the single largest music therapy association in the United States, representing music therapists in the United States and in over 30 countries around the globe.

The mission of the American Music Therapy Association is to advance public knowledge of the benefits of music therapy and to increase access to quality music therapy services in a rapidly changing world.

### CERTIFICATION BOARD FOR MUSIC THERAPISTS

The Certification Board for Music Therapists (CBMT) is a separate and distinct organization from AMTA, which was incorporated in 1983 to strengthen the credibility of the music therapy profession by assuring the competency of credentialed music therapists. The first music therapy board examination was administered two years later. CBMT has been fully-accredited by the National Commission for Certifying

Agencies since 1986 and is committed to maintaining certification and recertification requirements that reflect current music therapy practice. To date, there are over 8,000 certificants who hold the credential Music Therapist-Board Certified (MT-BC). Though CBMT and AMTA are separate, independent organizations, they often work together to achieve recognition for the music therapy profession and the MT-BC credential.

### NATIONAL ASSOCIATION FOR MUSIC THERAPY

The National Association for Music Therapy (NAMT) was founded at a meeting in New York City on June 2, 1950. NAMT succeeded where previous music therapy associations previously failed by creating a constitution and bylaws, developing standards for university-level educational and clinical training requirements, making research and clinical training a priority, creating a registry and, later, board certification requirements, and publishing research and clinical journals. NAMT operated from 1950-1997 and saw the creation of a board-certification program (1985), a critically-acclaimed Senate Hearing on Aging (1991), and the growth of music therapy from a few dozen practitioners to thousands. \*photo of Hospital Music Newsletter courtesy of National Music Council.

AMERICAN ASSOCIATION FOR MUSIC THERAPY

Originally called the Urban Federation of Music Therapists, the American Association for Music Therapy (AAMT) was established in 1971. Many of the purposes of AAMT were similar to those of NAMT, but there were differences in philosophy, education and approach.

Starting in 1980, AAMT published its own research and clinical journal, *Music Therapy* and by 1997, AAMT had grown to 700 members.

HISTORY AND RATIONALE FOR DELINEATING LEVELS OF PRACTICE IN MUSIC THERAPY

When the Commission on Education and Clinical Training made its recommendations to the Association, some of the recommendations in its 2000 report to the Assembly of Delegates were not adopted in the Standards for Education and Clinical Training and were appended to that document as "Issues for Future Consideration." The Commission also recommended changes in the organizational structure, to include committees on Program Approval and Internship Roster, as well as an Overview Committee. The Overview Committee was to be charged with internal and external monitoring of standards, considering competency requirements, examining trends and needs, giving advice concerning the Association's role and responsiveness in the areas of education and training, and acting as liaison to the Certification Board for Music Therapists (CBMT) and other outside agencies. The 2001 report of the Implementation Task Force supported the changes in the organizational structure recommended by the Commission.

In 2001 the Assembly of Delegates charged a Task Force on Organizational Restructuring to develop this new structure. In 2002, the Assembly adopted the proposed new organizational structure, which included an Education and Training Advisory Board. This board was created to serve as a visionary body to advise, inform, and make recommendations to the American Music Therapy Association (AMTA) on issues related to music therapy education and training. It was charged to analyze policy issues that focus on standards and professional competencies for advanced levels of education and training; and more specifically, the relationship of these standards and competencies to advanced degrees, education and training requirements, levels of practice, professional titles and designations, and various state licensures.

In carrying out these charges, the Education and Training Advisory Board was to address the "Issues for Future Consideration." Prior to its first meeting in November 2003, the Advisory Board reviewed a comprehensive packet of published literature, AMTA documents, and AMTA internal reports related to music therapy education and training from 1960 to the present. At the meeting, the Advisory Board discussed the literature and then focused on the prioritization of tasks. The Advisory Board determined that it was necessary to delineate levels of practice in music therapy in order to provide the foundation for the development of advanced competencies. From its inception, the Advisory Board worked according to one fundamental principle: that no recommendation would be forwarded to the Association unless it was unanimous.

After much discussion, the Advisory Board agreed that defining levels of practice in music therapy was a top priority for the profession as well as a foundation for other high priority tasks. Each Advisory Board member then researched and wrote a paper from her/his respective area of expertise related to this topic.

Differential levels of music therapy clinical practice have been described for decades in the music therapy literature (Bruscia, 1989, 1998; Gfeller & Thaut, 1999; Maranto, 1993; Scartelli, 1989; Standley, 1989; Wheeler, 1983). Suggested levels have been based on types of goals, depth and extent of services, and/or independence of the music therapist. Gfeller and Thaut, Scartelli, and Standley related levels of practice to educational preparation. The Commission on Education and Clinical Training (AMTA, 1999) similarly

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suggested that while the Bachelor's degree is designed to impart Professional Competencies for music therapy practice, the Master's degree could prepare the music therapist to work at a more advanced level, "depending on the clinical components of the degree program" while the doctoral degree would not only provide competence in research, teaching, and supervision, but also advanced competency in a "specialization area in music therapy."

The clinical music therapy literature describes several music therapy models that require substantial training and expertise beyond the AMTA Professional Competencies. These models include Analytical Music Therapy (AMT; Priestly, 1994), the Bonny Method of Guided Imagery and Music (BMGIM; Grocke & Bruscia, 2002), and Nordoff-Robbins Music Therapy (NRMT; Nordoff & Robbins, 1977). Several authors have described other treatment approaches that represent advanced or highly specialized clinical practice (e.g., Austin, 2001; Gfeller, 2001) or advanced areas of practice such as supervision (e.g., Forinash, 2001) and education and training (e.g., Wheeler, 2003; Wigram, Pedersen, & Bonde, 2002). Still others have modeled a level of practice beyond the Professional Competencies by developing methods of assessment (e.g., Coleman & Brunk, 1999; Wigram, 2000) or by proposing theories of music therapy (e.g., Kenny, 1989; Thaut, 2000).

The urgency of the need for AMTA to define levels of music therapy practice has increased with recent legislative and regulatory actions in several states that have specified how and under what circumstances music therapists may practice. By defining levels of music therapy practice, AMTA will be prepared proactively to partner with state legislatures and regulatory bodies in the development of occupational regulations that affect music therapy services.

Defining levels of practice in music therapy serves as the foundation toward achieving the following objectives for the Association:

1. Identify advanced competencies, both global and in areas of specialization, along with analysis of existing professional competencies
2. Develop education and clinical standards for graduate degree programs
3. Support the Academic Program Approval Committee in reviewing AMTA approved academic programs that are reapplying for AMTA program approval, as well as new programs applying for initial approval
4. Provide information for government relations work dealing with state licensures and employment practices (e.g., job descriptions, salaries, populations, scope of practice).
5. Support efforts in seeking reimbursement and financing of MT services
6. Support public relations efforts in professional recognition and perception of music therapy by other professions and the public
7. Support efforts in continuing education by providing a framework for defining what constitutes specialized trainings, advanced trainings, and other types of continuing education opportunities
8. Provide a basis for developing advanced professional designations and/or credentials
9. Support research efforts in music therapy
10. Stimulate continued growth of music therapists and the profession

In November 2004 the Advisory Board began its deliberations on defining levels of practice, which continued through a mid-year retreat in July 2005. Following the retreat, the Advisory Board issued the following Advisory on Levels of Practice for consideration by the AMTA Board of Directors, Assembly of Delegates, Regions, and membership.

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#### **4.21 Alexander Technique Science<sup>w</sup>**

Peer-reviewed Research on Mind, Movement, and Posture

A Short History of AT

##### THE TEACHING OF F.M. ALEXANDER

The history of the Alexander Technique extends back more than a century. Frederick Matthias Alexander (1869–1955) began his teaching career as an elocutionist in Melbourne in the 1890s. Over the course of several decades, he developed the method that bears his name—a general approach to changing habits of postural support, muscle tension, movement, attention, and reactivity. Alexander moved to Sydney in 1900, then London in 1904. At the onset of World War I, he moved his practice to New York City, where he taught off-and-on until returning to London full time in 1924. He opened the first training course for teachers in London in 1931. During World War II, he moved the training course to America. He resumed training teachers in London in 1945 and taught until shortly before he died in 1955. (Evans, 2001; Bloch, 2004; Staring, 2005; Murray, 2015). The Alexander Technique has continued to evolve in the decades since his death.

##### ELOCUTION

As a young man, Alexander was a teacher of elocution—also called voice culture—and a performer of “elocutionary recitals” involving poetry, soliloquies, and short dramatic scenes (Damousi, 2010). In the days before amplification, elocution lessons were of interest not only to actors and singers, but to barristers, clergymen, teachers, and politicians (Kofler, 1889; Kirkpatrick, 2006). Voice culture was considered a branch of the larger physical culture (physical education) movement (Mullan, 2012), and doctors sent patients to elocutionists for aid in respiratory health (Leeper, 1909/2015). Alexander’s earliest pamphlets (1894, 1895 & 1900) lean heavily on the works of nineteenth-century authorities on breath and voice, including Thomas P. Hill, Nicholas Hartley, Leo Kofler, and Emil Behnke and Lennox Browne. He taught breath gymnastics (exercises) and voice production (Alexander, 1900; Anonymous, 1904). Alexander appears to have been quite successful. As early as 1896, he received referrals and testimonials from a network of doctors (Staring, 2005; Alexander, 1900). He would attract the support of doctors throughout his career (Bloch, 2004; Murray, 2015).

##### DEVELOPMENT OF ALEXANDER’S TECHNIQUE

Alexander’s method changed gradually over time, through self-study provoked by persistent problems with his voice in performance (Alexander, 1907/1995; 1932/1985), through working with his brother, Albert Redden (A.R.) (Staring, 2005, p. 354, fn 343), and through his teaching experience (Bloch, 2004). He also explored other methods, such as the Delsarte System of Dramatic Expression (McLeod, 2017) and a variety of physical culture systems, including Sandow bodybuilding (Alexander, 1925/1995; McLeod, 2017). Though his method likely changed substantially from his early days as an elocutionist, Alexander retained a lifelong interest in breath coordination (1923/2004; Rengstorff, 2015).

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Alexander's work likely resembled modern Alexander Technique teaching by 1914 (Murray). He began using positions and movements that challenged postural coordination, such as "positions of mechanical advantage" (for example, a semi-squat) and functional movement such as sit-to-stand (1918/1995). At the same time, Alexander rejected common understandings of posture— including the idea of posture as a correct position, or that exercise was required to improve posture (1923/2004). Just as importantly, Alexander became focused on how habit challenged self-control and distorted self-perception. In lessons, a student's foremost responsibility became the "inhibition" of habits, not the assumption of a correct position or the performance of a correct action. An overarching goal of a course of study was to improve the accuracy of the student's body awareness—or "sensory appreciation" (1908/1995). To this end, Alexander developed a sophisticated and subtle use of his hands in teaching to clarify the intended coordination through sensory feedback and guided movement (1908/1995; Jones, 1976). For example, when working with sitting and standing, he would guide the student in and out of the chair.

By the 1920s, Alexander had developed a reputation as a remarkable practitioner and students particularly noted his hands-on skill. James Harvey Robinson, a professor of history at Columbia University, wrote in 1918 that Alexander "literally remodels the patient...all quite gently and persuasively" (Alexander, 1918/1996). The minister and author, Gerald Lee, gave a flowery account of lessons with Alexander in 1920: "When you have removed all obstructions and preconceptions in your own mind—and will stop preventing him from doing it, he places your body in an entirely new position and subjects you to a physical experience in sitting, standing, and walking, you have never dreamed you could have before" (1920). Andrew Rugg-Gunn, a doctor who supported Alexander's practice for several decades starting in 1913, commented on Alexander's skill in "palpation" and felt that Alexander's "insight into the living body had the quality of genius" (2002). And Moshe Feldenkrais, founder of the Feldenkrais method, told Mia Segal that Alexander "had the best hands he had ever felt" (Murray, 2011).

### INTELLECTUAL INFLUENCES

Alexander's work shows the influence of many of the intellectual currents of his day. In his first two books, *Man's Supreme Inheritance* (1910/1918) and *Constructive Conscious Control of the Individual* (1923), he places his technique within a larger vision of mankind's evolution towards greater consciousness, indebted to Neo-Lamarckian thinkers like Herbert Spencer (1918/1996; 1923/2004). Such Neo-Lamarckian ideas—that acquired habits could be passed on to subsequent generations— were common in educational and physical culture systems of the time (Fallace, 2011; Singleton, 2010). Alexander was also influenced by the new sciences of psychology and neuroscience, including William James' writings on volition and "ideomotor action" (Murray; Lamont, 1959) and Charles Sherrington's research on reflex action, kinesthesia, and inhibition in the nervous system (1906/1995; 1908/1995). In New York City during World War I, Alexander taught the prominent pragmatist philosopher, John Dewey, who became an enthusiastic advocate of Alexander's work and a significant influence over the next twenty years, especially in the writing of *Constructive Conscious Control of the Individual* and Alexander's third book, *The Use of the Self* (Williamson, 2016; Murray, 2015).

### THE PRIMARY CONTROL

In the 1920s, Alexander became familiar with the German physiologist Rudolf Magnus' research positing reflex control of posture in animals (Bloch, 2004). Magnus' conclusions about the role of head position and neck reflexes on posture—or more accurately, Alexander and his doctor supporters' mistranslation and misappropriation of Magnus' German text—would influence Alexander's coinage of the "primary control" (Douglas, 1950/2015; Fischer, 2019). The term primary control is used to describe both a postural relationship—the head, neck, and back—and also a pedagogical practice: Alexander taught students to

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consciously prevent interference with the “primary control” to bring about uninstructed and unconscious improvements in posture, movement, and reactivity. The reflex models of posture proposed by Magnus and Sherrington provided the neurophysiological mechanisms that teachers would use to explain the Technique for decades to come: one learns to inhibit learned habits in order to restore reflex control of posture (Jones, 1976/2003; Gelb, 1981/1994; Miller & Langstroth, 2007; Walker, 2008; Dimon, 2014).

### TRAINING COURSE FOR TEACHERS

In 1931, Alexander opened the first training course for teachers (Westfeldt, 1964/1998; Bloch, 2004). “First generation” teachers are particularly esteemed in the profession for their direct knowledge of Alexander’s work. The three year model for training Alexander established is still the basis of traditional teacher training today. Alexander moved the training course to America during World War II, training teachers outside Boston, MA, and Philadelphia, PA. Alexander suffered a stroke in fall 1947, and his teaching assistants took over most of the duties of the training course while he recovered. He resumed teaching by the following spring. His teaching assistant, Walter Carrington, took on many of the duties of training around 1952 and continued the training course after Alexander’s death. (Carrington & Casey, 1986). Two short films were made of Alexander in 1949 and 1950, with footage of him both demonstrating chair work as well as his own agility in old age.

### MID-CENTURY SCIENTIFIC RESEARCH

Two first generation teachers worked to establish the medical or scientific credentials of the Alexander Technique at midcentury. Wilfred Barlow was a medical doctor who trained with Alexander in the 1930s. While he attempted small studies with army cadets during World War II and vocalists at the Royal College of Music (RCM) in the early 1950s (Barlow, 2014), his work arguably had its biggest impact in the performing arts with the inclusion of the Alexander Technique in the curriculum at the RCM. Frank Pierce Jones trained with Alexander and his brother, A.R., in the U.S. during World War II and did the first laboratory research on the Alexander Technique in the 1950s and 1960s at Tufts University. Jones published a number of papers on the Alexander Technique, including research on postural set and the first study in the literature on sit-to-stand. (Jones, 1998) For a variety of reasons, Jones’ research was not widely cited. Following Magnus and Sherrington, Jones posited reflex explanations for AT phenomena. Jones felt constrained by behaviorism, the dominant model of psychology in the United States during this period. Strict behaviorism rejected the study of internal mental states and Jones expressed relief when concepts such as “awareness” become scientifically respectable again in the 1960s (1998). Study of the Alexander Technique also pushed against the limits of technology, as many of the most interesting aspects of the Alexander Technique, such as body schema and postural tone, were not measurable in the laboratory. This may explain why there was next to no significant research on the Alexander Technique until the 1990s.

### DECLINE AND RENEWAL

After Alexander’s death in 1955, interest in his method declined (Bloch, 2004; Gounaris, 2017). Renewal began in the performing arts, with the Alexander Technique offered at the Royal College of Music in the 1950s and the Juilliard School in New York City in the 1960s (Barlow, 1978; Kleinman & Buckoke, 2014; Leibowitz & Connington, 1990). Since that time, the Alexander Technique has become a regular offering in performing arts schools internationally, and many performing artists have trained as Alexander teachers. Interest in the Alexander Technique also grew with the Human Potential Movement in the 1960s and 1970s, when people turned to many Eastern and Western practices in the search for personal growth, awareness, and enlightenment (Caldwell, 1975; Blanc, 2005). Perhaps the most important single event in

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the growth of the Alexander Technique after Alexander's death was Nikolaas Tinbergen's unexpected advocacy of the Alexander Technique in his Nobel Prize speech in 1973. Though his address was controversial among scientists and even among Alexander teachers, the publicity led to a surge of interest in the Technique (Bloch, 2004; Lewin, 1974; Cacciatore, 2000; Murray, 2015).

### TRAINING COURSES AND PROFESSIONAL SOCIETIES

The Alexander Technique spread first to the United States and Europe, with significant interest in Israel beginning in the 1950s. The most influential of first generation Alexander teachers were those who ran training courses, notably Walter Carrington, Patrick Macdonald, Marjory and Bill Barlow, among others. Marjory Barstow was another influential first generation teacher. Though Barstow did not run a training course, she did work with a number of teachers in what has been described as an apprentice-style training beginning in the 1970s (Conable, 1988/2016). The Society for Teachers of the Alexander Technique (STAT) was founded in 1958. In the 1960s, STAT formally established a three-year training standard, which by the end of the decade was codified as 1600 hours of instruction time to qualify as a STAT-certified teacher (Fitzgerald, 2007). By the 1980s, STAT was overseeing training programs internationally, and so affiliated societies were formed, now numbering eighteen societies across the world. The formation of the North American Society for Teachers of the Alexander Technique in 1987 (now AmSAT—the American Society for the Alexander Technique) led to a dispute on the membership of students who had trained outside the STAT model. In 1992, an alternative society, Alexander Technique International was formed (ATI History, 2019). Mouritz Press has recently begun compiling information about the history of training courses and has identified approximately 185 teachers worldwide who have run training courses over the past 65 years (Fischer, 2019a).

### DEVELOPMENTS IN PEDAGOGY

Since Alexander's time, there has been an expansion in the teaching procedures used in lessons. F.M. Alexander taught almost exclusively using procedures around sitting and standing (referred to as chair work) and lying down (called table work). Alexander's teaching assistant, Irene Tasker, is often credited with developing what is sometimes called "application" or "activity" work, in which the lesson is centered on applying the Technique to an everyday activity (Evans, 2001; Hunter, 2013). Activity work is widely used by modern Alexander teachers, and some teachers specialize in particular activities, such as running (Balk & Shields, 2006), swimming (Shaw & D'Angour, 2001), dance (Nettl-Fiol & Vanier, 2011), or pregnancy and childbirth (Machover & Drake, 1993). Even teachers who focus almost exclusively on Alexander's classic procedures will often include time in lessons for applying the Technique to a specific activity, for example, playing a musical instrument (Carrington, 1986).

Other approaches to teaching the Alexander Technique may be less widespread. Some teachers use developmental movement to clarify aspects of the Alexander Technique, an approach first explored in the late 1960s by graduates of Walter Carrington's training course, Joan and Alexander Murray, in collaboration with the neuroanatomist and anthropologist, Raymond Dart (Goldberg, 1996). Traditional AT lessons are delivered one-to-one, with near-constant interaction and personalized feedback. Teaching in groups is associated with Marjory Barstow, who began teaching in groups of 60 or more in the 1970s. While most Alexander technique teachers will teach AT in group settings such as an introductory workshops, some Alexander teachers now teach almost exclusively in a group setting. Body mapping, an anatomy-based retraining of awareness, was developed by William and Barbara Conable, two students of Marjory Barstow. The most recent teacher experimentation involves distance learning, such as online lessons, in which traditional hands-on guidance is impossible. Such experiments have been seen by some



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Alexander teachers as a refreshing liberation from perceived Alexander Technique dogma. Others have seen these practices as a dilution or even a distortion of the Alexander Technique.

### SCIENTIFIC RESEARCH IN THE 21ST-CENTURY

Perhaps the most notable development in the new century is the growing body of scientific research establishing some of the benefits of Alexander lessons and investigating plausible mechanisms for such benefits. Modern scientific models are much more relevant to the Alexander Technique than the reflex models of posture available to F.M. Alexander. Research has started to identify some of the neurophysiological changes associated with Alexander lessons and teacher training—including increased adaptability of postural tone (Cacciatore, et al, 2011), changes in movement coordination possibly linked to adaptability of postural control (Cacciatore et al, 2014), reduced muscular co-contraction (Preece, et al, 2015), and possible changes of coordination from superficial to deeper musculature (Becker, et al, 2018). There is also intriguing research linking changes in body schema with functional improvements during movement learning, or dysfunction, as with chronic pain or focal dystonia (Bray & Moseley, 2011; Byl et al, 1997). Randomized controlled trials have found significant benefits of AT for individuals with Parkinson's disease (Stallibrass, et al, 2002), low back pain (Little, et al, 2008), and neck pain (MacPherson, et al, 2015). Such research is likely to make it easier for Alexander teachers to make connections with the medical profession. Historically, the Alexander profession has often struggled to reconcile tradition and innovation and to establish the boundaries of what practices are acceptable as the Alexander Technique. As the subtleties of the Technique become measurable outside the lesson, Alexander teachers may be able to find connections between the different traditions within the Technique's long history, as well as finding more ways of connecting with other professions and the wider public.

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### 4.22 Apitherapy <sup>w</sup>

Apitherapy is a branch of alternative medicine that uses honey bee products, including honey, pollen, propolis, royal jelly and bee venom. There is no good clinical evidence for the efficacy or safety of apitherapy treatments.

References to possible medical properties of bee products can be found in Chinese, Korean, Russian, Egyptian and Greek traditional medicine practices. Apitherapy has been practiced since the times of Hippocrates and Galen. Modern use of bee venom appears to have originated with Austrian physician Philipp Terč and his 1888 article "About a Peculiar Connection

Bee sting being applied during an apitherapy session.

### HISTORY

Between the Bee Stings and Rheumatism", but his claims were never tested in proper clinical trials. More recent alternative medicine practice is attributed to the Hungarian physician Bodog F. Beck who coined the term "bee venom therapy" in 1935, and to beekeeper Charles Mraz (1905–1999) in the latter half of the twentieth century. In 1957, the USSR Ministry of Health sanctioned use of bee venom to treat certain ailments by approval of Nikolay Artemov's "Instruction for Bee Sting Venom Apitherapy".

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Humans have historically used bee products in various ways: beeswax was used in casting metals and making incendiary weapons, honey was used for food and religious offerings, propolis was used as an adhesive, and pollen was used for agricultural work such as plant breeding. Much later, there was an attempt to use bee venom clinically via injection by J.

Langer at the University of Prague in late 1890s and in 1930, a firm in south Germany named Mack produced bee venom solution commercially. Apitherapy is used in traditional medicine in countries in Europe, Asia, and South America including China, Korea, and Russia.

Apitherapy is promoted as alternative medicine for several uses, but its health claims are not supported by scientific evidence. Bee venom or other honeybee products are ineffective for the treatment or prevention of cancer. In general, evidence for using honey in wound treatment is of such low quality that firm conclusions cannot be drawn.

Adverse reactions to bee venom therapy are frequent. Frequent exposure to the venom can also lead to arthropathy. In sensitized persons, venom compounds can act as allergens, causing a spectrum of allergic reactions that can range from mild, local swelling to severe systemic reactions, anaphylactic shock, or even death.

In March 2018 it was reported that a 55-year-old woman died after receiving "live bee acupuncture", suffering a severe anaphylactic episode which the apitherapy practitioner did not respond to by administering adrenaline. While stabilized by ambulance personnel on the way to the hospital, she died a few weeks later from complications resulting in multiple organ failure.

Live bee acupuncture therapy is "unsafe and unadvisable", according to researchers who studied the case.

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### **Aquatic therapy**<sup>w</sup>

Aquatic therapy refers to treatments and exercises performed in water for relaxation, fitness, physical rehabilitation, and other therapeutic benefit. Typically, a qualified aquatic therapist gives constant attendance to a person receiving treatment in a heated therapy pool. Aquatic therapy techniques include Ai Chi, Aqua Running, Bad Ragaz Ring Method, Burdenko Method, Halliwick, Watsu, and other aquatic bodywork forms. Therapeutic applications include neurological disorders, spine pain, musculoskeletal pain, postoperative orthopedic rehabilitation, pediatric disabilities, and pressure ulcers.

Aquatic therapy refers to water-based treatments or exercises of therapeutic intent, in particular for relaxation, fitness, and physical rehabilitation. Treatments and exercises are performed while floating, partially submerged, or fully submerged in water. Many aquatic therapy procedures require constant attendance by a trained therapist, and are performed in a specialized temperature-controlled pool. Rehabilitation commonly focuses on improving the physical function associated with illness, injury, or disability.

### OVERVIEW

Aquatic therapy encompasses a broad set of approaches and techniques, including aquatic exercise, physical therapy, aquatic bodywork, and other movement-based therapy in water (hydrokinesiotherapy). Treatment may be passive, involving a therapist or giver and a patient or receiver, or active, involving self-generated body positions, movement, or exercise. Examples include Halliwick Aquatic Therapy, Bad Ragaz Ring Method, Watsu, and Ai chi.

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For orthopedic rehabilitation, aquatic therapy is considered to be synonymous with therapeutic aquatic exercise, aqua therapy, aquatic rehabilitation, water therapy, and pool therapy. Aquatic therapy can support restoration of function for many areas of orthopedics, including sports medicine, work conditioning, joint arthroplasty, and back rehabilitation programs. A strong aquatic component is especially beneficial for therapy programs where limited or non-weight bearing is desirable and where normal functioning is limited by inflammation, pain, guarding, muscle spasm, and limited range of motion (ROM). Water provides a controllable environment for reeducation of weak muscles and skill development for neurological and neuromuscular impairment, acute orthopedic or neuromuscular injury, rheumatological disease, or recovery from recent surgery.

Various properties of water contribute to therapeutic effects, including the ability to use water for resistance in place of gravity or weights; thermal stability that permits maintenance of near constant temperature; hydrostatic pressure that supports and stabilizes, and that influences heart and lung function; buoyancy that permits flotation and reduces the effects of gravity; and turbulence and wave propagation that allow gentle manipulation and movement.

The use of water for therapeutic purposes first dates back to 2400 B.C. in the form of hydrotherapy, with records suggesting that ancient Egyptian, Assyrian, and Mohammedan cultures utilized mineral waters which were thought to have curative properties through the 18th century.

In 1911, Dr. Charles Leroy Lowman began to use therapeutic tubs to treat cerebral palsy and spastic patients in California at Orthopedic Hospital in Los Angeles. Lowman was inspired after a visit to Spaulding School for Crippled Children in Chicago, where wooden exercise tanks were used by paralyzed patients. The invention of the Hubbard Tank, developed by Leroy Hubbard, launched the evolution of modern aquatic therapy and the development of modern techniques including the Halliwick Concept and the Bad Ragaz Ring Method (BRRM). Throughout the 1930s, research and literature on aquatic exercise, pool treatment, and spa therapy began to appear in professional journals. Dr. Charles Leroy Lowman's *Technique of Underwater Gymnastics: A Study in Practical Application*, published in 1937, introduced underwater exercises that were used to help restore muscle function lost by bodily deformities. The National Foundation for Infantile Paralysis began utilizing corrective swimming pools and Lowman's techniques for treatment of poliomyelitis in the 1950s.

The American Physical Therapy Association (APTA) recognized the aquatic therapy section within the APTA in 1992, after a vote within the House of Delegates of the APTA in Denver, CO after lobbying efforts spearheaded starting in 1989 by Judy Cirullo and Richard C. Ruoti.

Techniques for aquatic therapy include the following:

**Ai Chi:** Ai Chi, developed in 1993 by Jun Konno, uses diaphragmatic breathing and active progressive resistance training in water to relax and strengthen the body, based on elements of qigong and Tai chi chuan.

**Aqua running:** Aqua running (Deep Water Running or Aquajogging) is a form of cardiovascular conditioning, involving running or jogging in water, useful for injured athletes and those who desire a low-impact aerobic workout. Aqua running is performed in deep water using a floatation device (vest or belt) to support the head above water.

**Bad Ragaz Ring Method:** The Bad Ragaz Ring Method (BRRM) focuses on rehabilitation of neuromuscular function using patterns of therapist-assisted exercise performed while the patient lies horizontal in water, with support provided by rings or floats around the neck, arms, pelvis, and knees. BRRM is an aquatic

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version of Proprioceptive Neuromuscular Facilitation (PNF) developed by physiotherapists at Bad Ragaz, Switzerland, as a synthesis of aquatic exercises designed by a German physician in the 1930s and land-based PNF developed by American physiotherapists in the 1950s and 1960s.

**Burdenko Method:** The Burdenko Method, originally developed by Soviet professor of sports medicine Igor Burdenko, is an integrated land-water therapy approach that develops balance, coordination, flexibility, endurance, speed, and strength using the same methods as professional athletes. The water-based therapy uses buoyant equipment to challenge the center of buoyancy in vertical positions, exercising with movement in multiple directions, and at multiple speeds ranging from slow to fast.

### TECHNIQUES

**Halliwick Concept:** The Halliwick Concept, originally developed by fluid mechanics engineer James McMillan in the late 1940s and 1950s at the Halliwick School for Girls with Disabilities in London, focuses on biophysical principles of motor control in water, in particular developing sense of balance (equilibrioception) and core stability. The Halliwick Ten-Point-Program implements the concept in a progressive program of mental adjustment, disengagement, and development of motor control, with an emphasis on rotational control, and applies the program to teach physically disabled people balance control, swimming, and independence.

**Halliwick Aquatic Therapy** (also known as Water Specific Therapy, WST), implements the concept in patient-specific aquatic therapy.

**Watsu:** Watsu is a form of aquatic bodywork, originally developed in the early 1980s by Harold Dull at Harbin Hot Springs, California, in which an aquatic therapist continuously supports and guides the person receiving treatment through a series of flowing movements and stretches that induce deep relaxation and provide therapeutic benefit. In the late 1980s and early 1990s physiotherapists began to use Watsu for a wide range of orthopedic and neurologic conditions, and to adapt the techniques for use with injury and disability.

Applications of aquatic therapy include neurological disorders, spine pain, musculoskeletal pain, postoperative orthopedic rehabilitation, pediatric disabilities, and pressure ulcers.

A 2006 systematic review of effects of aquatic interventions in children with neuromotor impairments found "substantial lack of evidence-based research evaluating the specific effects of aquatic interventions in this population".

For musculoskeletal rehabilitation, aquatic therapy is typically used to treat acute injuries as well as subjective pain of chronic conditions, such as arthritis. Water immersion has compressive effects and reflexively regulates blood vessel tone. Muscle blood flow increases by about 225% during immersion, as increased cardiac output is distributed to skin and muscle tissue.

Flotation is able to counteract the effects of gravitational force on joints, creating a low impact environment for joints to perform within. The temperature changes, increase in systolic blood pressure to extremities, and overall increase in ambulation are factors which help immersion to alleviate pain. Aquatic Therapy helps with pain and stiffness, but can also improve quality of life, tone the muscles in the body, and can help with movement in the knees and hips. Protocols using a combination of strengthening, flexibility, and balance exercises resulted in the greatest improvements in Childhood Health Assessment Questionnaire scores, whereas aerobic exercise did not result in greater improvements in CHAQ scores compared to a comparison group

## History of all Medicine

Applications and effectiveness performing Qigong. Not only does aquatic therapy help with pain, but can benefit postural stability, meaning it can help to strengthen balance functions especially with people who have neurological disorders. For people diagnosed with Parkinson's disease, aquatic exercise has been proven to be more beneficial than land-based exercise for two important outcome measures. The Berg Balance Scale and Falls Efficacy Scale score were reported to have significant improvement when implementing aquatic exercise over land-based exercise. These results suggest that aquatic exercise can be extremely helpful for Parkinson's disease patients with specific balance disorders and fear of falling.

Aquatic therapy in warm water has been shown to have a positive effect on the aerobic capacity of people with fibromyalgia. It is still inconclusive whether land therapy is better than aquatic therapy however it has been demonstrated that aquatic therapy is as effective as land base therapy. There are advantageous outcomes for patients with fibromyalgia resulting from aquatic therapy such as decrease of articulate load regarding an individual's biomechanics.

Currently there is no standardized aquatic therapy protocol for people post stroke however it is safe to conclude that aquatic therapy can be more effective than land based therapy for improving balance and mobility. There is insufficient evidence regarding improvements in functional independence of people post stroke.

From a cardiopulmonary standpoint, aquatic therapy is often used because its effects mirror land-based effects but at lower speeds. During immersion, blood is displaced upwards into heart and there is an increase in pulse pressure due to increased cardiac filling. Cardiac volume increases 27-30%. Oxygen consumption is increased with exercise, and heart rate is increased at higher temperatures, and decreased at lower temperatures. However, immersion can worsen effects in cases of valvular insufficiency due to this cardiac and stroke volume increase. The aquatic environment is also not recommended for those who experience severe or uncontrolled heart failure.

Aquatic therapy is performed by diverse professionals with specific training and certification requirements. An aquatic therapy specialization is an add-on certification for healthcare providers, mainly including physical therapists and athletic trainers.

For medical purposes, aquatic therapy, as defined by the American Medical Association (AMA), can be performed by various legally-regulated healthcare professionals who have scopes of Professional training and certification practice that permit them to offer such services and who are permitted to use AMA Current Procedural Terminology (CPT) codes. Currently, aquatic therapy certification is provided by the Aquatic Therapy and Rehab Institute (ATRI), which aims to further education for therapists and healthcare professionals working in aquatic environments. The ATRI prerequisites for certification include 15 hours of Aquatic Therapy, Rehab and/or Aquatic Therapeutic Exercise education, which can be completed hands-on or online. Once completing the prerequisites, those pursuing certification can take the Aquatic Therapy & Rehab Institutes Aquatic Therapeutic Exercise Certification exam.

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#### 4.24 Bibliotherapy<sup>w</sup>

Bibliotherapy (also referred to as book therapy, reading therapy, poetry therapy or therapeutic storytelling) is a creative arts therapies modality that involves storytelling or the reading of specific texts. It uses an individual's relationship to the content of books and poetry and other written words as therapy. Bibliotherapy has some overlap with writing therapy and is often combined with writing therapy.

Distinct from the creative arts therapy is bibliotherapy as a supportive psychotherapy, a brief self-help intervention where through the reading of a chosen standard manual, emotion regulation skills are acquired through either behavioral therapy or cognitive therapy techniques. Two popular books used for this are *The Feeling Good Handbook* for cognitive therapy and *Control Your Depression* for behavioral therapy. The main advantages of this psychotherapy compared to cognitive behavioral therapy (CBT) is its cost-effectiveness, although, especially for complex presentations, CBT tends to have more positive treatment outcomes. It has been shown to be effective in the treatment of mild to moderate depression, with cognitive bibliotherapy having a long-lasting effect. Modest evidence also exists to the symptom reduction of alcohol dependence, self-harm and panic disorder.

#### BIBLIOTHERAPY

Unstructured and more informal bibliotherapy fits under creative arts therapies, possibly including reading or activity recommendations by a librarian or health professional based on perceived therapeutic value. More structured bibliotherapy can be described as supportive psychotherapy, where more consideration is placed on the therapist to the selection of reading material and in including other activities to facilitate skill acquisition and symptom reduction.

An important difference between the two is the greater empirical support of symptom reduction in bibliotherapy as a supportive psychotherapy.

Bibliotherapy is an old concept in library science. According to the Greek historian Diodorus Siculus, in his monumental work *Bibliotheca historica*, there was a phrase above the entrance to the royal chamber where books were stored by King Ramses II of Egypt. Considered to be the oldest known library motto in the world, ψῦχῆς ἰατρεῖον, is translated: "the house of healing for the soul". Galen, the extraordinary philosopher and physician to Marcus Aurelius of Rome, maintained a medical library in the first century A.D., used not only by himself but by the staff of the Sanctuary Asclepion, a Roman spa famous for its therapeutic waters and considered to be one of the first hospital centers in the world. As far back as 1272, the Koran was prescribed reading in the Al-Mansur Hospital in Cairo as medical treatment.

In the early nineteenth century, Benjamin Rush favored the use of literature in hospitals for both the "amusement and instruction of patients". By the middle of the century, Minson Galt II wrote on the uses of bibliotherapy in mental institutions, and by 1900 libraries were an important part of European psychiatric institutions.

After the term bibliotherapy was coined by Samuel McChord Crothers in an August 1916 *Atlantic Monthly* article, it eventually found its way into the medical lexicon. During World War I, the Library War Service stationed librarians in military hospitals, where they dispensed books to patients and developed the emerging "science" of bibliotherapy with hospital physicians. When they returned from the war, they tried to implement these ideas in hospital libraries.

## HISTORY

Kathleen Jones, the editor of the book series *Hospital Libraries*, was the library administrator for the McLean Hospital in Massachusetts. This influential work was first published in 1923, and then updated in 1939, and then 1953. Pioneer librarian Sadie Peterson Delaney used bibliotherapy in her work at the VA Hospital in Tuskegee, Alabama from 1924 to her death in 1958. Elizabeth Pomeroy, director of the Veterans Administration Library Service, published the results of her research in 1937 on the efficacy of bibliotherapy at VA hospitals. The United Kingdom, beginning in the 1930s, also began to show growth in the use in of reading therapy in hospital libraries. Charles Hagberg-Wright, librarian of the London Library, speaking at the 1930 British Empire Red Cross Conference, spoke about the importance of bibliotherapy as part of "curative medicine" in hospitals. In addition, reports from the 1930 Public Health Conference about bibliotherapy were included in the British journal *Lancet*. By the 1920s, there were also training programs in bibliotherapy. One of the first to offer such training was the School of

Library Science at Western Reserve University followed by a program at the University of Minnesota School of Medicine.

With hospitals taking the lead, bibliotherapy principles and practice developed in the United States. In the United Kingdom some felt that bibliotherapy lagged behind the US and Joyce Coates, writing in the *Library Association Record*, felt that "the possibilities of bibliotherapy have yet to be fully explored". In 1966, the Association of Hospital and Institution Libraries, a division of the American Library Association, issued a working definition of bibliotherapy in recognition of its growing influence. Then, in the 1970s, Arleen McCarty Hynes, a proponent for the use of bibliotherapy, created the "Bibliotherapy Round Table" which sponsored lectures and publication dedicated to the practice.

In its most basic form, bibliotherapy is using books to aid people in solving the issues that they may be facing at a particular time. It consists of selecting reading material relevant to a client's life situation. Bibliotherapy has also been explained as "a process of dynamic interaction between the personality of the reader and literature - interaction which may be utilized for personal assessment, adjustment, and growth." Bibliotherapy for adults is a form of self-administered treatment in which structured materials provide a means to alleviate distress.

The concept of the treatment is based on the human inclination to identify with others through their expressions in literature and art. For instance, a grieving child who reads, or is read a story about another child who has lost a parent may feel less alone in the world. The concept of bibliotherapy has widened over time, to include self-help manuals without therapeutic intervention, or a therapist "prescribing" a movie that might provide needed catharsis to a client.

The Online Dictionary for Library and Information Science (2011) defines bibliotherapy as:

Changing definitions: The use of books selected on the basis of content in a planned reading program designed to facilitate the recovery of patients suffering from mental illness or emotional disturbance. Ideally, the process occurs in three phases: personal identification of the reader with a particular character in the recommended work, resulting in psychological catharsis, which leads to rational insight concerning the relevance of the solution suggested in the text to the reader's own experience.

Assistance of a trained psychotherapist is advised.

Although the term "bibliotherapy" was first coined by Samuel Crothers in 1916, the use of books to change behavior and to reduce distress has a long history, dating back to the Middle Ages.

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When applied in a therapeutic context, bibliotherapy can comprise both fictional and nonfictional materials. Fictional bibliotherapy (e.g., novels, poetry) is a dynamic process, where material is actively interpreted in light of the reader's circumstances. From a psychodynamic perspective, fictional materials are believed to be effective through the processes of identification, catharsis and insight. Through identification with a character in the story the reader gains an alternative position from which to view their own issues. By empathizing with the character the client undergoes a form of catharsis through gaining hope and releasing emotional tension, which consequently leads to insights and behavioral change. Working with an imaginative journey and a specific selection of metaphors, proponents claim that a therapeutic story approach has the potential to shift an out of balance behavior or situation back towards wholeness or balance. A patient might also find it easier to talk about his issues if he and the therapist can pretend that they are talking about the character's issues. Proponents suggest that the story form offers a healing medium that allows the listener to embark on an imaginative journey, rather than being lectured or directly addressed about the issue.

In the 1980s and early 1990s, bibliotherapy was a widely used but poorly researched therapeutic model. However, numerous randomized controlled trials (RCTs) have documented the positive effects of bibliotherapy for clinical conditions such as deliberate self-harm, obsessive-compulsive disorder (OCD) and bulimia nervosa and insomnia. Research also supports bibliotherapy as an intervention for a wide array of psychological issues including emotional disorders, alcohol addiction, and sexual dysfunction. In a recent review of psychotherapeutic treatments for older depressed people, bibliotherapy emerged as an effective intervention.

### CLINICAL USE

The use of bibliotherapy in mental health programs, including those for substance abuse, has been shown to be beneficial to patients in the United Kingdom where it is a popular resource.

Researchers have found that bibliotherapy can successfully complement treatment programs and reduce recidivism.

In the United States a researcher from the University of South Florida published a study seeking to revise the collection development policy for a bibliotherapy library used by the residents at a women's AOD treatment center in Tampa, Florida. The research was conducted by Peter Cannon as part of his PhD on rhetoric and reading therapies. Preliminary findings suggest this new model can offer the residents a new bibliotherapy track that employs less emotionally triggering texts that will be useful for treatment.

Bibliotherapy can be performed using affective treatment techniques, cognitive behavioral therapy (CBT), and visual-based materials. Affective bibliotherapy relies upon fiction which can aid participants. By empathizing with a story's character, the client undergoes a form of catharsis by gaining hope and releasing emotional tension. There can also be a connection made between the circumstances in a story and the reader's own personal issues. This, consequently, leads to insights and behavioral change. Bibliotherapy using CBT relies mainly on self-help books which work to correct negative behaviors by offering alternative, positive actions. Visual-based materials, such as graphic novels, utilize both affective and CBT techniques.

### COGNITIVE TREATMENT

The gains achieved in cognitive bibliotherapy illustrate that the most important element in cognitive bibliotherapy is content of the program and not the individual interactions with a therapist. Bibliotherapy using CBT have been empirically tested the most and directed CBT appears to be the most prevalent



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methodology in the literature. The selection of CBT books is important since there are many on the market that purport to help. Pardeck's analysis on choosing books is quite instructive and much of his criteria mirror what librarians teach in information literacy. These include the authority of the author on the topic, the type of empirical support offered for treatment claims, the existence of studies testing its clinical efficacy, and a comparative review of other books.

### TREATMENT TRACKS

#### AFFECTIVE TREATMENT

There is not as much research on using fiction in bibliotherapy when compared to cognitive self-help books. The recent work of Shechtman has been important in investigating the use of affective literature for bibliotherapy. In her work on counseling with aggressive boys, Shechtman discusses the deficits these children exhibit and describe affect disorders with symptoms of emotional arousal, low levels of empathy, and difficulties in self-expression. Using integrative treatment whereby the patient explores the problem, gains insight, and commits to change, Shechtman found that using affective bibliotherapy techniques achieved therapeutic change while indicating gains in empathy and insight.

#### VISUAL TREATMENT AND GRAPHIC NOVELS

In the simplest sense, graphic novels are long-form comic books, usually 100 pages or more in length. Application of graphic novels in this context will allow people struggling with literacy to have better access to materials. Dozens of graphic novels have been published over the last decade that address public health topics, such as depression, drug abuse, and PTSD. Public health based comic books originated in the 1940s. The earliest public health comics averaged around twelve pages and were aimed at preventive instruction for children. Over the last fifteen years, however, the genre has evolved and public health graphic novels and are now commonly 150 pages long and focus more on adult struggles with physical or mental illness. This change has gotten the attention of medical professionals who gather and evaluate these materials. Currently, a group of physicians, professors, artists, and bioethicists run the website Graphic Medicine and hosts an annual conference to discuss the use of graphic novels and comic books in health.

There is a wide range of research that indicates graphic novels are an effective tool for people struggling with literacy and communication problems. They also have been shown to be effective with populations that have trouble with traditional literacy instruction. Resistance to learning can take many forms, some of which can be seen in populations involved with the criminal justice system. Graphic novels are most often used to entice the group referred to as "reluctant readers", people who have abandoned reading for pleasure. While this group may be literate in the basic sense, research shows that people who read for pleasure continuously improve vocabulary and language skills, skills that can help people rehabilitate after incarceration. Research shows graphic novels are of use to students with traditional learning disabilities, like dyslexia and also have been shown to be effective when used in a bibliotherapeutic context to assist people with mental illness in explaining their own struggles to others. Graphic novels have also been described by professionals in the field as especially apt for portraying the struggles associated with mental illness.

Bibliotherapy has been studied by Jennie Bolitho (2011) in relationship to libraries, health and social connection for the elderly. Bolitho set up a pilot reading program where she read the text aloud to a group of participants at a local aged care hostel. (She described "being read to as part of the nurturing experience".) Her evaluation at the end of the 12-week program described all responses as positive and participants commented that they "look forward to the group as it made them think for themselves and gave them something to think about aside from their ailments and the monotony of the day" (p. 90).

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Bibliotherapy has not been vastly researched to ensure that it will be successful for all students.

It has many drawbacks, that include unavailable literature on certain topics that students may be struggling with, many students not being ready to face their issues and read, and students and parents defensively implementing the therapy. The resistance of using bibliotherapy is based on a lack of assertiveness, negative attitudes, anxiety, depression, sexual dysfunctions, and negative behaviors. There has been advocacy for reading books containing difficult themes in advance, rather than in response to a parent or teacher identifying a specific issue in a child's life. The major issue that lies behind bibliotherapy is the lack of research that has been conducted on this therapy device.

Advantages of bibliotherapy include teaching students to solve problems, help students cope with teasing, name calling, mockery, fears, sexuality changes, anxiety, and death. Despite the limited research on bibliotherapy and its effects, many teachers have shown improved achievement and self-concept.

Bibliotherapy can consist solely of reading, or it can be complemented with discussion or play activity. A child might be asked to draw a scene from the book or asked whether commonality is felt with a particular character in the book. The book can be used to draw out a child on a subject (s)he has been hesitant to discuss.

### OLDER ADULTS

### USE IN CHILDREN'S THERAPY

### IMPLEMENTATION

Of necessity, bibliotherapy originally used existing texts. Literature that touched on the particular subject relevant to the child provided the source material. (For example, *Romeo and Juliet* is typically read in 8th or 9th grade as Romeo is 15 and Juliet is 13; students at that age can identify with them.) Recently it has become possible to find texts targeted to the situation; e.g. many of *The Berenstain Bears* books target particular behaviors and responses to certain situations.

Two forms of bibliotherapy exist: clinical and developmental. Clinical bibliotherapy is solely used by qualified personnel in a therapeutic setting and developmental bibliotherapy is a useful tool to utilize before a problem arises. Developmental bibliotherapy can be useful for issues such as nightmares as children age. Developmental bibliotherapy is often used by teachers or parents, however, if an issue arises that a teacher or parent cannot handle, clinical bibliotherapy is needed.

Many therapeutic stories are written for specific individual needs, but practitioners have also used them to build psychological resilience when group and communities face challenges. For example, therapeutic storytelling can play a role in creating inclusive classroom and work communities. Therapeutic stories are also sometimes referred to as "healing stories". In the US, the National Storytelling Network has a special interest group called the Healing Story Alliance.

Implementing bibliotherapy in an elementary classroom can be very beneficial to both the students and the teacher. Teachers who use bibliotherapy in their classroom also learn much about the children they teach. Teachers as practitioners of bibliotherapy select appropriate reading materials and match them to the needs of individual students to assist them in the development of self-awareness, problem-solving skills, perspective-taking, and understanding of problems. The materials may include "any literacy activity, including reading (fiction, nonfiction, or poetry), creative writing, or storytelling." Teachers that select appropriate literature for their classroom needs may provide a child with a "character in a story to help the child understand himself Classroom story time and a guided discussion allows students to "become aware of problems of other children and develop empathy".

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In the article "Read two books and write me in the morning", the authors highlight the fact that teachers are an integral part of a student's therapeutic team. It is the teacher who may be the first person to notice that something is troubling a child. They also note that teachers have been in the classroom referred to as carryover agents, who carry out recommendations from other professionals who have suggested accommodations necessary to ensure a particular student's well-being or success in their classroom. In inclusive classrooms the teacher and the whole class play a role in meeting directly or indirectly, the needs of students with exceptionalities. Bibliotherapy can help the students in the class to learn coping skills that will help them deal with the social and emotional challenges that may occur. Books and reading are an integral part of classroom life. Through books, "children are able to see reflections of themselves, their times, their country, their concerns... well-written realistic fiction will always help readers gain a deeper understanding of themselves and others."

Bibliotherapy has three recognized stages: (1) identification, (2) catharsis, and (3) insight.

Identification is when a reader associates themselves with the character or situation in the literary work. Catharsis is when the reader shares many of the same thoughts and feelings of the characters in the literary work, and insight is when the reader realizes that they relate to the character or situation and learn to deal more effectively with their own personal issues.

Literary pieces allow teachers to identify for their class, or an individual student, a particular issue which they are dealing with directly or indirectly. In a class with a special needs student, for example, books featuring a character with the same needs will help students experience living with a chronic condition; through a guided discussion, they will be able to verbalize their thoughts and concerns. This exercise will offer insight into the issue of how to help their classmate effectively. Bibliotherapy "does not prescribe meanings, nor is it a form of direct teaching; it is more an invitation and permission giving to children to unveil wisdom and insight that might otherwise be squelched."

Teachers who practice or need to use bibliotherapy can find connections to their state or provincial guidelines. A common challenge for classroom teachers is finding the right book, and although some annotated bibliographies are available online and in curriculum publications, not all issues are touched upon. A teacher may have to find their book. The following evaluation framework is suggested:

"Is the story simple, clear, brief, non-repetitious, and believable? Is it at an appropriate reading level and developmental level? Does the story fit with relevant feelings, needs, interests, and goals? Does it demonstrate cultural diversity, gender inclusivity, and sensitivity to aggression?"

Do characters show coping skills and does the problem situation show resolution?"

### STAGES FOR TEACHERS

There are steps that make bibliotherapy a more effective solution for dealing with the issues that a student may be facing, including developing support, trust, and confidence with the student with an issue, identifying other school personnel that could aid in implementing the therapy, seeking support from the student's parents or guardians, defining the issue that the student is facing and why the teacher wants to help solve it, creating goals that may help the student overcome the issue, researching books that may help with the specific problem, introducing the book to all the people that will be involved, incorporating reading activities, and evaluating the effects and successes that the book may have had on the student.

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#### 4.25 Chelation therapy<sup>w</sup>

Chelation therapy is a medical procedure that involves the administration of chelating agents to remove heavy metals from the body. Chelation therapy has a long history of use in clinical toxicology and remains in use for some very specific medical treatments, although it is administered under very careful medical supervision due to various inherent risks, including the mobilization of mercury and other metals through the brain and other parts of the body by the use of weak chelating agents that unbind with metals before elimination, exacerbating existing damage. To avoid mobilization, some practitioners of chelation use strong chelators, such as selenium, taken at low doses over a long period of time.

##### CHELATION THERAPY

Chelation therapy must be administered with care as it has a number of possible side effects, including death. In response to increasing use of chelation therapy as alternative medicine and in circumstances in which the therapy should not be used in conventional medicine, various health organizations have confirmed that medical evidence does not support the effectiveness of chelation therapy for any purpose other than the treatment of heavy metal poisoning. Over-the-counter chelation products are not approved for sale in the United States.

Chelation therapy is the preferred medical treatment for metal poisoning, including acute mercury, iron (including in cases of sickle-cell disease and thalassemia), arsenic, lead, uranium, plutonium and other forms of toxic metal poisoning. The chelating agent may be administered intravenously, intramuscularly, or orally, depending on the agent and the type of poisoning.

##### CHELATING AGENTS

There are a variety of common chelating agents with differing affinities for different metals, physical characteristics, and biological mechanism of action. For the most common forms of heavy metal intoxication – lead, arsenic, or mercury – a number of chelating agents are available. Dimercaptosuccinic acid (DMSA) has been recommended for the treatment of lead poisoning in children by poison control centers around the world. Other chelating agents, such as 2,3-dimercaptopropanesulfonic acid (DMPS) and alpha lipoic acid (ALA), are used in conventional and alternative medicine. Some common chelating agents are ethylenediaminetetraacetic acid (EDTA), 2,3-dimercaptopropanesulfonic acid (DMPS), and thiamine tetrahydrofurfuryl disulfide (TTFD). Calcium-disodium EDTA and DMSA are only approved for the removal of lead by the Food and Drug Administration while DMPS and TTFD are not approved by the FDA. These drugs bind to heavy metals in the body and prevent them from binding to other agents. They are then excreted from the body. The chelating process also removes vital nutrients such as vitamins C and E, therefore these must be supplemented.

The German Environmental Agency (Umweltbundesamt) listed DMSA and DMPS as the two most useful and safe chelating agents available.

##### MEDICAL USES

Chelator Used in Dimercaprol (British anti-Lewisite; BAL) acute arsenic poisoning acute mercury poisoning lead poisoning (in addition to EDTA)

Lewisite poisoning (for which it was developed as an antidote)

Dimercaptosuccinic acid (DMSA) lead poisoning arsenic poisoning mercury poisoning

Dimercapto-propane sulfonate (DMPS) severe acute arsenic poisoning severe acute mercury poisoning

Penicillamine

Mainly in: copper toxicity

Occasionally adjunctive therapy in: gold toxicity arsenic poisoning lead poisoning rheumatoid arthritis

Ethylenediamine tetraacetic acid (calcium disodium versenate) (CaNa<sub>2</sub>-EDTA) lead poisoning

Deferoxamine, Deferasirox and Deferiprone acute iron poisoning iron overload

When used properly in response to a diagnosis of harm from metal toxicity, side effects of chelation therapy include dehydration, low blood calcium, harm to kidneys, increased enzymes as would be detected in liver function tests, allergic reactions, and lowered levels of dietary Side effects elements. When administered inappropriately, there are the additional risks of hypocalcaemia (low calcium levels), neurodevelopmental disorders, and death.

Chelation therapy can be traced back to the early 1930s, when Ferdinand Münz, a German chemist working for I.G. Farben, first synthesized ethylenediaminetetraacetic acid (EDTA).

Munz was looking for a replacement for citric acid as a water softener. Chelation therapy itself began during World War II when chemists at the University of Oxford searched for an antidote for lewisite, an arsenic-based chemical weapon. The chemists learned that EDTA was particularly effective in treating lead poisoning.

Following World War II, chelation therapy was used to treat workers who had painted United States naval vessels with lead-based paints. In the 1950s, Norman Clarke, Sr. was treating workers at a battery factory for lead poisoning when he noticed that some of his patients had improved angina pectoris following chelation therapy. Clarke subsequently administered chelation therapy to patients with angina pectoris and other occlusive vascular disease and published his findings in *The American Journal of the Medical Sciences* in December 1956. He hypothesized that "EDTA could dissolve disease-causing plaques in the coronary systems of human beings." In a series of 283 patients treated by Clarke et al. From 1956 to 1960, 87% showed improvement in their symptomatology. Other early medical investigators made similar observations of EDTA's role in the treatment of cardiovascular disease (Bechtel, 1956; Bessman, 1957; Perry, 1961; Szekely, 1963; Wenig, 1958: and Wilder, 1962).

In 1973, a group of practicing physicians created the Academy of Medical Preventics (now the American College for Advancement in Medicine). The academy trains and certifies physicians in the safe administration of chelation therapy. Members of the academy continued to use EDTA therapy for the treatment of vascular disease and developed safer administration protocols.

In the 1960s, BAL was modified into DMSA, a related dithiol with far fewer side effects. DMSA quickly replaced both BAL and EDTA as the primary treatment for lead, arsenic and mercury poisoning in the United States. Esters of DMSA have been developed which are reportedly more effective; for example, the monoisoamyl ester (MiADMSA) is reportedly more effective than DMSA at clearing mercury and cadmium. Research in the former Soviet Union led to the introduction of DMPS, another dithiol, as a mercury-chelating agent. The Soviets also introduced ALA, which is transformed by the body into the dithiol dihydrolipoic acid, a mercury- and arsenic- History chelating agent. DMPS has experimental status in the United States, while ALA is a common nutritional supplement.

Since the 1970s, iron chelation therapy has been used as an alternative to regular phlebotomy to treat excess iron stores in people with haemochromatosis. Other chelating agents have been discovered. They

## History of all Medicine

all function by making several chemical bonds with metal ions, thus rendering them much less chemically reactive. The resulting complex is water-soluble, allowing it to enter the bloodstream and be excreted harmlessly.

Calcium-disodium EDTA chelation has been studied by the U.S. National Center for Complementary and Alternative Medicine for treating coronary disease. In 1998, the U.S. Federal Trade Commission (FTC) pursued the American College for Advancement in Medicine (ACAM), an organization that promotes "complementary, alternative and integrative medicine" over the claims made regarding the treatment of atherosclerosis in advertisements for EDTA chelation therapy. The FTC concluded that there was a lack of scientific studies to support these claims and that the statements by the ACAM were false. In 1999, the ACAM agreed to stop presenting chelation therapy as effective in treating heart disease, avoiding legal proceedings.

In 2010 the U.S. Food and Drug Administration (FDA) warned companies who sold over-the-counter (OTC) chelation products and stated that such "products are unapproved drugs and devices and that it is a violation of federal law to make unproven claims about these products.

There are no FDA-approved OTC chelation products."

In 1998, the U.S. Federal Trade Commission (FTC) charged that the web site of the American College for Advancement in Medicine (ACAM) and a brochure they published had made false or unsubstantiated claims. In December 1998, the FTC announced that it had secured a consent agreement barring ACAM from making unsubstantiated advertising claims that chelation therapy is effective against atherosclerosis or any other disease of the circulatory system.

In August 2005, doctor error led to the death of a five-year-old autistic boy who was undergoing chelation therapy. Others, including a three-year-old nonautistic girl and a nonautistic adult, have died while undergoing chelation therapy. These deaths were due to cardiac arrest caused by hypocalcemia during chelation therapy. In two of the cases hypocalcemia appears to have been caused by the administration of Na<sub>2</sub>EDTA (disodium EDTA) and in the third case the type of EDTA was unknown. Only the 3-year-old girl had found to have an elevated blood lead level and resulting low iron levels and anemia, which is the conventional medical cause for Society and culture administration of chelation therapy. According to protocol, EDTA should not be used in the treatment of children. More than 30 deaths have been recorded in association with IV-administered disodium EDTA since the 1970s.

## USE IN ALTERNATIVE MEDICINE

In alternative medicine, some practitioners claim chelation therapy can treat a variety of ailments, including heart disease and autism. The use of chelation therapy by alternative medicine practitioners for behavioral and other disorders is considered pseudoscientific; there is no proof that it is effective. Chelation therapy prior to heavy metal testing can artificially raise urinary heavy metal concentrations ("provoked" urine testing) and lead to inappropriate and unnecessary treatment. The American College of Medical Toxicology and the American Academy of Clinical Toxicology warn the public that chelating drugs used in chelation therapy may have serious side effects, including liver and kidney damage, blood pressure changes, allergies and in some cases even death of the patient.

## CANCER

The American Cancer Society says of chelation therapy: "Available scientific evidence does not support claims that it is effective for treating other conditions such as cancer. Chelation therapy can be toxic and has the potential to cause kidney damage, irregular heartbeat, and even death."

CARDIOVASCULAR DISEASE

According to the findings of a 1997 systematic review, EDTA chelation therapy is not effective as a treatment for coronary artery disease and this use is not approved in the United States by the US Food and Drug Administration (FDA).

The American Heart Association stated in 1997 that there is "no scientific evidence to demonstrate any benefit from this form of therapy." The United States Food and Drug Administration (FDA), the National Institutes of Health (NIH) and the American College of Cardiology "all agree with the American Heart Association" that "there have been no adequate, controlled, published scientific studies using currently approved scientific methodology to support this therapy for cardiovascular disease." They speculate that any improvement among heart patients undergoing chelation therapy can be attributed to the placebo effect and generally recommended lifestyle changes such as "quitting smoking, losing weight, eating more fruits and vegetables, avoiding foods high in saturated fats and exercising regularly." They also are concerned that patients could put off proven treatments for heart disease like drugs or surgery.

A systematic review published in 2005 found that controlled scientific studies did not support chelation therapy for heart disease. It found that very small trials and uncontrolled descriptive studies have reported benefits while larger controlled studies have found results no better than placebo.

In 2009, the Montana Board of Medical Examiners issued a position paper concluding that "chelation therapy has no proven efficacy in the treatment of cardiovascular disease, and in some patients could be injurious."

The U.S. National Center for Complementary and Alternative Medicine (NCCAM) conducted a trial on the chelation therapy's safety and efficacy for patients with coronary artery disease.

NCCAM Director Stephen E. Straus cited the "widespread use of chelation therapy in lieu of established therapies, the lack of adequate prior research to verify its safety and effectiveness, and the overall impact of coronary artery disease" as factors motivating the trial. The study has been criticized by some who said it was unethical, unnecessary and dangerous, and that multiple studies conducted prior to it demonstrated that the treatment provides no benefit.

The US National Center for Complementary and Alternative Medicine began the Trial to Assess Chelation Therapy (TACT) in 2003. Patient enrollment was to be completed around July 2009 with final completion around July 2010, but enrollment in the trial was voluntarily suspended by organizers in September 2008 after the Office for Human Research Protections began investigating complaints such as inadequate informed consent. Additionally, the trial was criticized for lacking prior Phase I and II studies, and critics summarized previous controlled trials as having "found no evidence that chelation is superior to placebo for treatment of CAD or PVD." The same critics argued that methodological flaws and lack of prior probability made the trial "unethical, dangerous, pointless, and wasteful." The American College of Cardiology supported the trial and research to explore whether chelation therapy was effective in treating heart disease. Evidence of insurance fraud and other felony convictions among (chelation proponent) investigators further undermined the credibility of the trial.

The final results of TACT were published in November 2012. The authors concluded that disodium EDTA chelation "modestly" reduced the risk of adverse cardiovascular outcomes among stable patients with a history of myocardial infarction. The study also showed a "marked" reduction in cardiovascular events in diabetic patients treated with EDTA chelation.

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An editorial published in the Journal of the American Medical Association said that "the study findings may provide novel hypotheses that merit further evaluation to help understand the pathophysiology of secondary prevention of vascular disease." Critics of the study characterized the study as showing no support for the use of chelation therapy in coronary heart disease, particularly the claims to reduce the need for coronary artery bypass grafting (CABG, pronounced "cabbage").

### AUTISM

Quackwatch says that autism is one of the conditions for which chelation therapy has been falsely promoted as effective, and practitioners falsify diagnoses of metal poisoning to trick parents into having their children undergo the risky process. As of 2008, up to 7% of autistic children worldwide had been subjected to chelation therapy. The death of two children in 2005 was caused by the administration of chelation treatments, according to the American Center for Disease Control. One of them was autistic. Parents either have a doctor use a treatment for lead poisoning, or buy unregulated supplements, in particular DMSA and lipoic acid. Aspies For Freedom, an autism rights organization, considers this use of chelation therapy unethical and potentially dangerous. There is little to no credible scientific research that supports the use of chelation therapy for the effective treatment of autism.

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### 4.26 Chromotherapy <sup>w</sup>

Chromotherapy, sometimes called color therapy, colorology or cromatherapy, is an alternative medicine method that is considered pseudoscience and quackery. Chromotherapists claim to be able to use light in the form of color to balance "energy" lacking from a person's body, whether it be on physical, emotional, spiritual, or mental levels. For example, they thought that shining a colored light on a person would cure constipation.

Color therapy is unrelated to photomedicine, such as phototherapy and blood irradiation therapy, which are scientifically accepted medical treatments for a number of conditions, as well as being unrelated to photobiology, which is the scientific study of the effects of light on living organisms.

Avicenna (980–1037), seeing color as of vital importance both in diagnosis and in treatment, discussed chromotherapy in The Canon of Medicine. He wrote that "color is an observable

### CHROMOTHERAPY ALTERNATIVE MEDICINE



Edwin Dwight Babbitt, an early proponent of Chromotherapy



|                       |  |
|-----------------------|--|
| Claims                | History of all Medicine<br>Colored light can balance "energy" in a human body. |
| Year                  | proposed 1876  |
| Original proponents   | Augustus Pleasonton  |
| Subsequent proponents | Seth Pancoast, Edwin Dwight Babbitt  |

## HISTORY

Avicenna (980–1037), seeing color as of vital importance both in diagnosis and in treatment, discussed chromotherapy in *The Canon of Medicine*. He wrote that "color is an observable symptom of disease" and also developed a chart that related color to the temperature and physical condition of the body. His view was that red moved the blood, blue or white cooled it, and yellow reduced muscular pain and inflammation.

American Civil War General Augustus Pleasonton (1801–1894) conducted his own experiments and in 1876 published his book *The Influence Of The Blue Ray Of The Sunlight And Of The Blue Color Of The Sky* about how the color blue can improve the growth of crops and livestock and can help heal diseases in humans. This led to modern chromotherapy, influencing scientist Dr. Seth Pancoast (1823–1889) and Edwin Dwight Babbitt (1828–1905) to conduct experiments and to publish, respectively, *Blue and Red Light; or, Light and Its Rays as Medicine* (1877) and *The Principles of Light and Color*.

In 1933, Indian-born American-citizen scientist Dinshah P. Ghadiali (1873–1966) published *The Spectro Chromometry Encyclopaedia*, a work on color therapy. Ghadiali claimed to have discovered why and how the different colored rays have various therapeutic effects on organisms. He believed that colors represent chemical potencies in higher octaves of vibration, and for each organism and system of the body there is a particular color that stimulates and another that inhibits the work of that organ or system. Ghadiali also thought that, by knowing the action of the different colors upon the different organs and systems of the body, one can apply the correct color that will tend to balance the action of any organ or system that has become abnormal in its function or condition. Dinshah P. Ghadiali's son, Darius Dinshah, continues to provide information about color therapy via his Dinshah Health Society, a nonprofit organization dedicated to advancing non-pharmaceutical home color therapy, and his book *Let There Be Light*.

Science writer Martin Gardner had described Ghadiali as "perhaps the greatest quack of them all". According to Gardner, photographs of Ghadiali at work in his laboratory are "indistinguishable from stills of a grade D movie about a mad scientist".

Throughout the 19th century "color healers" claimed colored glass filters could treat many diseases, including constipation and meningitis.

## COLORED CHAKRAS

Practitioners of ayurvedic medicine believe the body has seven "chakras", which some claim are 'spiritual centers', and are thought to be located along the spine. New Age thought associates each of the chakras with a single color of the visible light spectrum, along with a function and organ or bodily system. According to this view, the chakras can become imbalanced and result in physical and mental diseases, but application of the appropriate color can allegedly correct such imbalances.

Chromotherapy is regarded by health experts as quackery.

## History of all Medicine

According to a book published by the American Cancer Society, "available scientific evidence does not support claims that alternative uses of light or color therapy are effective in treating cancer or other illnesses".

Photobiology, the term for the scientific study of the effects of light on living tissue, has sometimes been used instead of the term chromotherapy in an effort to distance it from its roots in Victorian mysticism and to strip it of its associations with symbolism and magic.

Light therapy is a specific treatment approach using high intensity light to treat specific sleep, skin and mood disorders.

A review of the existing research on chromotherapy found that there is no evidence to support a causal link between specific colors to health outcomes, there is not enough evidence to support A New Age conceptualisation of the chakras of Indian body culture and their positions in the human body Scientific rejection a causal link between specific colors and emotional or mental states, and there is no research to suggest there exists one-to-one relationships between specific colors and emotions.

Chromotherapy has been accused of oversimplifying psychological responses to colors, making sweeping statements based on myths or beliefs that lack empirical support. Guidelines for chromotherapy lack consistency and appear to be subjective judgements that have inconclusive and nonspecific applicability in healthcare systems. While twelve colors have been reported as beneficial for health and well-being, a rigorous definition of each of these colors has yet to be provided, making it impossible to know if all color therapists are using the same wavelengths for these colors.

Chromotherapy has also been criticized for its lack of falsifiability and verifiability. Critics have further suggested that some positive results from the therapy are actually placebo effects, where the mere introduction of a treatment led to health improvements unrelated to the colors.

More recently, concern regarding the theory has questioned the risks associated with the emergence of light-emitting diode (LED) based lamps that have been created for use in chromotherapy, these lamps are classified as low risk for exposure and do not require any warnings to accompany the products. However, certain chromotherapy procedures require the individual to place the lamps near their eyes, which is not the recommended use for these lights and may alter the exposure duration to a level that can cause risk of retinal damage. With no consensus or regulation regarding how these products are to be used and whether eyewear is required, this treatment puts participants at risk for serious eye damage.

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## **Energy medicine <sup>w</sup>**

Energy medicine is a branch of alternative medicine based on a pseudo-scientific belief that healers can channel "healing energy" into a patient and effect positive results. Practitioners use a number of names including various synonyms for medicine (e.g., energy healing) and sometimes use the word vibrational instead of or in concert with energy. In most cases there is no empirically measurable energy involved: the term refers instead to so-called subtle energy.

Practitioners may classify practice as hands-on, hands-off, and distant (or absent) where the patient and healer are in different locations. Many schools of energy healing exist using many names: for example, biofield energy healing, spiritual healing, contact healing, distant healing, therapeutic touch, Reiki or Qigong.

## History of all Medicine

Reviews of the scientific literature on energy healing have concluded that there is no evidence supporting clinical efficacy. The theoretical basis of healing has been criticised as implausible; research and reviews supportive of energy medicine have been faulted for containing methodological flaws and selection bias, and positive therapeutic results have been determined to result from known psychological mechanisms. Some claims of those purveying "energy medicine" devices are known to be fraudulent and their marketing practices have drawn law-enforcement action in the US.

History records the repeated association or exploitation of scientific inventions by individuals claiming that newly discovered science could help people to heal. In the 19th century, electricity and magnetism were in the "borderlands" of science and electrical quackery became rife.

These concepts continue to inspire writers in the New Age movement. In the early-20th century health claims for radio-active materials put lives at risk, and recently quantum mechanics and grand unification theory have provided similar opportunities for commercial exploitation. Thousands of devices claiming to heal via putative or veritable energy are used worldwide. Many of them are illegal or dangerous and are marketed with false or unproven claims. Several of these devices have been banned.

Reliance on spiritual and energetic healing is associated with serious harm or death when patients delay or forego medical treatment.

The term "energy medicine" has been in general use since the founding of the non-profit International Society for the Study of Subtle Energies and Energy Medicine in the 1980s. Guides are available for practitioners, and other books aim to provide a theoretical basis and evidence for the practice. Energy medicine often proposes that imbalances in the body's "energy field" result in illness, and that by re-balancing the body's energy-field health can be restored. Some modalities describe treatments as ridding the body of negative energies or blockages in 'mind'; illness or episodes of ill health after a treatment are referred to as a 'release' or letting go of a 'contraction' in the body-mind. Usually, a practitioner will then recommend further treatments for complete healing.

The US-based National Center for Complementary and Integrative Health (NCCIH) distinguishes between health care involving scientifically observable energy, which it calls "Veritable Energy Medicine", and health care methods that invoke physically undetectable or unverifiable "energies", which it calls "Putative Energy Medicine":

Types of "veritable energy medicine" include magnet therapy, colorpuncture, and light therapy. Medical techniques involving the use of electromagnetic radiation (e.g. radiation therapy or magnetic resonance imaging) are not considered "energy medicine" in the terms of alternative medicine.

Types of "putative energy medicine" include biofield energy healing therapies that are claimed to direct or modulate "energies" to allow healing in the patient. This includes spiritual healing, psychic healing, Therapeutic touch, Healing Touch, Hands of light, Esoteric healing, Magnetic healing (now a historical term not to be confused with magnet therapy), Qigong healing, Reiki, crystal healing, Tong Ren therapy, distant healing, intercessory prayer, and Classification similar modalities. Concepts such as Qi (Chi), Prana, Innate Intelligence, Mana, Pneuma, vital fluid, Odic force, and orgone are among the many terms that have been used to describe these putative energy fields. This category does not include Acupuncture, Ayurvedic medicine, Chiropractic, Moxibustion and other modalities where a physical intervention is used to manipulate a putative energy.

Polarity therapy founded by Randolph Stone is a kind of energy medicine based on the belief that a person's health is subject to positive and negative charges in their electromagnetic field. It has been

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promoted as capable of curing a number of human ailments ranging from muscular tightness to cancer; however, according to the American Cancer Society "available scientific evidence does not support claims that polarity therapy is effective in treating cancer or any other disease".

There are various schools of energy healing, including biofield energy healing, spiritual healing, contact healing, distant healing, Pranic Healing, therapeutic touch, Reiki, and Qigong among others.

Spiritual healing occurs largely among practitioners who do not see traditional religious faith as a prerequisite for effecting cures. Faith healing by contrast takes place within a traditional or non-denominational religious context such as with some televangelists. The Buddha is often quoted by practitioners of energy medicine, but he did not practise "hands on or off" healing.

## BELIEFS

### A REIKI PRACTITIONER

Energy healing techniques such as Therapeutic touch have found recognition in the nursing profession. In 2005–2006, the North American Nursing Diagnosis Association approved the diagnosis of "energy field disturbance" in patients, reflective of what has been variously called a "postmodern" or "anti-scientific" approach to nursing care. This approach has been strongly criticised.

Believers in these techniques have proposed quantum mystical invocations of non-locality to try to explain distant healing. They have also proposed that healers act as a channel passing on a kind of bioelectromagnetism which shares similarities to vitalistic pseudosciences such as orgone or qi. Writing in the *Journal of Bodywork and Movement Therapies*, James Oschman introduced the concept of healer-sourced electromagnetic fields which change in frequency. Oschman believes that "healing energy" derives from electromagnetic frequencies generated by a medical device, projected from the hands of the healer, or by electrons acting as antioxidants. Beverly Rubik, in an article in the *Journal of Alternative and Complementary Medicine*, justified her belief with references to biophysical systems theory, bioelectromagnetics, and chaos theory that provide her with a "...scientific foundation for the biofield..." Drew Leder remarked in a paper in the same journal that such ideas were attempts to "make sense of, interpret, and explore 'psi' and distant healing." and that "such physics-based models are not presented as explanatory but rather as suggestive."

Physicists and sceptics criticise these explanations as pseudophysics – a branch of pseudoscience which explains magical thinking by using irrelevant jargon from modern physics to exploit scientific illiteracy and to impress the unsophisticated.

Indeed, even enthusiastic supporters of energy healing say that "there are only very tenuous theoretical foundations underlying [spiritual] healing".

### DISTANT HEALING

A systematic review of 23 trials of distant healing published in 2000 did not draw definitive conclusions because of the methodological limitations among the studies. In 2001 the lead author of that study, Edzard Ernst, published a primer on complementary therapies in cancer care in which he explained that though "about half of these trials suggested that healing is effective", the evidence was "highly conflicting" and that "methodological shortcomings prevented firm conclusions." He concluded that "as long as it is not used as an alternative to Scientific investigations effective therapies, spiritual healing should be virtually devoid of risks." A 2001 randomised clinical trial by the same group found no statistically significant difference on chronic pain between distance healers and "simulated healers". A 2003 review

## History of all Medicine

by Ernst updating previous work concluded that the weight of evidence had shifted against the use of distant healing, and that it can be associated with adverse effects.

### CONTACT HEALING

A 2001 randomised clinical trial randomly assigned 120 patients with chronic pain to either healers or "simulated healers", but could not demonstrate efficacy for either distance or face-to face healing. A systematic review in 2008 concluded that the evidence for a specific effect of spiritual healing on relieving neuropathic or neuralgic pain was not convincing. In their 2008 book *Trick or Treatment*, Simon Singh and Edzard Ernst concluded that "spiritual healing is biologically implausible and its effects rely on a placebo response. At best it may offer comfort; at worst it can result in charlatans taking money from patients with serious conditions who require urgent conventional medicine."

### EVIDENCE BASE

Alternative medicine researcher Edzard Ernst has said that although an initial review of pre-1999 distant healing trials had highlighted 57% of trials as showing positive results, later reviews of non-randomised and randomised clinical trials conducted between 2000 and 2002 led to the conclusion that "the majority of the rigorous trials do not support the hypothesis that distant healing has specific therapeutic effects." Ernst described the evidence base for healing practices to be "increasingly negative". Many of the reviews were also under suspicion for fabricated data, lack of transparency, and scientific misconduct. He concluded that "[s]piritual healing continues to be promoted despite the absence of biological plausibility or convincing clinical evidence ... that these methods work therapeutically and plenty to demonstrate that they do not." A 2014 study of energy healing for colorectal cancer patients showed no improvement in quality of life, depressive symptoms, mood, or sleep quality.

The Earthing Institute gathers researchers and therapists who believe that to maintain or regain good health it is necessary to restore direct contact with Earth by removing floors, carpets and Earthing especially shoes. Walking barefoot and sleeping on the ground are conceived as useful tools for achieving the "earthing" (or "grounding") of our body. It is claimed that thanks to earthing one would benefit from the "extraordinary healing power" of Nature by means of the transferral of electrons from the Earth's surface to the body: "a primordial and naturally stabilized electric reference point for all body biological circuits is created." According to its practitioners, Earthing has preventive and curative effects on chronic inflammation, aging-related disorders, cardiovascular diseases, diabetes, arthritis, autoimmune disorders, cancer, and even depression and autism.

The concept of earthing has been criticized as pseudoscience by skeptics and the medical community. A review of the available literature on the subject was written by several people that are financially tied to the company espousing the practice of earthing. Steven Novella referred to the work as "typical of the kind of worthless studies designed to generate false positives—the kind of in-house studies that companies sometimes use so that they can claim their products are clinically proven."

Bioresonance therapy (including MORA therapy) is a pseudoscientific medical practice in which it is proposed that electromagnetic waves can be used to diagnose and treat human illness.

### History and method

Bioresonance therapy was invented (in Germany) in 1977 by Franz Morell and his son-in-law, engineer Erich Rasche. Initially they marketed it as "MORA-Therapie", for MOrell and RASche.

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Some of the machines contain an electronic circuit measuring skin-resistance, akin to the Emeter used by Scientology, which the bioresonance creators sought to improve; Franz Morell had links with Scientology.

Practitioners claim to be able to detect a variety of diseases and addictions. Some practitioners also claim they can treat diseases using this therapy without drugs, by stimulating a change of "bioresonance" in the cells, and reversing the change caused by the disease. The devices would need to be able to isolate and pinpoint pathogens' responses from the mixture of responses the device receives via the electrodes. Transmitting these transformed signals over the same electrodes is claimed by practitioners to generate healing signals that have the curative effect.

### BIORESONANCE THERAPY

#### SCIENTIFIC EVALUATION

Lacking any scientific explanation of how bioresonance therapy might work, researchers have classified bioresonance therapy as pseudoscience.

Some studies did not show effects above that of the placebo effect. WebMD states: "There is no reliable scientific evidence that bioresonance is an accurate indicator of medical conditions or disease or an effective treatment for any condition."

Proven cases of online fraud have occurred, with a practitioner making false claims that he had the ability to cure cancer, and that his clients did not need to follow the chemotherapy or surgery recommended by medical doctors, which can be life-saving. Ben Goldacre ridiculed the BBC when it reported as fact a clinic's claim that the treatment had the ability to stop 70% of clients smoking, a better result than any conventional therapy.

In the United States of America, the U.S. Food and Drug Administration (FDA) classifies "devices that use resistance measurements to diagnose and treat various diseases" as Class III devices, which require FDA approval prior to marketing. The FDA has banned some of these devices from the US market, and has prosecuted many sellers of electrical devices for making false claims of health benefits.

According to Quackwatch, the therapy is completely nonsensical and the proposed mechanism of action impossible.

There are several, primarily psychological, explanations for positive reports after energy therapy, including placebo effects, spontaneous remission, and cognitive dissonance. A 2009 review found that the "small successes" reported for two therapies collectively marketed as "energy psychology" (Emotional Freedom Techniques and Tapas Acupressure Technique) "are potentially attributable to well-known cognitive and behavioral techniques that are included with the energy manipulation." The report concluded that "[p]sychologists and researchers should be wary of using such techniques, and make efforts to inform the public about the ill effects of therapies that advertise miraculous claims."

There are primarily two explanations for anecdotes of cures or improvements, relieving any need to appeal to the supernatural. The first is post hoc ergo propter hoc, meaning that a genuine improvement or spontaneous remission may have been experienced coincidental with but Explanations for positive reports independent from anything the healer or patient did or said. These patients would have improved just as well even had they done nothing. The second is the placebo effect, through which a person may experience genuine pain relief and other symptomatic alleviation. In this case, the patient genuinely has been helped by the healer – not through any mysterious or numinous function, but by the power of their own belief that they would be healed. In both cases the patient may experience a real reduction in

symptoms, though in neither case has anything miraculous or inexplicable occurred. Both cases are strictly limited to the body's natural abilities.

Positive findings from research studies can also result from such psychological mechanisms, or as a result of experimenter bias, methodological flaws such as lack of blinding, or publication bias; positive reviews of the scientific literature may show selection bias, in that they omit key studies that do not agree with the author's position. All of these factors must be considered when evaluating claims.

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#### **4.27 Feldenkrais Method <sup>w</sup>**

The Feldenkrais Method is a type of exercise therapy devised by Israeli Moshé Feldenkrais (1904–1984) during the mid-20th century. The method is claimed to reorganize connections between the brain and body and so improve body movement and psychological state.

There is no good medical evidence that the Feldenkrais method confers any health benefits. It is not known if it is safe or cost-effective, but researchers do not believe it poses serious risks.

The Feldenkrais Method is a type of alternative exercise therapy that proponents claim can repair impaired connections between the motor cortex and the body, so benefiting the quality of body movement and improving wellbeing. The Feldenkrais Guild of North America claims that the Feldenkrais method allows people to "rediscover [their] innate capacity for graceful, efficient movement" and that "These improvements will often generalize to enhance functioning in other aspects of [their] life". Proponents claim that the Feldenkrais Method can benefit people with a number of medical conditions, including children with autism, and people with multiple sclerosis. However, no studies in which participants were clearly identified as having an autism spectrum disorder or developmental disabilities have been presented to back this claims.

In a session, a Feldenkrais practitioner directs attention to habitual movement patterns that are thought to be inefficient or strained, and attempts to teach new patterns using gentle, slow, repeated movements. Slow repetition is believed to be necessary to impart a new habit and Description allow it to begin to feel normal. These movements may be passive (performed by the practitioner on the recipient's body) or active (performed by the recipient). The recipient is fully clothed.

In 2015, the Australian Government's Department of Health published the results of a review of alternative therapies that sought to determine if any were suitable for being covered by health insurance; the Feldenkrais Method was one of 17 therapies evaluated for which no clear evidence of effectiveness was found. Accordingly, in 2017 the Australian government identified the Feldenkrais Method as a practice that would not qualify for insurance subsidy, saying this step would "ensure taxpayer funds are expended appropriately and not directed to therapies lacking evidence".

The Feldenkrais Method is promoted with anecdotal claims it can help children with autism and other developmental disorders, but such claims are not backed by reputable supporting evidence.

There is limited evidence that workplace-based use of the Feldenkrais Method may help aid rehabilitation of people with upper limb complaints.

David Gorski has written that the Method bears similarities to faith healing, is like "glorified yoga", and that it "borders on quackery". Quackwatch places the Feldenkrais Method on its list of "Unnaturalistic methods".

Students at the San Francisco Feldenkrais Practitioner Training doing an Awareness Through Movement lesson (1975)

## EFFECTIVENESS AND RECEPTION

### HISTORY

Similar to some other somatic methods, such as those started by F. Matthias Alexander, Elsa Gindler, and Gerda Alexander, the Feldenkrais Method originated in the efforts of its founder to work with his own bodily problem. In the case of Moshé Feldenkrais, it was a chronically injured knee.

Feldenkrais first injured his knee while playing soccer in British-controlled Palestine in the 1920s. He reinjured it while negotiating the slippery decks of submarines while working as a scientist at the British Naval station at Fairlie, Scotland during the Second World War.

By that time Feldenkrais was a judo teacher and had mostly completed the work toward a D.Sc. under the guidance of Nobel laureate Frédéric Joliot-Curie. Facing the prospect of a surgery that could leave him with a life-long limp, Feldenkrais decided to apply the knowledge gained from his study of physics, engineering, and martial arts to an intensive self-study of his own movement habits. When his work provided him with relief, allowing him to avoid the knee surgery, he began exploring the methods he developed on himself with a small group of people at Fairlie, including scientific colleague John Desmond Bernal and John Boyd-Orr, Nobel laureate and first president of the World Academy of Art and Science.

After serving as head of electronic engineering for the Israeli Army in newly formed Israel from 1951 to 1953, Feldenkrais devoted the rest of his life, from age 50 onward, to developing and teaching self-awareness through movement lessons.

From the 1950s till his death in 1984, he taught continuously in his home city of Tel Aviv.

Feldenkrais gained recognition in part through media accounts of his work with prominent individuals, including Israeli Prime Minister David Ben-Gurion. Beginning in the late 1950s, Feldenkrais made trips to teach in Europe and America. Several hundred people became certified Feldenkrais practitioners through trainings he held in San Francisco from 1975 to 1978 and in Amherst, Massachusetts, from 1980 to 1984. Anticipating the need for an institutional structure to carry on his teaching, he helped found the Feldenkrais Guild of North America in 1977.

Feldenkrais developed the conceptual framework of his method in part through the publication of six books, beginning with *Body and Mature Behavior* (1949) and ending with the posthumously published *The Potent Self* (1985).

Since Feldenkrais' death, the international Feldenkrais community has used a guild structure to regulate its activity, with training accreditation boards in the Americas, Europe, and Australasia overseeing guilds and associations in eighteen member countries. The *Feldenkrais Journal*, the annual publication of the Feldenkrais Guild of North America, serves as a forum for the Feldenkrais community to discuss the method and its applications.

The development of the Feldenkrais Method was influenced by Moshe Feldenkrais's involvement in the martial arts. After meeting Kano Jigoro, the founder of Judo, while living in Paris in the 1930s, Feldenkrais transitioned to that practice. One of the main influences of judo on the Feldenkrais Method is the differentiation between rote exercise and attentive movement: "the methods of physical exercise in



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vogue ... exert only the muscles without any other goal, and one needs much will to bind oneself unfailingly to one of these methods", wrote Feldenkrais in 1952.

"Judo is very different, each movement has a specific goal which is reached after a precise and supple execution." Before he focused on the creation of his own method, Feldenkrais influenced the teaching of martial arts in Western Europe through the publication of five books on jiu-jitsu and judo, as well as teaching at practice centers in France and Great Britain.

Feldenkrais was born into an Hasidic family and community, and he acknowledged the influence of Hasidic Judaism on his method. In David Kaetz's biography, *Making Connections: Roots and Resonance in the Life of Moshe Feldenkrais* (2007), he argues many lines of influence can be found between the Judaism of Feldenkrais's upbringing and the Feldenkrais Method – for instance, the use of paradox as a pedagogical tool. Feldenkrais also acknowledged the influence of the Russian spiritualist George Gurdjieff on his work, in particular Gurdjieff's teachings on automatism and freedom in embodiment. Feldenkrais earned his doctorate in a program at the Sorbonne intended to bridge theoretical physics and industrial engineering. Mark Reese, another biographer of the teacher, says that Feldenkrais brought this emphasis on practical scientific inquiry to the understanding of embodiment expressed through his method: Feldenkrais was critical of the appropriation of the term 'energy' to express immeasurable phenomena or to label experiences that people had trouble describing ... He was impatient when someone invoked energy in pseudoscientific 'explanations' that masked a lack of understanding. In such cases he urged skepticism and scientific discourse. He encouraged empirical and phenomenological narratives that could lead to insights.

### INFLUENCES

Feldenkrais incorporated the views of other scientists into his teaching; for instance, he asked questions of both the neurosurgeon Karl H. Pribram and the cyberneticist Heinz von Foerster at trainings in San Francisco in the mid-1970s. Cybernetics, also known as dynamic systems theory, continued to influence the Feldenkrais Method in the 1990s through the work of human development researcher Esther Thelen.

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### **4.29 Horticultural therapy <sup>w</sup>**

Horticultural therapy (also known as garden therapy or social and therapeutic horticulture or STH) is defined by the American Horticultural Therapy Association (AHTA) as the engagement of a person in gardening and plant-based activities, facilitated by a trained therapist, to achieve specific therapeutic treatment goals. Direct contact with plants is believed to guide a person's focus away from stress enhancing their overall quality of life. The AHTA believes that horticultural therapy is an active process which occurs in the context of an established treatment plan. Horticultural therapists are specially educated and trained members of rehabilitation teams (with doctors, psychiatrists, psychologists, occupational therapists and others) who involve the client in all phases of gardening, from propagation to selling products, as a means of bringing about improvement in their life.

The use of horticulture to calm the senses dates as far back as 2000 BC in ancient Mesopotamia, and around 500 BC, ancient Persians created gardens to soothe the senses by involving beauty, fragrance, flowing water, and cool temperatures. According to the American Horticultural Therapy Association, Ancient Egyptian physicians prescribed walks around a garden for patients with mental illness; which makes the first sign of the therapeutic process in Alexandria and Ancient Egypt through Renaissance Europe. During the Middle Ages, on the grounds of a monastery hospital, plants were used to express

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purpose of cheering up melancholy patients. Also, the gardens were used to treat both physical and mental ailments of sickness who visited them. The first modern documentation of horticulture being used as a treatment for mental health purposes was in the 1800s. Dr. Benjamin Rush was the first to suggest that field labor in a farm setting helped attain positive outcomes for clients with mental illness. This discovery led many hospitals in the western world to begin using horticulture as a means to start therapeutically treating patients with mental health and developmental disabilities. In 1817, the Asylum for Persons Deprived of Their Reason, now known as Friends Hospital, constructed an environment with landscaping, paths and a park atmosphere in effort to assist patients in their recovery. In 1879 Friends Hospital built the first greenhouse that was used for therapy. Post World War 1 horticultural therapy was used to help servicemen rehabilitate, in the 1940s garden club members brought garden activities to the servicemen and in 1960 the first published book on horticultural therapy was written. The first degree in horticultural therapy was established in 1972.

## VETERANS PARTICIPATING IN HORTICULTURAL THERAPY

### HISTORY

In 1973 the Council for Therapy and Rehabilitation through Horticulture (NCTRH) was established by a group of horticulture therapy professionals. In 1988, they changed their name to the American Horticulture Therapy Association (AHTA) which they are still called today. AHTA is a non-profit organization with about 25% of their members being professionally registered.

Today, horticultural therapy is practiced in many countries and areas in the world, such as in Japan, Korea, Hong Kong, the United Kingdom, Germany, Italy, India and Sweden. Many universities in these countries have education programs and research in horticultural therapy.

Special laboratories have also been built, such as Alnarp Rehabilitation Garden at the Swedish University of Agricultural Sciences campus area in Alnarp. In India Horticultural Therapy Healing center, founded by Karthikeyan V, one of the pioneer in Horticultural Therapy in India, has conducting sessions for various populations in Horticultural Therapy.

Goals and types of treatment vary depending on the facility using horticultural therapy.

Institutions from schools and nursing homes to prisons utilize horticultural therapy to meet therapeutic needs. Each one of these facilities have different types of horticultural therapy, each with their own individual forms of treatment. Fundamentally horticultural therapy can be divided into three types of programming: Vocational, therapeutic, and social.

### VOCATIONAL HORTICULTURAL THERAPY

Vocational Horticultural Therapy is intended to teach skill and enhance behaviors that can be used in a job or workplace. People undergoing vocational therapy can learn skills involving greenhouses, vegetable gardening, tree and shrub care, as well as learn about plant production, sales and services. Activities vocational therapy teaches consists of how to repot, water, and move plants within their space. Learning the basic knowledge of their plants root system and the care different plants need is taught at their own pace. Ultimately aimed at employment, vocational horticulture therapy teaches people how to grow and work with plants while also learning the benefits of supporting themselves mentally and financially.

## TYPES OF TREATMENT

### THERAPEUTIC HORTICULTURAL THERAPY

Therapeutic Horticultural Therapy has its focus on medical and illness recovery. The central belief that therapeutic horticulture therapy revolves around is that being in nature has restorative properties. Therapeutic horticulture might be used to try and improve physical activity, social skills and engagement. Activities encompassed by therapeutic horticulture vary widely, some activities include: repetitive actions such as digging and watering, making observations about plant growth and change, relating plant life cycle to human life, and starting seeds. It has been suggested that things such as new growth on their plants can excite the caretaker, building up their confidence and increasing enthusiasm towards horticultural activities. The impact that therapeutic horticulture has on both mind and body, as well as its ability to be undertaken in small spaces makes therapeutic horticulture an attractive option for smaller facilities. An extensive systematic review with meta-analysis examined the effectiveness of horticultural therapy. A significant positive association with gardening was observed for a wide range of health outcomes, such as reductions in depression and anxiety symptoms, stress, mood disturbance, and BMI, as well as increases in quality of life, sense of community, physical activity levels, and cognitive function.

### SOCIAL HORTICULTURAL THERAPY

Social Horticultural Therapy is focused on leisure activity and enhancement of life quality.

Unlike therapeutic horticultural therapy, social horticultural therapy is more likely to be activity based. Social Horticulture therapy works to create a community that focuses on plant growth and teaches self-reliance all while providing a support system.

Another element of social horticultural knowledge and expertise is to advise patients and the general public how different herbs and spices can be added to their meals to give flavour and to Gardening greenhouse cure minor ailments. If the varies herbs and edible food crops and plants are planted in their gardens. The patient and or their family can go and pick the varies herbs to add to their meals.

Carers with horticultural knowledge and expertise can advise their patients and their families which herbs can be used for different dishes, and advise what other ingredients would work well with these dishes.

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### **4.30 Hydrotherapy<sup>w</sup>**

Hydrotherapy, formerly called hydropathy and also called water cure, is a branch of alternative medicine (particularly naturopathy), occupational therapy, and physiotherapy, that involves the use of water for pain relief and treatment. The term encompasses a broad range of approaches and therapeutic methods that take advantage of the physical properties of water, such as temperature and pressure, to stimulate blood circulation, and treat the symptoms of certain diseases.

Various therapies used in the present-day hydrotherapy employ water jets, underwater massage and mineral baths (e.g. balneotherapy, Iodine-Grine therapy, Kneipp treatments, Scotch hose, Swiss shower, thalassotherapy) or whirlpool bath, hot Roman bath, hot tub, Jacuzzi, and cold plunge.

## HYDROTHERAPY

### USES

Water therapy may be restricted to use as aquatic therapy, a form of physical therapy, and as a cleansing agent. However, it is also used as a medium for delivery of heat and cold to the body, which has long been the basis for its application. Hydrotherapy involves a range of methods and techniques, many of which use water as a medium to facilitate thermoregulatory reactions for therapeutic benefit.

Hydrotherapy is used as an adjunct to therapy, including in nursing, where its use is now long established. It continues to be widely used for burn treatment, although shower-based hydrotherapy techniques have been increasingly used in preference to full-immersion methods, partly for the ease of cleaning the equipment and reducing infections due to contamination.

When removal of tissue is necessary for the treatment of wounds, hydrotherapy which performs selective mechanical debridement can be used. Examples of this include directed wound irrigation and therapeutic irrigation with suction.

The appliances and arrangements by means of which heat and cold are brought to bear are: Packings, general and local (i.e. IcyHot);

Hot air and steam baths;

General baths;

Sitz (sitting), spinal, head, and foot baths;

Bandages or compresses, wet and dry; also;

Fomentations and poultices, sinapisms, stupes, rubbings, and water potations.

Opening of the new Hydrotherapy Pool, Manchester Royal Infirmary, 2009

### TECHNIQUE

Hydrotherapy which involves submerging all or part of the body in water can involve several types of equipment:

Full body immersion tanks (a "Hubbard tank" is a large size)

Arm, hip, and leg whirlpool

Whirling water movement, provided by mechanical pumps, has been used in water tanks since at least the 1940s. Similar technologies have been marketed for recreational use under the terms "hot tub" or "spa".

In some cases, baths with whirlpool water flow are not used to manage wounds, as a whirlpool will not selectively target the tissue to be removed, and can damage all tissue. Whirlpools also create an unwanted risk of bacterial infection, can damage fragile body tissue, and in the case of treating arms and legs, bring risk of complications from edema.

The therapeutic use of water has been recorded in ancient Egyptian, Greek and Roman civilizations. Egyptian royalty bathed with essential oils and flowers, while Romans had communal public baths for their citizens. Hippocrates prescribed bathing in spring water for sickness. Other cultures noted for a long history of hydrotherapy include China and Japan, the latter being centred primarily around Japanese hot springs. Many such histories predate the Roman thermae.

MODERN REVIVAL

HISTORY

Hydrotherapy became more prominent following the growth and development of modern medical practices in the 18th and 19th century. As traditional medical practice became increasingly professional in terms of how doctors operated, it was felt that medical treatment became increasingly less personalized, the development of hydrotherapy was believed to be a more personal form of medical treatment that did not necessarily present to patients the alienating scientific language that modern developments of medical treatment entailed.

1700–1810

Two English works on the medical uses of water were published in the 18th century that inaugurated the new fashion for hydrotherapy. One of these was by Sir John Floyer, a physician of Lichfield, who, struck by the remedial use of certain springs by the neighbouring peasantry, investigated the history of cold bathing and published a book on the subject in 1702. The book ran through six editions within a few years and the translation of this book into German was largely drawn upon by Dr J. S. Hahn of Silesia as the basis for his book called *On the Healing Virtues of Cold Water, Inwardly and Outwardly Applied, as Proved by Experience*, published in 1738.

The other work was a 1797 publication by Dr James Currie of Liverpool on the use of hot and cold water in the treatment of fever and other illness, with a fourth edition published in 1805, not long before his death. It was also translated into German by Michaelis (1801) and Hegewisch (1807). It was highly popular and first placed the subject on a scientific basis. Hahn's writings had meanwhile created much enthusiasm among his countrymen, societies having been formed everywhere to promote the medicinal and dietetic use of water; and in 1804 Professor E.F.C.

Oertel of Anspach republished them and quickened the popular movement by unqualified commendation of water drinking as a remedy for all diseases.

The general idea behind hydropathy during the 1800s was to be able to induce something called a crisis. The thinking was that water invaded any cracks, wounds, or imperfections in the skin, which were filled with impure fluids. Health was considered to be the natural state of the body, and filling these spaces with pure water, would flush the impurities out, which would rise to the surface of the skin, producing pus. The event of this pus emerging was called a crisis, and was achieved through a multitude of methods. These methods included techniques such as James Currie, who, according to Captain R. T. Claridge, discovered "...the merit of settling the use of cold water...[and who established] the scientific base of Hydropathy" sweating, the plunging bath, the half bath, the head bath, the sitting bath, and the douche bath.

All of these were ways to gently expose the patient to cold water in different ways.

Vincenz Priessnitz (1799–1851)

Vincenz Priessnitz was the son of a peasant farmer who, as a young child, observed a wounded deer bathing a wound in a pond near his home. Over the course of several days, he would see this deer return and eventually the wound was healed. Later as a teenager, Priessnitz was attending to a horse cart, when the cart ran him over, breaking three of his ribs. A physician told him that they would never heal. Priessnitz decided to try his own hand at healing himself, and wrapped his wounds with damp bandages. By daily changing his bandages and drinking large quantities of water, after about a year, his broken ribs had been cured. Priessnitz quickly gained fame in his hometown and became the consulted physician.

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Later in life, Priessnitz became the head of a hydropathy clinic in Gräfenberg in 1826. He was extremely successful and by 1840, he had 1600 patients in his clinic including many fellow physicians, as well as important political figures such as nobles and prominent military officials.

Treatment length at Priessnitz's clinic varied. Much of his theory was about inducing the abovementioned crisis, which could happen quickly, or could occur after three to four years. In accordance with the simplistic nature of hydropathy, a large part of the treatment was based on living a simple lifestyle. These lifestyle adjustments included dietary changes such as eating only very coarse food, such as jerky and bread, and of course drinking large quantities of Vincenz Priessnitz, who initiated the popular revival of hydrotherapy at Gräfenberg water. Priessnitz's treatments also included a great deal of less strenuous exercise, mostly including walking. Ultimately, Priessnitz's clinic was extremely successful, and he gained fame across the western world. His practice even influenced the hydropathy that took root overseas in America.

### Sebastian Kneipp (1821–1897)

Sebastian Kneipp was born in Germany and he considered his own role in hydropathy to be that of continuing Priessnitz's work. Kneipp's own practice of hydropathy was even gentler than the norm. He believed that typical hydropathic practices deployed were "too violent or too frequent" and he expressed concern that such techniques would cause emotional or physical trauma to the patient. Kneipp's practice was more all encompassing than Priessnitz's, and his practice involved not only curing the patients' physical woes, but emotional and mental as well.

Kneipp introduced four additional principles to the therapy: medicinal herbs, massages, balanced nutrition, and "regulative therapy to seek inner balance". Kneipp had a very simple view of an already simple practice. For him, hydropathy's primary goals were strengthening the constitution and removing poisons and toxins in the body. These basic interpretations of how hydropathy worked hinted at his complete lack of medical training. Kneipp did have, however, a very successful medical practice in spite of, perhaps even because of, his lack of medical training. As mentioned above, some patients were beginning to feel uncomfortable with traditional doctors because of the elitism of the medical profession. The new terms and techniques that doctors were using were difficult for the average person to understand. Having no formal training, all of his instructions and published works are described in easy to understand language and would have seemed very appealing to a patient who was displeased with the direction traditional medicine was taking.

A significant factor in the popular revival of hydrotherapy was that it could be practised relatively cheaply at home. The growth of hydrotherapy (or 'hydropathy' to use the name of the time), was thus partly derived from two interacting spheres: "the hydro and the home".

Hydrotherapy as a formal medical tool dates from about 1829 when Vincenz Priessnitz (1799–1851), a farmer of Gräfenberg in Silesia, then part of the Austrian Empire, began his public career in the paternal homestead, extended so as to accommodate the increasing numbers attracted by the fame of his cures.

At Gräfenberg, to which the fame of Priessnitz drew people of every rank and many countries, medical men were conspicuous by their numbers, some being attracted by curiosity, others by the desire of knowledge, but the majority by the hope of cure for ailments which had as yet proved incurable. Many records of experiences at Gräfenberg were published, all more or less favorable to the claims of Priessnitz, and some enthusiastic in their estimate of his genius and penetration.

SPREAD OF HYDROTHERAPY

Captain R. T. Claridge was responsible for introducing and promoting hydropathy in Britain, first in London in 1842, then with lecture tours in Ireland and Scotland in 1843. His 10-week tour in Ireland included Limerick, Cork, Wexford, Dublin and Belfast, over June, July and August 1843, with two subsequent lectures in Glasgow.

Some other Englishmen preceded Claridge to Graefenberg, although not many. One of these was Dr. James Wilson, who himself, along with Dr James Manby Gully, established and operated a water cure establishment at Malvern in 1842. In 1843, Wilson and Gully published a comparison of the efficacy of the water-cure with drug treatments, including accounts of some cases treated at Malvern, combined with a prospectus of their Water Cure Establishment.

Then in 1846 Gully published *The Water Cure in Chronic Disease*, further describing the treatments available at the clinic.

Hydropathic applications according to Claridge's *Hydropathy* book

The fame of the water-cure establishment grew, and Gully and Wilson became well-known national figures. Two more clinics were opened at Malvern. Famous patients included Charles Darwin, Charles Dickens, Thomas Carlyle, Florence Nightingale, Lord Tennyson and Samuel Wilberforce. With his fame he also attracted criticism:

Sir Charles Hastings, a physician and founder of the British Medical Association, was a forthright critic of hydropathy, and Gully in particular.

From the 1840s, hydropathics were established across Britain. Initially, many of these were small institutions, catering to at most dozens of patients. By the later nineteenth century the typical hydropathic establishment had evolved into a more substantial undertaking, with thousands of patients treated annually for weeks at a time in a large purpose-built building with lavish facilities – baths, recreation rooms and the like – under the supervision of fully trained and qualified medical practitioners and staff.

In Germany, France and America, and in Malvern, England, hydropathic establishments multiplied with great rapidity. Antagonism ran high between the old practice and the new. Unsparring condemnation was heaped by each on the other; and a legal prosecution, leading to a royal commission of inquiry, served but to make Priessnitz and his system stand higher in public estimation.

Increasing popularity soon diminished caution whether the new method would help minor ailments and be of benefit to the more seriously injured. Hydropathists occupied themselves mainly with studying chronic invalids well able to bear a rigorous regimen and the severities of unrestricted crisis. The need of a radical adaptation to the former class was first adequately recognized by John Smedley, a manufacturer of Derbyshire, who, impressed in his own person with the severities as well as the benefits of the cold water cure, practised among his workpeople a milder form of hydropathy, and began about 1852 a new era in its history, founding at Matlock a counterpart of the establishment at Gräfenberg.

Ernst Brand (1827–1897) of Berlin, Rajen and Theodor von Jürgensen of Kiel, and Karl Liebermeister of Basel, between 1860 and 1870, employed the cooling bath in abdominal typhus with striking results, and led to its introduction to England by Dr Wilson Fox. In the Franco-German War the cooling bath was largely employed, in conjunction frequently with quinine; and it was used in the treatment of hyperpyrexia.

## HOT BATHS

Hydrotherapy, especially as promoted during the height of its Victorian revival, has often been associated with the use of cold water, as evidenced by many titles from that era. However, not all therapists limited their practice of hydrotherapy to cold water, even during the height of this popular revival.

The specific use of heat was however often associated with the Turkish bath. This was introduced by David Urquhart into England on his return from the East in the 1850s, and ardently adopted by Richard Barter. The Turkish bath became a public institution, and, with the morning tub and the general practice of water drinking, is the most noteworthy of the many contributions by hydropathy to public health.

## SPREAD TO THE UNITED STATES

The first U.S. hydropathic facilities were established by Joel Shew and Russell Thacher Trall in the 1840s. Dr Charles Munde also established early hydrotherapy facilities in the 1850s. Trall also co-edited the *Water Cure Journal*.

By 1850, it was said that "there are probably more than one hundred" facilities, along with numerous books and periodicals, including the *New York Water Cure Journal*, which had Baigneuses, oil on canvas, Jean-Léon Gérôme (1824–1904) "attained an extent of circulation equaled by few monthlies in the world". By 1855, there were attempts by some to weigh the evidence of treatments in vogue at that time.

Following the introduction of hydrotherapy to the U.S., John Harvey Kellogg employed it at Battle Creek Sanitarium, which opened in 1866, where he strove to improve the scientific foundation for hydrotherapy. Other notable hydropathic centers of the era included the Cleveland Water Cure Establishment, founded in 1848, which operated successfully for two decades, before being sold to an organization which transformed it into an orphanage.

At its height, there were over 200 water-cure establishments in the United States, most located in the northeast. Few of these lasted into the postbellum years, although some survived into the 20th century including institutions in Scott (Cortland County), Elmira, Clifton Springs and Dansville. While none were located in Jefferson County, the Oswego Water Cure operated in the city of Oswego.

## SUBSEQUENT DEVELOPMENTS

In November 1881, the *British Medical Journal* noted that hydropathy was a specific instance, or "particular case", of general principles of thermodynamics. That is, "the application of heat and cold in general", as it applies to physiology, mediated by hydropathy. In 1883, another writer stated "Not, be it observed, that hydropathy is a water treatment after all, but that water is the medium for the application of heat and cold to the body".

Hydrotherapy was used to treat people with mental illness in the 19th and 20th centuries and before World War II, various forms of hydrotherapy were used to treat alcoholism.

The basic text of the Alcoholics Anonymous fellowship, *Alcoholics Anonymous*, reports that A.A. co-founder Bill Wilson was treated by hydrotherapy for his alcoholism in the early 1930s.

## RECENT TECHNIQUES

A subset of cryotherapy involves cold water immersion or ice baths, used by physical therapists, sports medicine facilities and rehab clinics. Proponents assert that it results in improved return of blood flow and byproducts of cellular breakdown to the lymphatic system and more efficient recycling.



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Alternating the temperatures, either in a shower or complementary tanks, combines the use of hot and cold in the same session. Proponents claim improvement in circulatory system and lymphatic drainage. Experimental evidence suggests that contrast hydrotherapy helps to reduce injury in the acute stages by stimulating blood flow and reducing swelling.

The growth of hydrotherapy, and various forms of hydropathic establishments, resulted in a form of tourism, both in the UK, and in Europe. At least one book listed English, Scottish, Irish and European establishments suitable for each specific malady, while another focused primarily on German spas and hydropathic establishments, but including other areas. While many bathing establishments were open all year round, doctors advised patients not to go before May, "nor to remain after October. English visitors rather prefer cold weather, and they often arrive for the baths in May, and return again in September. Americans come during the whole season, but prefer summer. The most fashionable and crowded time is during July and August". In Europe, interest in various forms of hydrotherapy and spa tourism continued unabated through the 19th century and into the 20th century, where "in France, Italy and Germany, several million people spend time each year at a spa." In 1891, when Mark Twain toured Europe and discovered that a bath of spring water at Aix-les-Bains soothed his rheumatism, he described the experience as "so enjoyable that if I hadn't had a disease I would have borrowed one just to have a pretext for going on".

This was not the first time such forms of spa tourism had been popular in Europe and the U.K.

Indeed, in Europe, the application of water in the treatment of fevers and other maladies had, since the seventeenth century, been consistently promoted by a number of medical writers. In the eighteenth century, taking to the waters became a fashionable pastime for the wealthy classes who decamped to resorts around Britain and Europe to cure the ills of overconsumption.

In the main, treatment in the heyday of the British spa consisted of sense and sociability: promenading, bathing, and the repetitive quaffing of foul-tasting mineral waters.

A hydropathic establishment is a place where people receive hydropathic treatment. They are commonly built in spa towns, where mineral-rich or hot water occurs naturally.

### SOCIETY AND CULTURE

Several hydropathic institutions wholly transferred their operations away from therapeutic purposes to become tourist hotels in the late 20th century whilst retaining the name 'Hydro'.

There are several prominent examples in Scotland at Crieff, Peebles and Seamill amongst others.

Canine hydrotherapy is a form of hydrotherapy directed at the treatment of chronic conditions, post-operative recovery, and pre-operative or general fitness in dogs.

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### **4.31 Myofascial release <sup>w</sup>**

Myofascial release (MFR, self-myofascial release) is an alternative medicine therapy claimed to be useful for treating skeletal muscle immobility and pain by relaxing contracted muscles, improving blood and lymphatic circulation, and stimulating the stretch reflex in muscles.

Fascia is a thin, tough, elastic type of connective tissue that wraps most structures within the human body, including muscle. Fascia supports and protects these structures. Osteopathic practice holds that this soft

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tissue can become restricted due to psychogenic disease, overuse, trauma, infectious agents, or inactivity, often resulting in pain, muscle tension, and corresponding diminished blood flow.

The use of myofascial release as a treatment is not supported by good evidence; as a replacement for conventional treatment for cancer, it risks causing harm.

Writing for Science-Based Medicine, Harriet Hall described myofascial release as an umbrella term for several types of physical manipulation, and it might more simply be described as a kind of massage based on vaguely-defined scientific notions.

The American Cancer Society states that "There is little scientific evidence available to support proponents' claims that myofascial release relieves pain or restores flexibility" and cautions Effectiveness against using it as a substitute for conventional cancer treatment. The poor quality of research into the use of myofascial release for orthopaedic conditions precludes any conclusions being drawn about its usefulness for this purpose.

### DESCRIPTION AND CONCEPTUAL BASIS

In 2011, the UK Advertising Standards Authority (ASA) upheld a complaint regarding the effectiveness claims published in an advertising leaflet produced by the Myofascial Release UK health care service. The ASA Council ruled that materials presented by Myofascial Release UK in support of the claims made in their ad were inadequate to establish a "body of robust scientific evidence" to substantiate Myofascial Release UK's range of claims. In addition, the ASA determined that the ad breached advertising rules by introducing a risk that readers might be discouraged from seeking other essential medical treatments.

Reviews published in 2013 and 2015 evaluating evidence for MFR efficacy found that clinical trials that had been conducted varied in quality, technique, outcome measurements, and had mixed outcomes; the 2015 review noted: "it is time for scientific evidences on MFR to support its clinical use." Another review concluded that the use of foam rollers or a roller massager before or after exercise for self-myofascial release has been observed to decrease soreness due to DOMS and that self-myofascial release appears to have no negative effect on performance.

However, the optimal timing and duration of use requires further study.

The approach was promulgated as an alternative medicine concept by Andrew Taylor Still, inventor of osteopathy, and his early students. The exact phrase "myofascial release" was coined in the 1960s by Robert Ward, an osteopath who studied with Ida Rolf, the originator of Rolfing. Ward, along with physical therapist John Barnes, are considered the two primary founders of Myofascial Release.

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### 4.32 Numerology <sup>w</sup>

Numerology is the pseudoscientific belief in a divine or mystical relationship between a number and one or more coinciding events. It is also the study of the numerical value of the letters in words, names, and ideas. It is often associated with the paranormal, alongside astrology and similar to divinatory arts.

Numerorum mysteria (1591), a treatise on numerology by Pietro Bongo and his most influential work in Europe.

Despite the long history of numerological ideas, the word "numerology" is not recorded in English before c. 1907.

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The term numerologist can be used for those who place faith in numerical patterns and draw pseudoscientific inferences from them, even if those people do not practice traditional numerology. For example, in his 1997 book *Numerology: Or What Pythagoras Wrought*, mathematician Underwood Dudley uses the term to discuss practitioners of the Elliott wave principle of stock market analysis.

The practice of gematria, assigning numerical values to words and names and imputing those values with religious meaning, dates back to antiquity. An Assyrian inscription from the 8th century BC, commissioned by Sargon II. declares "the king built the wall of Khorsabad 16,283 cubits long to correspond with the numerical value of his name." Rabbinic literature used gematria to interpret passages in the Hebrew Bible.

In 325 AD, following the First Council of Nicaea, departures from the beliefs of the state church were classified as civil violations within the Roman Empire. Numerology, referred to as isopsephy, remained in use in conservative Greek Orthodox circles. Despite the church's resistance to numerology, there have been arguments made for the presence of numerology in the Bible and religious architecture.

Some alchemical theories were closely related to numerology. For example, Persian-Arab alchemist Jabir ibn Hayyan framed his experiments in an elaborate numerology based on the names of substances in the Arabic language.

Numerology is prominent in Sir Thomas Browne's 1658 literary Discourse *The Garden of Cyrus*.

Throughout its pages, the author attempts to demonstrate that the number five and the related Quincunx pattern can be found throughout the arts, in design, and in nature – particularly botany.

### ALPHABETIC SYSTEMS

There are various numerology systems which assign numerical value to the letters of an alphabet. Examples include the Abjad numerals in Arabic, Hebrew numerals, Armenian numerals, History Methods and Greek numerals. The practice within Jewish tradition of assigning mystical meaning to words based on their numerical values, and on connections between words of equal value, is known as gematria.

### LATIN ALPHABET SYSTEMS

There are various systems of numerology that use the Latin alphabet. Different methods of interpretation exist, including Chaldean, Pythagorean, Hebraic, Helyn Hitchcock's method, Phonetic, Japanese, Arabic and Indian.

### ENGLISH QABALLA

English Qaballa (EQ) refers to a system of Hermetic Qabalah that interprets the letters of the English alphabet via an assigned set of values developed by James Lees in 1976. Like most of the systems developed since the death of Aleister Crowley (1875-1947), it was created with the intent of gaining a better understanding of the mysteries elaborated in his inspired works, especially those in *Liber AL vel Legis*, the Book of the Law. According to Jake Stratton-Kent, "the English Qaballa is a qabalah and not a system of numerology. A qabalah is specifically related to three factors: one, a language; two, a 'holy' text or texts; three, mathematical laws at work in these two."

### ABJAD SYSTEM

The Arabic system of numerology is known as Abjad notation or Abjad numerals. In this system each letter of Arabic alphabet has a numerical value. This system is the foundation of ilm-ulciphir, the Science of Ciphir, and ilm-ul-huroof, the Science of Alphabet:

## History of all Medicine

ط = 9

ح = 8

ز = 7

و = 6

ه = 5

د = 4

ج = 3

ب = 2

أ = 1

ص = 90

ف = 80

ع = 70

س = 60

ن = 50

م = 40

ل = 30

ك = 20

ي = 10

ظ = 900

ض = 800

ذ = 700

خ = 600

ث = 500

ت = 400

ش = 300

ر = 200

ق = 100

غ = 1000

### ARAB NUMEROLOGY

Some Chinese assign a different set of meanings to the numbers and certain number combinations are considered luckier than others. In general, even numbers are considered lucky, since it is believed that good luck comes in pairs.

Traditional Chinese Medicine (TCM), and its associated fields such as acupuncture, base their system on mystical numerical associations, such as the "12 vessels circulating blood and air corresponding to the 12 rivers flowing toward the Central Kingdom; and 365 parts of the body, one for each day of the year" being the basis of locating acupuncture points.

## CHINESE NUMBER DEFINITIONS

Cantonese frequently associate numbers with the following connotations (based on its sound), which may differ in other varieties of Chinese:

1. 一 [jét] – sure
2. 二 [ji:] – easy 易 [ji:]
3. 三 [sá:m] – live 生 [sá:ŋ] but it can also be seen as a halved eight when using Arabic numerals and so considered unlucky.
4. 四 [sēi] – considered unlucky since 4 is a homophone with the word for death or suffering 死 [séi] (see tetraphobia), yet only in the Shanghainese, it is a homophone of water (水) and is considered lucky because water is associated with money.
5. 五 [ŋ] – the self, me, myself 吾 [ŋ], nothing, never 唔 [ŋ, m] in the Shanghainese, it is a homophone of fish (鱼)
6. 六 [lù:k] – easy and smooth, all the way
7. 七 [ts<sup>h</sup>ét] – a slang/vulgar word in Cantonese.
8. 八 [pā:t] – sudden fortune, prosperity 發 [fā:t]
9. 九 [kěu] – long in time 久 [kěu], enough 夠 [kěu] or a slang/vulgar word derived from dog 狗 [kěu] in Cantonese

Some "lucky number" combinations include:

## CHINESE NUMEROLOGY

99 – doubly long in time, hence eternal; used in the name of a popular Chinese American supermarket chain, 99 Ranch Market.

168 – many premium-pay telephone numbers in China begin with this number, which is considered lucky. It is also the name of a motel chain in China (Motel 168).

888 – Three times the prosperity, means "wealthy wealthy wealthy".

6 = U, V, 9

369 - 369=love

There is no assignment for the number 9. Numerologists analyze double-digit numbers from 10 to 99.

In southern India, mostly Tamil Nadu, the numbers assigned to English alphabets are the same as in the Chaldean system. The list is shown below:

1 = A, I, J, Q, Y

2 = B, K, R

3 = C, G, L, S

## History of all Medicine

4 = D, M, T

5 = E, H, N, X

6 = U, V, W

7 = O, Z

8 = F, P

There is no assignment for the number 9. Numerologists analyze double-digit numbers from 10 to 99.

Ex: Number 29 is supposed to be the worst numbered-name a person can have.

In Science

### INDIAN NUMEROLOGY

Other uses of the term

Scientific theories are sometimes labeled "numerology" if their primary inspiration appears to be a set of patterns rather than scientific observations. This colloquial use of the term is quite common within the scientific community and it is mostly used to dismiss a theory as questionable science.

The best known example of "numerology" in science involves the coincidental resemblance of certain large numbers that intrigued such eminent men as mathematical physicist Paul Dirac, mathematician Hermann Weyl and astronomer Arthur Stanley Eddington. These numerical coincidences refer to such quantities as the ratio of the age of the universe to the atomic unit of time, the number of electrons in the universe, and the difference in strengths between gravity and the electric force for the electron and proton. ("Is the Universe Fine Tuned for Us?", Stenger, V.J.).

The discovery of atomic triads, an early attempt to sort the elements into some logical order by their physical properties, was once considered a form of numerology, and yet ultimately led to the construction of the periodic table. Here the atomic weight of the lightest element and the heaviest are summed, and averaged, and the average is found to be very close to that of the intermediate weight element. This did not work with every triplet in the same group, but worked often enough to allow later workers to create generalizations.

Large number co-incidences continue to fascinate many mathematical physicists.

Wolfgang Pauli was also fascinated by the appearance of certain numbers, including 137, in physics

British mathematician I. J. Good wrote:

There have been a few examples of numerology that have led to theories that transformed society: see the mention of Kirchhoff and Balmer in Good (1962) ... and one can well include Kepler on account of his third law. It would be fair enough to say that numerology was the origin of the theories of electromagnetism, quantum mechanics, gravitation.... So I intend no disparagement when I describe a formula as numerological.

When a numerological formula is proposed, then we may ask whether it is correct. ... I think an appropriate definition of correctness is that the formula has a good explanation, in a Platonic sense, that is, the explanation could be based on a good theory that is not yet known but 'exists' in the universe of possible reasonable ideas.

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### 4.33 Orthopathy <sup>w</sup>

Orthopathy (from the Greek ὀρθός orthos "right" and πάθος pathos "suffering") or natural hygiene (NH) is a set of alternative medical beliefs and practices originating from the Nature Cure movement. Proponents claim that fasting, dieting, and other lifestyle measures are all that is necessary to prevent and treat disease.

Natural hygiene is an offshoot of naturopathy that advocates a philosophy of "natural living" that was developed in the early nineteenth century. Natural hygienists oppose drugs, fluoridation, immunization, most medical treatments and endorse fasting, food combining and raw food or vegetarian diets.

#### 19th century

The orthopathy movement originated with Isaac Jennings in the 1820s, who practiced conventional medicine for many years but became discouraged with its results. Jennings' system was firmly opposed to all medicine and was known as the "no-medicine plan". He prescribed bathing, rest and a vegetarian diet as part of his system.

In 1837, Colonel John Benson, Sylvester Graham and William Alcott founded the American Physiological Society (APS) in Boston to promote Grahamism, which lasted just three years.

The APS was the first natural hygiene organization in the United States. Mary Gove Nichols lectured for the Ladies Physiological Society, an off-shoot of the APS. In the 1840s, Joel Shew History and practice was influenced by the dieting ideas of Sylvester Graham and promoted natural hygiene practices such as bathing, exercise and massage as well as the elimination of alcohol and tobacco.

Isaac Jennings in his 1867 book *The Tree of Life*, defined orthopathy as "from orthos, right, true, erect; and pathos, affection. Nature is always upright—moving in the right direction." George H. Taylor who introduced Swedish massage to the United States in the 1860s was known to promote natural hygiene and physical culture. Taylor believed that correct breathing and diet, gymnastics and mechanical massage could replace medical intervention and restore health.

Natural hygiene was often associated with vegetarianism during the nineteenth century.

However, not all natural hygienists are vegetarians. Russell T. Trall was a notable early proponent of natural hygiene and vegetarianism. Trall established his own version called "hygeiotherapy", a mixture of hydrotherapy with diet and exercise treatment regimes.

In 1887, Susanna Way Dodds and her sister Mary established the Hygienic College of Physicians and Surgeons in St. Louis, Missouri. They focused on "natural methods of treatment: diet, exercise, massage, electricity and hydrotherapy in all of its manifold applications".

During the 1880s, Thomas Allinson developed his theory of medicine, which he called 'Hygienic Medicine.'

#### 20th century

Natural hygienist George S. Weger managed Weger Health School in Redlands, California (1923–1935).

Herbert M. Shelton who has been described as "the twentieth century's premier natural hygienist", was influenced by Sylvester Graham and Russell T. Trall. Shelton wrote much on the topic, beginning with *The Hygienic System: Orthopathy* in 1939, which renamed orthopathy as 'Natural Hygiene.'

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Consumption of 'incompatible' foods in one meal is said to lead to ill health, and consumption of 'compatible' foods is said to maintain it: Shelton defined food combining and seven groups of food, sorted by function as: supplying energy (carbohydrates, fats, and proteins) needed to build the body (proteins, salts, and water) and regulating bodily processes (minerals, vitamins, and water.)

White supremacist Ben Klassen was influenced by Shelton and natural hygienic principles and promoted his own "racial health" regimen known as Salubrious Living. However, Klassen emphasised there were differences between his doctrine and the natural hygiene movement as the latter did not focus on perpetuating the white race like his regimen did. Klassen coauthored the book Salubrious Living with Arnold DeVries in 1982.

Interest in natural hygiene was renewed in the 1980s following publication of Fit for Life and Living Health by Harvey and Marilyn Diamond.

### ORGANIZATIONS

In 1948, the American Natural Hygiene Society (ANHS) was founded by Herbert Shelton, William Esser, Gerald Benesh, Christopher Gian-Cursio, Jesse Mercer Gehman, Irving Davidson, Jack Dunn Trop and Symon Gould. In 1998, the ANHS became the National Health Association.

In 1956, Keki Sidhwa established the British Natural Hygiene Society (BNHS).

The International Association of Hygienic Physicians was founded in 1978. The International Natural Hygiene Society was founded in 2003 and has reported over 800 members.

### CRITICISM

Medical experts consider natural hygiene practices such as anti-vaccination, fasting and food combining to be quackery. There is no scientific evidence that prolonged fasting provides any significant health benefits. A prolonged fast may cause "anemia, impairment of liver function, kidney stones, postural hypotension, mineral imbalances, and other undesirable side effects."

Claims from natural hygienists about fasting curing cancer are not supported by scientific evidence. According to the American Cancer Society, "available scientific evidence does not support claims that fasting is effective for preventing or treating cancer in humans."

### Founders



Isaac Jennings





Sylvester Graham



Joel Shew



George H. Taylor



Mary Gove Nichols



Susanna Way Dodds



George S. Weger

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#### 4.34 Radionics <sup>w</sup>

Radionics—also called electromagnetic therapy (EMT) and the Abrams Method—is a form of alternative medicine that claims that disease can be diagnosed and treated by applying electromagnetic radiation (EMR), such as radio waves, to the body from an electrically powered device. It is similar to magnet therapy, which also applies EMR to the body but uses a magnet that generates a static electromagnetic field.



Albert Abrams



The concept behind radionics originated with two books published by American physician Albert

Abrams in 1909 and 1910. Over the next decade, Abrams became a millionaire by leasing EMT machines, which he designed himself. This so-called treatment contradicts the principles of physics and biology and therefore is widely considered pseudoscientific. The United States Food and Drug Administration does not recognize any legitimate medical use for radionics devices.

Several systematic reviews have shown radionics is no more effective than placebo and falls into the category of pseudoscience.

Beginning around 1909, Albert Abrams (1864–1924) began to claim that he could detect "energy frequencies" in his patient's bodies. The idea was that a healthy person will have certain energy frequencies moving through their body that define health, while an unhealthy person will exhibit other, different energy frequencies that define disorders. He said he could cure people by "balancing" their discordant frequencies and claimed that his devices are sensitive enough that he could tell someone's

## History of all Medicine

religion by looking at a drop of blood. He developed thirteen devices and became a millionaire leasing his devices, and the American Medical Association described him as the "dean of gadget quacks". His devices were definitively proven useless by an independent investigation commissioned by Scientific American in 1924. He used "frequency" not in its standard meaning, but to describe an imputed energy type, which does not correspond to any property of energy in the scientific sense.

### RADIONIC INSTRUMENTS

#### HISTORY

In one form of radionics popularised by Abrams, some blood on a bit of filter paper is attached to a device Abrams called a "dynamizer", which is attached by wires to a string of other devices and then to the forehead of a healthy volunteer, facing west in a dim light. By tapping on his abdomen and searching for areas of "dullness", disease in the donor of the blood is diagnosed by proxy. Handwriting analysis is also used to diagnose disease under this scheme. Having done this, the practitioner may use a special device known as an oscilloclast or any of a range of other devices to broadcast vibrations at the patient in order to attempt to heal them.

Other notable quack devices in radionics have included the Ionaco and the Hieronymus machine.

Some people claim to have the paranormal or parapsychological ability to detect "radiation" within the human body, which they call radiesthesia. According to the theory, all human bodies give off unique or characteristic "radiations" as do all other physical bodies or objects. Such radiations are often termed an "aura". Radiesthesia is cited as the explanation of such phenomena as dowsing by rods and pendulums in order to locate buried substances, diagnose illnesses, and the like. Radiesthesia has been described as a mixture of occultism and pseudoscience by critics.

Modern practitioners conceptualize these devices merely as a focusing aid to the practitioner's proclaimed dowsing abilities, and claim that there is no longer any need for the device to have any demonstrable function. Indeed, Abrams' black boxes had no purpose of their own, being merely obfuscated collections of wires and electronic parts.

Contemporary proponents of radionics or EMT claim that where there is an imbalance of electromagnetic fields or frequencies, within the body, that it causes diseases or other illnesses by disrupting the body's chemical makeup. These practitioners believe that applications of electromagnetic energy from outside the body can correct these imbalances. Like magnet therapy, electromagnetic therapy has been proposed by practitioners of alternative medicine for a variety of purposes, including, according to the American Cancer Society, "ulcers, headaches, burns, chronic pain, nerve disorders, spinal cord injuries, diabetes, gum infections, asthma, bronchitis, arthritis, cerebral palsy, heart disease, and cancer".

Another variant of radionics or EMT is magnetic resonance therapy.



An original Rife machine from 1922



An "Electro-metabograph", an apparatus which supposedly diagnosed and cured diseases by using radio waves

The claims for radionic devices contradict the accepted principles of biology and physics. No scientifically verifiable mechanisms of function for these devices has been posited, and they are often described as "magical" in operation. No plausible biophysical basis for the "putative energy fields" has been proposed, and neither the fields themselves nor their purported therapeutic effects have been convincingly demonstrated.

No radionic device has been found efficacious in the diagnosis or treatment of any disease, and the U.S. Food and Drug Administration does not recognize any legitimate medical uses of any Scientific assessment such device. According to David Helwig in The Gale Encyclopedia of Alternative Medicine, "most physicians dismiss radionics as quackery".

Internally, a radionic device is very simple, and may not even form a functional electrical circuit. The wiring in the analysis device is simply used as a mystical conduit. A radionics device does not use or need electric power, though a power cord may be provided, ostensibly to determine a "base rate" on which the device operates to attempt to heal a subject. Typically, little attempt is made to define or describe what, if anything, is flowing along the wires and being measured. Energy in the physical sense, i.e., energy that can be sensed and measured, is viewed as subordinate to intent and "creative action".

Claims about contemporary EMT devices are similar to those made by the older generation of "radionics" devices, and are also not supported by evidence and are also pseudoscientific. Even though some of the early works in bioelectromagnetics have been applied in clinical medicine, there is no relationship between alternative devices or methods that use externally applied electrical forces and the use of electromagnetic energy in mainstream medicine.

The American Cancer Society says that "relying on electromagnetic treatment alone and avoiding conventional medical care may have serious health consequences". In some cases, the devices may be ineffective and harmful.

## REVIEWS

Several systematic reviews have shown EMT is not a useful therapy:

In 2009 no significant difference from control was found for management of pain or stiffness for osteoarthritis.

In 2011 a systematic literature review on the use of pulsed electromagnetic field (PEMT) body mats used in a wide range of conditions found insufficient evidence for them to be recommended and recommended further high-quality, double-blind trials.

In 2014 insufficient for the efficacy of EMT as a therapy for urinary incontinence.

In 2014 EMT was found to have no difference from control for stimulation of bone growth in acute fractures.

In 2015 Cochrane Database of Systematic Reviews found no evidence that EMT was useful in healing pressure ulcers or venous stasis ulcers.

A 2016 guideline, in addition to reviews in 2016, 2013 and 2022, did not find EMT useful for various forms of pain.

The FDA has banned some commercially available EMT devices. In 2008 the VIBE machine from Vibe Technologies had a Class I recall that was completed in 2012.

Other ineffectual EMT therapy devices that have been marketed include:

"BioResonance Tumor Therapy", developed by Martin Keymer and purported to stimulate the P53 gene to cure cancer.

"Cell Com System", a device created by Hugo Nielsen that is used on hands and feet to regulate communications between cells in the body.

"Rife machine", a device created by Royal Rife, which is also known as frequency therapy or frequency generator and marketed as treating cancer.

"Zapping Machine", a device created by Hulda Regehr Clark, claimed to cure cancer by using low-level electrical current to kill parasites within the body that are supposed to cause cancer.

"EMP Pad", a device manufactured by EMPPad, advertised by Noel Edmonds, that is claimed to slow ageing, reduce pain, lift depression and stress and tackles cancer.

"UVLrx", a device manufactured by UVLrx Therapeutics that provides ultraviolet treatment of blood to treat HIV/AIDS, Hepatitis C, Dengue fever and Lyme disease, as well as many other conditions.

"ReBuilder", a device manufactured by Rebuilder, is claimed to reverse neuropathy (nerve damage) by using tiny electrical signals to wake up nerves.

"Electro Physiological Feedback Xrroid (EPFX)", a device manufactured by Desiré Dubounet that is claimed to cure cancer, as well as other serious conditions by sending electromagnetic frequencies into the body.

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#### 4.35 Urine therapy <sup>w</sup>

Urine therapy or urotherapy, (also urinotherapy, Shivambu, uropathy, or auto-urine therapy) in alternative medicine is the application of human urine for medicinal or cosmetic purposes, including drinking of one's own urine and massaging one's skin, or gums, with one's own urine.

Drinking or local application of human or animal urine for medicinal purposes has been practiced all over the world for millennia.

Urine therapy

Alternative medicine

Claims                                      Various therapeutic uses of urine.

Related fields                              Naturopathy

#### HISTORY

Though urine has been believed useful for diagnostic and therapeutic purposes in several traditional systems, and mentioned in some medical texts, auto-urine therapy as a system of alternative medicine was popularized by British naturopath John W. Armstrong in the early 20th century. Armstrong was inspired by his family's practice of using urine to treat minor stings and toothaches, by a metaphorical reading of the Biblical Proverb 5:15 "Drink waters out of thine own cistern, and running waters out of thine own well", and his own experience with ill-health that he treated with a 45-day fast "on nothing but urine and tap water". Starting in 1918, Armstrong prescribed urine-therapy regimens that he devised to many thousands of patients, and in 1944 he published *The Water of Life: A treatise on urine therapy*, which became a founding document of the field.

Armstrong's book sold widely, and in India inspired the writing of *Manav mootra* (Gujarati: Urine therapy; 1959) by Gandhian social reformer Raojibhai Manibhai Patel, and many later works.

These works often reference *Shivambu Kalpa*, a treatise on the pharmaceutical value of urine, as a source of the practice in the East. They also cite passing references to properties and uses of urine in Yogic-texts such as *Vayavaharasutra* by Bhadrabahu and *Hatha Yoga Pradapika* by Svamarama; and Ayurvedic texts such as *Sushruta Samhita*, *Bhava Prakasha* and *Harit*. However, according to medical anthropologist Joseph Adler, the practices of *sivambu* (drinking one's own urine) and *amaroli* recommended by modern Indian practitioners of urine therapy are closer to the ones propounded by Armstrong than traditional ayurveda or yoga, or even the practices described in *Shivambu Kalpa*.

Urine-therapy has also been combined with other forms of alternative medicine including Ayurveda

#### MODERN CLAIMS AND FINDINGS

An exhaustive description of the composition of human urine was prepared for NASA in 1971.

Urine is an aqueous solution of greater than 95% water. The remaining constituents are, in order of decreasing concentration: urea 9.3 g/L, chloride 1.87 g/L, sodium 1.17 g/L, potassium 0.750 g/L, creatinine 0.670 g/L and other dissolved ions, inorganic and organic compounds.

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In China there is a Urine Therapy Association which claims thousands of members.

According to a BBC report, a Thai doctor promoting urine therapy said that Thai people had been practicing urophagia for a long time, but according to the Department of Thai Traditional and Alternative Medicine, there was no record of the practice.

Urinating on jellyfish, wasp or bee stings, sunburns, cuts, and blood vessel bursts is a common "folk remedy", however Scientific American reports that it may be counterproductive, as it can activate nematocysts remaining at the site of the sting, making the pain worse.

Urine and urea have been claimed by some practitioners to have an anti-cancer effect, and urotherapy has been offered along with other forms of alternative therapy in some cancer clinics in Mexico.

In the Arabian Peninsula, bottled camel urine is sold by vendors, as prophetic medicine with its claimed urine therapy, health benefits. Saudi police arrested a man, "because the urine in the bottles was his own".

In January 2022, Christopher Key, a spreader of COVID-19 misinformation, claimed that urine therapy is the antidote to the COVID-19 pandemic. Key also falsely claims that a 9-month research trial on urine therapy has been conducted. There is no actual scientific evidence supporting urine therapy as a cure to the COVID-19 disease.

### HEALTH CONCERNS

According to the American Cancer Society, "available scientific evidence does not support claims that urine or urea given in any form is helpful for cancer patients".

In 2016 the Chinese Urine therapy Association was included on a list of illegal organizations by the Ministry of Civil Affairs. However, the Municipal Bureau of Civil Affairs in Wuhan, said they had no jurisdiction over the association.

A study on bacterial isolates contained in the urine of Nigerian children and cows found a significant presence of antibiotic-resistant pathogen strains, including E. coli, Shigella, and Salmonella. The study concluded that these pathogens may be introduced into the body through urine consumption, most notably through the traditional urine therapy treatments conducted by some local individuals.

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### **4.36 Wellness** (alternative medicine) <sup>w</sup>

Wellness is a state beyond absence of illness but rather aims to optimize well-being.

#### THE EIGHT DIMENSIONS OF WELLNESS

The notions behind the term share the same roots as the alternative medicine movement, in 19th-century movements in the US and Europe that sought to optimize health and to consider the whole person, like New Thought, Christian Science, and Lebensreform. Ayurveda mentions the concept and also has dedicated a whole speciality for the concept of wellness and maintenance of health.

The term wellness has also been misused for pseudoscientific health interventions.

### HISTORY

The term was partly inspired by the preamble to the World Health Organization's 1948 constitution which said: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." It was initially brought to use in the US by Halbert L. Dunn, M.D. in the 1950s; Dunn was the chief of the National Office of Vital Statistics and discussed "high-level wellness," which he defined as "an integrated method of functioning, which is oriented toward maximizing the potential of which the individual is capable." The term "wellness" was then adopted by John Travis who opened a "Wellness Resource Center" in Mill Valley, California in the mid-1970s, which was seen by mainstream culture as part of the hedonistic culture of Northern California at that time and typical of the Me generation. Travis marketed the center as alternative medicine, opposed to what he said was the disease-oriented approach of medicine. The concept was further popularized by Robert Rodale through *Prevention* magazine, Bill Hetler, a doctor at University of Wisconsin–Stevens Point, who set up an annual academic conference on wellness, and Tom Dickey, who established the Berkeley Wellness Letter in the 1980s. The term had become accepted as standard usage in the 1990s.

In recent decades, it was noted that mainstream news sources had begun to devote more page space to "health and wellness themes".

The US Substance Abuse and Mental Health Services Administration uses the concept of wellness in its programs, defining it as having eight aspects: emotional, environmental, financial, intellectual, occupational, physical, social, and spiritual.

### CORPORATE WELLNESS PROGRAMS

By the late 2000s, the concept had become widely used in employee assistance programs in workplaces, and funding for development of such programs in small business was included in the Affordable Care Act. The use of corporate wellness programs has been criticized as being discriminatory to people with disabilities. Additionally, while there is some evidence to suggest that wellness programs can save money for employers, such evidence is generally based on observational studies that are prone to selection bias. Randomized trials provide less positive results and often suffer from methodological flaws.

The discrimination of disabled people in corporate wellness programs was one of the many reasons that prompted the creation of the Americans with Disabilities Act of 1990. Under the newly proposed Americans with Disabilities Act rule, an employee-wellness program consists of programs that relates to health promotion or disease prevention that includes disability-related inquiries or medical examinations. There are two types of wellness programs that are under the Americans with Disabilities Act: Participatory and Health-contingent. This newly proposed rule no longer contains the requirement that such programs be reasonably designed to promote health or prevent disease.

### CRITICISM

#### PROMOTION OF PSEUDOSCIENCE

Wellness is a particularly broad term, but it is often used by promoters of unproven medical therapies, such as the Food Babe or Goop. Jennifer Gunter has criticized what she views as a promotion of over-diagnoses by the wellness community. Goop's stance is that it is "skeptical of the status quo" and "offer[s] open-minded alternatives." Michael D. Gordin writes that pseudoscience is a bad category for analysis because it exists entirely as a negative attribution that scientists and non-scientists hurl at others but never apply themselves. Pseudoscience is typically used to describe something that looks like science, but



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is somehow false, misleading, or unproven. Things that fall under the pseudoscience umbrella consists of: astrology, phrenology, UFOlogy, creationism, and eugenics.

### HEALTHISM

Wellness has also been criticized for its focus on lifestyle changes over a more general focus on harm prevention that would include more establishment-driven approaches to health improvement such as accident prevention. Petr Skrabanek has also criticized the wellness movement for creating an environment of social pressure to follow its lifestyle changes without having the evidence to support such changes. Some critics also draw an analogy to Lebensreform, and suggest that an ideological consequence of the wellness movement is the belief that "outward appearance" is "an indication of physical, spiritual, and mental health."

The wellness trend has been criticized as a form of conspicuous consumption.

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### 4.37 History of Reflexology <sup>w</sup>

1.1. The very beginning of reflexology history according to ancient Chinese records, Buddhist monks brought early reflexology from India to China about 5000 years ago.

1.2. Just under 5000 years ago many ancient Chinese books talk about techniques that are similar and sometimes identical to modern reflexology eg. they practiced the "examining foot method".

1.3. There are also many references in a treasured ancient text called 'The Great Yellow Emperors Medical Book' (The Inner Cannon, The Classic of Internal Medicine).

1.4. The information in this text is still used by Traditional Chinese Medicine Practitioners all over the world today.

1.5. 4000 years ago there is evidence of some form of foot and hand therapy being practiced in Egypt as depicted in the tomb of Ankmahor. Found in the tomb of Egyptian Vizier (second in charge after the king) Ankhmahor, were many pictures of different tradespeople, people making jewelry and craftsman.

1.6. In the room dedicated to medical pictures they found one of the people practicing something that looks a lot like reflexology.

1.7. One man having his feet receiving reflexology, another his finger. Underneath the picture is this writing, (rough translation) the patient is saying "do not cause pain" and the physician replies "I will give you only pleasure"

1.8. The North American tribes of the First Nation People are known to have practiced a form of foot therapy for hundreds of years.

1.9. The dictionary definition of a 'Reflex' is 'an involuntary or instinctive movement in response to a stimulus' or in the sense of reflection or mirror image.

1.10. The reflexes on our feet and hands act as mirror images of the body's – a microcosm of the whole body.

1.11. Zone Therapy was used as far back as 1500 AD. The re-discovery of some form of systemised foot treatment is accredited to Dr William Fitzgerald who called it Zone Therapy and drew it to the attention of the medical world between 1915 and 1917.

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- 1.12. During the 16th Century a number of books were published on Zone Therapy, one was written by Dr Adamus and Dr A'tatis and another by Dr Ball in Leipzig.
- 1.13. The first use of the word 'reflex' with reference to motor reactions was used by the German physiologist Johann August Unzer in 1771. In 1883 Marshall Hall, an English physiologist introduced the concept and term 'reflex action'.
- 1.14. In the late 1880s, neurology as a branch of science became a field of its own. Often articles regarding the most up-to-date research on reflex action were published in England in 'Brain' - a Journal of Neurology. One article 'Reflex Action as a Cause of Disease and Means of Cure' by Dr. T. Lauter Brunton discussed the beneficial use of inducing a blister on the skin for the healing of internal problems.
- 1.15. Sir Henry Head (an English physiologist) was able to chart areas according to the spinal segment to which they belonged. After years of research he established the Head zones, which are labeled in anatomy books today as dermatomes. Head's work conclusively proved the neurological relationship that exists between the skin and the internal organs.
- 1.16. The Russians pursued the study of reflexology both from the psychological and physiological point of view. Russian work with reflexes began with Ivan Pavlov's (1849-1936) theory of conditioned reflex response which earned him the Nobel Prize in 1904. His famous theory was a reflex action was a simple and direct relationship between a stimulus and a response (the ringing of a bell and a dog salivating).
- 1.17. It was in 1915 that an article entitled 'To stop that toothache, squeeze your toe' was published in 'Everybody's Magazine', written by Edwin Bowers, which first brought Dr Fitzgerald's work on Zone Therapy before the public.
- 1.18. In 1917, Dr Fitzgerald wrote 'Zone Therapy or Relieving Pain in the Home'. Two years later, they enlarged this book and published it under a second title 'Zone Therapy or Curing Pain and Disease'.
- 1.19. Dr William Fitzgerald (1872 – 1942) received his medical degree from the University of Vermont in 1895. He practiced in Boston City Hospital for two and a half years before going to London where he spent two years at the Central London Nose and Throat hospital before taking up a position in Vienna as Assistant to Professors Politzer and Chiari, who were highly respected doctors.
- 1.20. Dr Ada Politzer (1835 – 1920) of the University of Vienna, was a wellLEARN 1.21. Dr Fitzgerald never published the original sources for his own therapy, but it is likely that he was influenced during this time in Vienna, by the work of Dr d'Arsonval. In 'Zone Therapy is Scientific' by Dr W D Chesney, it is stated that in Germany, Dr d'Arsonval was using physiotherapy and getting relief following the use of reflex knowledge, which, in effect, was what was later termed Zone Therapy by Drs Fitzgerald and Bowers.
- 1.22. When Dr Fitzgerald returned to the United States, he became head of the Nose and Throat Department at St Francis Hospital, Hartford, Connecticut. Around 1909, Dr Fitzgerald discovered, or re-discovered Zone Therapy. Almost ten years later.
- 1.23. Dr Fitzgerald wrote his book, about how he had stumbled upon the concept of Zone Therapy: "Six years ago I accidentally discovered that pressure with a cotton tipped probe on the muco-cutinous margin (where the skin joins the mucous membrane) of the nose gave an anesthetic result as though a cocaine solution had been applied. I further found that there were many spots in the nose, mouth, throat and on both surfaces of the tongue, which, when pressed firmly, deadened definite areas of sensation. Also, that pressure exerted over any bony eminence of the hands, feet or over the joints, produces the same characteristic results in pain relief. I found also that when pain was relieved, the condition that produced

## History of all Medicine

the pain was most generally relieved. This led to my 'mapping out' these various areas and their associated connections and also to noting the conditions influenced through them. This science I have named "Zone Therapy".

1.24. It is worth noting that the Chinese had, in Acupuncture, divided the body into longitudinal Meridians by approximately 2,500 B.C.

1.25. The physiotherapist working with Dr Riley at St Petersburg, was Eunice Ingham (1889 – 1974). Eunice Ingham extended the work of Dr Fitzgerald and painstakingly mapped the feet with all the corresponding organs and glands of the body. She was a real pioneer who was determined to help people to help themselves, if their doctor was not using reflexology. In the early years, she worked with doctors to prove her findings and to demonstrate to them that reflexology was a useful diagnostic tool.

1.26. She lectured at a medical clinic headed by Dr Charles Epstein in May 1939. In his report, he acknowledged that reflexology worked. However, while they knew it worked, doctors were not interested in using it, because reflexology was too time consuming and they could not make as much money.

1.27. Eunice Ingham is still known as the pioneer of modern reflexology and she authored two well-known books "Stories the Feet Can Tell" and "Stories the Feet Have Told". They have since been combined into one volume. In addition to her writing and lecturing, she, along with her nephew, Dwight Byers, founded the International Institute so that her work could be continued in perpetuity.

1.28. Throughout her forty years of experience treating many thousands of people, Eunice Ingham devised a system of techniques which enable the practitioner to contact the reflexes in the most effective and economic way. This system is known as the "Original Ingham Method"

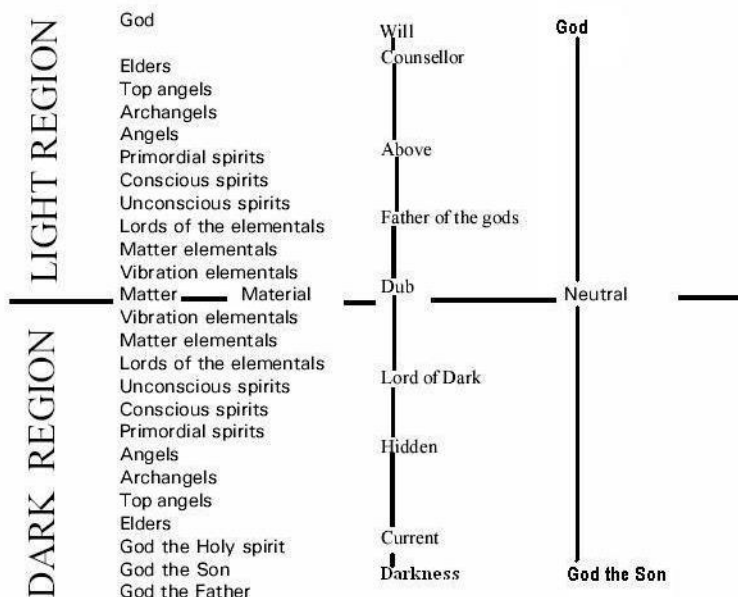
1.29. Eunice Ingham died in 1974, having devoted forty years of her life to reflexology.

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**5.0 History of Natural Medicine <sup>z</sup>**

The Universe is the matter part of Existence, which is divided into realms, where angels were in charge of taking care of spirits and spirits were in charge of direct care of nature, which was what Devil revolted against to control what spirits were in charge of because he was already in charge of spirits. That caused the fall, as sprits were cut off, so the body will be in charge of the physical. Before the fall of humankind from paradise to good and evil where nakedness was not knowing anything about emotions, where the part of evil connected to the darkness seen in the Universe without the Sun shining that brought in sickness, humanity were kept pure without the contaminations of the Universe that were from micro-organisms that were only surviving in the Universe. Humans lived in spirit, where they Willed whatever they wanted and did not die but instead translated when their spirit mission was completed; the problem with the spirit cutoff after the fall of humankind was that the mission of the person that is born to earth is not known to the person as the person is only of emotions and carnal form, which made the person vulnerable to the activities of the Universe that the soul and physical body were from.

The spirit is not from the Universe, but the spirit force is what was used to create the Universe that is dark and harbours darkness, which is always related to a spirit part; no part of darkness is not connected to or from a spirit part that is light. It is because of the choice of good and evil that the spirit was cut off, which without the spirit, the darkness or evil part of a human or animal or plant will not be regulated. Good and evil are respectively, the back brain and the front brain; the front brain is for matter to do materialism, while the back brain is for the spirit, and the mid brain connects the soul with the endocrine system to give emotions. The highest being in a planet chose the path of this world, even though the Carnal form of the Devil was not from this planet. The Devil's descendants have spread around the planet as the dominant race, who have redefined the way of the earth to what made their ancestors world collapse; the flood only reduced them from being a thousand times the descendants of Adam, there are different flood stories of survival that shows it is not Noah alone in the Bible that survived. They bruise their head by speculating, and the rest of humanity bruise their heal by activity for the system. Light does not mean white, light means bright.



The ancient dark skinned before the aliens intervention that caused God to cut off spirit activity, was that they feel their environment from their spirit via their soul; the military feeling of environment now is only

## History of all Medicine

by soul, but the traditional black Chiefs and Chief priests still feel from their spirit because of the prayers of the people and himself before his coronation that allows God to let his ancestors spirit guide him, unless he prays for his own way as was intended by God, then his spirit opens to let him read by download of information into his brain. That was why the moors that Sub-Saharan Africa of West-Central Africa were known by the half-breed half-caste were known where the people who had to teach the ancestors of the future colonialists how to bathe regularly, cook the different species of the edible plants etc. they were not used to, but because of inferiority complex and the will to dominate the earth as their alien paternal ancestors did materially in their own star system that made them carnal, which annoyed God to curse the original point of the land of the Garden of Eden that anyone can see how the indigenes in those places in Nigeria into the Cameron do not agree to solve anything which is what lets migration occur and allowed colonialists who came in and siezed the land as the inhabitants princes etc. were fighting over power that left thier land unprotected. So for the colonialists to dominate in leadership and in resources control, they had to divide and conquer by going after the system Sub-Saharan Africans relied on most that was their traditional medicines which kept them alive and going after the fall; although most of the dark skinned never knew that it was because of the white skinned that paradise that was their spiritual way of doing things was lost, as they embraced them to like foreign goods because of the moors who went there and exchanged or did trade by batter to look more advanced. But the colonialists stigmatized their medicines to sell theirs by imposing it on the colonial African doctors they brought up using the mistakes of some traditional medicines practitioners to look like the norm for Sub-Saharan Africans medicinal practice, which those who believed them paid with their lives because Medicine is best with the addition of the indigenous medicine in addition to the better practice, and not discarding herbs that are indigenous to your body formation to use herbal or synthetic products from lands that are different from your genetical structure that treatment will not last for long like the one from your area.

There was a super continent called Pangea that had all the continents as one with four different species of humanoid, then the continents broke up and the homo sapiens were left in Gondwana-land, then South America and India broke up from it with the homo sapiens that mingled with the races they met when their land joined the other lands that broke from Pangea to produce the natives of the Americas and Asia (that left separating religion as spirituality from medicine since it was cursed). But Africa remained as the Garden of Eden and original point of humanoid origin when it was Pangea. It was when Gondwana-land existed that the aliens that were shining because of their active being had coitus with the Indian that was the first of the Asian human races, but not the first of what remained as Africa. So the first man to know his spirit had other helpers that were humans before he was the first person to have a woman that was formed with his own spirit and soul, which the rest of the world was made to copy to make them human beings, as his alien-half-cast son from his wife's sin killed the full human brother and fled to the east of Asia to form present day Georgia where Greece came from, and Rome came from Greece until they became nine countries that came from Cain, which the ninth Country called Britain formed the tenth Country called USA that its systems was different from every other, but the three systems that came out of it dominated the world as democracy, judiciary and the financial system.

The real forbidden fruit was Eve producing her first descendant from a man from Andromeda Galaxy that had older stars from Galaxies that collapsed to form it as the galaxy is younger than Earth, yet a little bigger than our Milky Way. It should have been strange to any scientific mind, why the calendar of human civilization was forced to the period from the beginning of the fall of humans to good and evil, which is about seven thousand years, rather than the period of the origin of Eden, which is millions of years. The reason for this is that half of their genes came from around the Sirus star system in Andromeda Galaxy. Aliens and humans pray to the same God. It was the sin that is fornication of the alien that was the Devil

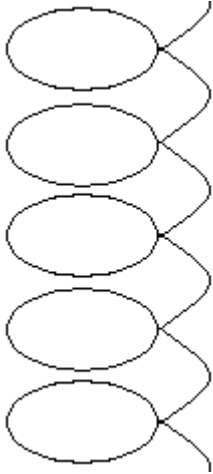
## History of all Medicine

that made God curse stop the interaction of aliens and humans because the aliens that come to Earth see the curse of God on the disobedient, where earthlings are carnal now, without true spirituality as it is by only emotional excitement of the spirit in prayer that they live as worship rather than full activity of the spirit because God cut the way to the spirit with an angel guiding every way to it in everyone, but anyone can reach and connect with their spirit by praying to God in truth that they want to be as God and that person agreed before his/ her spirit descended into the soul that descended into the foetus in the form that meets it's conditional needs to achieve it's divine purpose. Which most stray from because their mind is more on material things and needs than their spiritual purpose that they are supposed to bring to harmony in practice on Earth. It is the sense of posture as professionals, which they learnt from the moors of west-Africa that the colonialists imbibed in their colonialists trained that made them appear feeling academically professionals, when the whites kept reading to become true academic doctors and not just remaining with the professional courtesy of doctor in waiting as resident that was allowed as a bachelor degree holder to use the final training title status. Getting the world from the Devil is getting the world back to the original descendants of the earth, by having all systems, especially Medicine to be taken by the original pure species.

The fall of humankind cursed the Garden of Eden with the centre now called Nigeria that triggered the Sahara Desert to erase all vegetation, which caused humans to migrate to the Middle East where the Sumerian civilization began learning how to do things physically without spirit. As religion grew, those that could tap into the metaphysical more than others were deemed heretic and persecuted, even though those who did the persecution were led by metaphysicians that belonged to a religion, who were actually persecuting those who were not subject to their doctrine. The melanin recessive were easily moved by their Andromeda galaxy force to be hostile to those of the Milky Way as both galaxies were on a path of collision to become one, so it was all a good and evil of two galaxies becoming one, where the dominant specie dictates the system of the union of both galaxies. I write about period and time, because there was a period before time measurement of life or activity that has to do with spiritual activity of beings using the garment of skin and a later time where good and evil caused an elapse of time. The allopathic belief is that the traits of a child are from the parents alone and the parents are from different persons that are different families; the truth is that genuine divine husband and wife have bodies from different parents, but with seperated soul and same spirit; but the children are only related to the parents by their physical body, as their soul and spirit are for another person for them to do what God sent them to do.

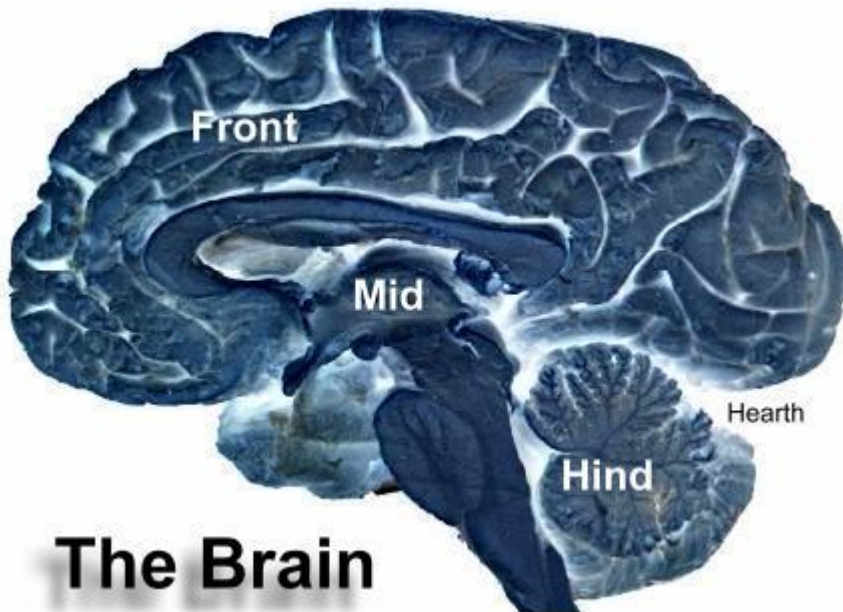
In the period of good and evil that the colonial medicine established itself by force, they introduced a scientific system based on the garment of skin that was against the origin of mankind that had to do with the spirit of humankind that was like God and was the only part that could communicate directly with God, which was what the early black skinned Africans as the origin of the human race were partly connected to as humankind were cutoff. That was where they were able to spiritually see the herbal, animal, or material products with the dosage of herbal and chemical prescriptions they prescribed. At the time of the renaissance of the occidentals, they had alchemists who had learnt this system from Africans like Amunotep that when their carnal nature could not pass than the spiritual and emotional connectivity to natural healing, they formed scientific bodies to change the meaning of science from spiritual, emotional and physical knowledge to only physical knowledge that they chose to replace the original science that encompassed all forms of the human being with the carnal form of knowledge perfected in wars by cadaver study as anatomy.

## History of all Medicine



The spiritual rise of the spirit of mankind, is not in circles about a particular thing or way on earth, but a spirial rise of the spiritual person in the mind to his point of spiritual origin, because it is the spirit that keeps the body alive that has a purpose and not the body that learnt the way of the world to work for the world to be as good and evil was designed by the Devil to upgrade into more materialism but, to upgrade into more spirituality.

The old ways of medicine was that the intending applicant to be a doctor must be spiritual for the native doctor to pass down his knowledge to, if he or she was not spiritual to develop telepathy, the native doctor rejects the intending student; that was why the Occidental medical practice dumped spirituality since many who could study medicine were not spiritual or metaphysical to be alchemist. Since then, medicine became only carnal and the emotional and spiritual side of it that makes it holistic disappeared and medical practice remained colonial, which rejected indigenou medicine to make medical doctors marketers of foreign drugs they prescribe, while their council constitution tells them not to do so. What hypocrisy. After Lucifer deception on humans to choose good and evil to be wise, it took over 6,000 years for generational change for humans to become wise carnally. That does not mean we should abandon the spirit, but we should seek it for God to make us from image to be like gods as He said before creating humans. We are supposed to live by our intuition assisted by our intellect and not the reverse that the present scientific teaching portrays on students to take them away from their spirit that knows the truth of science more than the body and emotions can ever understand to do. That is the only way to have technology beyond any species on Earth but equal or more than the most civilized aliens in the Universe that commune by telepathy of the soul.



The old ways of knowing before writing was needed to transfer information because the human had lost its 'being' nature to be using its intellect alone that made them not to be truly human beings, was like the internet cloud of the mind where information can only be tapped by the cerebrum of the brain through the solar plexus connection of the spirit. The intellect is the front and mid brain use alone without the hind brain that makes the human being because of the use of the spirit. To connect to the spirit is to ask God by your intention to be as your spirit came to be in the/ your body from inception of the formation of the foetus that will allow God remove the angel blocking everywhere to the tree of life that is your spirit, for you to be of charisma and absolute intelligence and knowledge that is like gods. In colonial conventional medicine, the pons has no meaning because they threw away the way of the spirit, but in holistic medicine where the spirit is also involved, the pons is the main bridge holding the soul to the brain for the interaction of the spirit via the medulla oblongata. The healing of any patient cannot be complete without the complete use of the full potential of the person that includes the body, soul and spirit. The spirit is housed by the soul to be able to operate in materialism, while the body houses the soul to operate in matter.

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## 6.0 Physicians <sup>c</sup>

Physicians diagnose diseases and injuries, administer treatment, and advise patients on good diet and other ways to stay healthy. The United States has two kinds of physicians, the Doctor of Medicine (MD) and the Doctor of Osteopathy (DO). Both use medicines, surgery, and other standard methods of treating disease. DOs place special emphasis on problems involving the musculoskeletal system, which includes muscles, ligaments, bones, and joints.

Patients receive medical care from primary care doctors and specialists. Primary care doctors include general practitioners, family physicians, general internists, and general pediatricians. Many women also use obstetricians-gynecologists as primary care doctors. Patients usually consult a primary care doctor when they first become ill or injured. Primary care physicians can treat most common disorders, and provide comprehensive, lifelong care for individuals and families.

But medical knowledge has advanced so far that no physician can master an entire field of medicine. Primary care doctors may refer patients with unusually complicated problems to specialists with advanced training in a particular disease or field of medicine. Specialists may even concentrate in one particular area, and become subspecialists. Each specialist in internal medicine, for instance, is an expert in diagnosis and nonsurgical treatment of adult diseases. But some internists take advanced training to become subspecialists in treating adolescents, heart disease, elderly people, cancer, or arthritis. For more information about the areas that specialists treat, see the table on Medical Specialties.

### OTHER HEALTH PROFESSIONALS <sup>c</sup>

Medicine is not restricted to physicians. A wide variety of health care practitioners work in this exciting field. By far the largest professional group is nurses. Registered nurses help physicians during examinations, treatment, and surgery. They observe, evaluate, and record patients' symptoms, administer medications, and provide other care (see Nursing). Nurse practitioners perform basic duties once reserved for physicians, such as diagnosing and treating common illnesses and prescribing medication. Certified nurse-midwives care for mothers during pregnancy and deliver babies (see Midwifery). Nurse-anesthetists administer anesthesia to patients during surgery. Licensed practical nurses provide basic bedside care for sick patients under the supervision of registered nurses and physicians.

Physician assistants deliver basic health services under the general supervision of a physician. They examine patients, order X rays and laboratory tests, and prescribe drugs or other treatment. In some rural areas, physician assistants provide all basic health care for patients, consulting with a supervising physician by telephone or electronic mail.

Dentists diagnose, treat, and help prevent diseases of the teeth, gums, and other tissues in the mouth and jaws (see Dentistry). Most are general practitioners, but many specialize in a particular area of dental health. Orthodontists treat teeth that are poorly aligned; oral surgeons operate on the jaw and mouth; periodontists specialize in gum disease; pediatric dentists care for children; endodontists perform root canals; prosthodontists make and insert artificial teeth and dentures. Other dental professionals include dental hygienists who assist dentists in surgery, clean teeth, and provide fluoride treatments. They advise patients on proper oral hygiene techniques to prevent tooth and gum disease.

For more information about other health care practitioners, see the table on Allied Health Professionals.

### HEALTH CARE FACILITIES <sup>c</sup>

A sick or injured person can obtain medical care in several different places. These include provider practices such as medical offices and clinics, hospitals, nursing homes, and home care.

## History of all Medicine

There are about 200,000 medical offices, clinics, and other provider practices in the United States. Earlier in the 20th century most physicians were solo practitioners working in their own offices or in partnership with another doctor. Patients visited the office, received an examination or other service, and paid a fee. This traditional solo, fee-for-service medicine has been declining. Many physicians now practice in groups where they share the same offices and equipment with other doctors. Group practices may combine primary care physicians, several kinds of specialists, laboratories, and equipment for diagnosing disease. Physicians who practice in a group reduce their own expenses and provide patients with a wider range of services.

Many doctors are joining with hospitals, insurance companies, and industrial employers to provide managed care for groups of patients. Physicians may work as employees of health maintenance organizations (HMOs) or other health care alliances. These plans oversee, or manage, care for patients, to avoid unnecessary services and reduce costs. Rather than taking a fee from each patient, managed care physicians may receive an annual salary from the HMO or a fixed sum for each patient.

Patients who are too sick for care in a doctor's office go to a hospital. Hospitals offer patients 24-hour care from a staff of health professionals. They provide services not available elsewhere, such as major surgery, child birth, and intensive care for the critically ill. The United States has about 6,020 hospitals including more than 1 million beds. Several kinds of hospitals exist, including general hospitals, specialized hospitals that care for specific diseases, small community hospitals, and large academic medical centers that train new doctors. Hospitals also provide many outpatient services to patients being treated in doctors' offices and clinics. These include laboratory tests, computerized imaging scans, X rays, and other diagnostic tests for people who do not require admission to the hospital.

Hospital care is the most expensive form of health care. Efforts to control health care costs have emphasized reducing the number of patients admitted to hospitals and their length of stay. During the 1980s and 1990s, these efforts led to the closing of more than 600 hospitals, which eliminated almost 200,000 beds. Physicians also try to treat more people on a nonhospital, or outpatient, basis, and these cost-control efforts have led to fast growth in outpatient treatment centers. These include ambulatory surgery centers, where patients undergo operations once available only in hospitals and return home the same day.

Patients who need long-term medical care because of advanced age or chronic illness may stay in a nursing home. The United States has about 17,000 nursing homes with about 1.8 million patients. The number of nursing homes has doubled since 1960 because there are more older people in the population. Changing lifestyles, in which adult children and parents often live far apart, also contributed to the need for more nursing homes. About 85 percent of nursing home patients are age 65 and over. Many stay for a few weeks while recovering from an acute illness. They receive medical care and help with everyday activities like eating, bathing, and using the bathroom. Then they return home and care for themselves, often with the help of family or other caregivers. Other patients stay longer.

Some patients need regular medical care and other assistance, but are not sick enough for a hospital or nursing home. Home health care allows them to receive skilled nursing and other care in their own homes. Home care services are the fastest-growing sector of the health care industry, increasing about 30 percent per year in the 1990s. This growth is largely because home care is less expensive than hospital or nursing home care. Home care also is very popular with patients because most people prefer staying at home, rather than entering a hospital or nursing home. About 15,000 home health agencies provide most home care services in the United States. Many agencies are privately owned. Hospitals, public health departments, and other organizations also offer home care.

## History of all Medicine

Hospices are special health care facilities that provide care for dying patients in the final stages of a terminal illness. A hospice staff is focused on making the last days of a dying patient pain free and comfortable. Many patients choose hospice services in their homes.

Research is one of the most important fields of medicine. It provides health care professionals with new knowledge and technology for better diagnosis, treatment, and prevention of disease.

Medical research often combines medicine with related fields of biology, and is called biomedical research. Research can be basic or applied. Basic, or fundamental, research has no immediate practical application. Basic cancer research, for instance, may try to identify gene mutations that turn a healthy cell malignant. While this information does not have immediate clinical value, it generates knowledge that often leads to better care for patients. Applied research has a specific practical goal, such as development of a better drug for breast cancer. The early stages of biomedical research usually occur in a laboratory. As scientists gain more knowledge in a particular area, they begin studies on humans. These studies often take place in hospitals or clinics and are called clinical research.

Clinical research usually is performed by multidisciplinary teams, rather than by individual scientists working alone. These groups of men and women have knowledge and skills in different areas, or disciplines, of science. A multidisciplinary biomedical research team may include biochemists, geneticists, physiologists, and physicians. Each team member approaches the problem from a different side and shares knowledge with the group. This multidisciplinary approach increases the chances of solving a problem or developing a new treatment.

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### 6.1 Clinical Trials <sup>c</sup>

One of the greatest advances in medicine was the introduction of a new research technique in the mid-1950s called the controlled clinical trial, which is used to determine if new drugs and other treatments are safe and effective. In the controlled clinical trial, one group of patients, the treatment group, receives the new drug or new treatment. Another group, the control group, is given an inactive pill (a placebo) or the best standard treatment. Researchers then compare the two groups over a period of time. The data collected is put through rigorous statistical techniques to determine whether the new treatment is safer and more effective than standard therapy or no treatment.

Most clinical trials are conducted on a blind or double-blind basis. In a blind trial, patients do not know whether they receive the new drug or a placebo. In a double-blind trial, neither patients nor physicians know who is receiving the new treatment. This secrecy is important because patients who know they are taking a powerful new drug may expect to feel better and report improvement to doctors. Researchers who know that a patient is receiving the test treatment may also see improvements that really do not exist.

Clinical trials usually are randomized. Researchers put patients into the treatment group or control group at random. This helps to assure that neither group contains an excess of patients with severe disease. A drug may appear more effective if the treatment group were packed with patients who had only mild symptoms.

The results of clinical trials are subjected to peer review. Researchers publish their results in scientific journals or present them to an audience of other scientists, who are their peers. This gives scientists not involved in the research a chance to spot potential errors.

## 6.2 Medical Ethics <sup>c</sup>

### INTRODUCTION

Medical Ethics or Bioethics, study and application of moral values, rights, and duties in the fields of medical treatment and research. Medical decisions involving moral issues are made every day in diverse situations such as the relationship between patient and physician, the treatment of human and animal subjects in biomedical experimentation, the allocation of scarce medical resources, the complex questions that surround the beginning and the end of a human life, and the conduct of clinical medicine and life-sciences research.

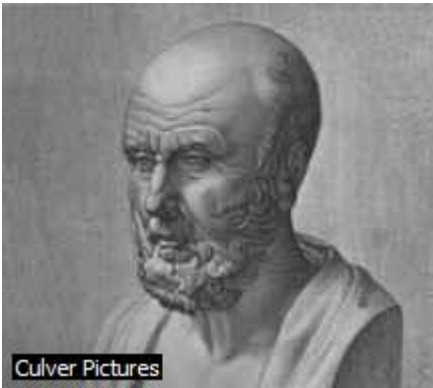
Medical ethics traces its roots back as far as ancient Greece, but the field gained particular prominence in the late 20th century. Many of the current issues in medical ethics are the product of advances in scientific knowledge and biomedical technology. These advances have presented humanity not only with great progress in treating and preventing disease but also with new questions and uncertainties about the basic nature of life and death. As people have grappled with issues on the frontier of medical science and research, medical ethics has grown into a separate profession and field of study. Professional medical ethicists bring expertise from fields such as philosophy, social sciences, medicine, research science, law, and theology.

Medical ethicists serve as advisors to hospitals and other health-care institutions. They have also served as advisors to government at various levels. For example, experts in medical ethics assisted the United States government from 1974 to 1978 as members of the National Commission for the Protection of Human Subjects of Medical Research. The commission was formed in response to several large-scale experiments that used human subjects who were tricked into participating. In the late 1990s the National Bioethics Advisory Commission, at the direction of President Bill Clinton, studied issues related to the cloning of human beings. Ethicists also serve as advisors to state legislatures in the writing of laws concerning the decision to end life support, the use of genetic testing, physician-assisted suicide, and other matters. Medical ethics has even become part of the landscape in the commercial world of science. An increasing number of firms involved in biotechnology (the business of applying biological and genetic research to the development of new drugs and other products) regularly consult with medical ethicists about business and research practices.

The field of medical ethics is also an international discipline. The World Health Organization founded the Council for International Organizations of Medical Sciences in 1949 to collect worldwide data on the use of human subjects in research. In 1993 the United Nations Educational, Scientific, and Cultural Organization (UNESCO) established an International Bioethics Committee to examine and monitor worldwide issues in medicine and life-sciences research. The UNESCO directory lists more than 500 centers outside the United States. The International Association of Bioethics was founded in 1997 to facilitate the exchange of information in medical ethics issues and to encourage research and teaching in the field.

In the United States and Canada more than 25 universities offer degrees in medical ethics. In many instances, the subject is also part of the curriculum in the education of physicians and other health-care professionals. Many medical schools include ethics courses that examine topics such as theories of moral decision-making and the responsible conduct of medical research.

## HISTORY



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## Hippocrates

Greek physician and philosopher Hippocrates (460?-377? bc), regarded as the father of medicine, is considered the first to formally address the ethical issues associated with medical practices.

## CULVER PICTURES

The examination of moral issues in medicine largely began with the Greeks in the 4th century BC. The Greek physician Hippocrates is associated with more than 70 works pertaining to medicine. However, modern scholars are not certain how many of these works can be attributed to Hippocrates himself, as some may have been written by his followers. One work that is generally credited to Hippocrates contains one of the first statements on medical ethics. In *Epidemics I*, in the midst of instructions on how to diagnose various illnesses, Hippocrates offers the following, “As to diseases, make a habit of two things—to help and not to harm.”

The most famous ethical work—although the exact origin of the text is unknown—is the Hippocratic Oath. In eight paragraphs, those swearing the oath pledge to “keep [patients] from harm and injustice.” The oath also requires physicians to give their loyalty and support to their fellow physicians, promise to apply dietetic measures for the benefit of the sick, refuse to provide abortion or euthanasia (the act of assisting a chronically ill person to die), and swear not to make improper sexual advances against any members of the household. “In purity and holiness I will guard my life and my art,” concludes one section of the oath. For most of the 20th century, it was common for modified versions of the Hippocratic Oath to be recited by medical students upon the awarding of their degrees. For many people, the oath still symbolizes a physician’s duties and obligations.

The idea of ethical conduct is common in many early texts, including those from ancient India and China—cultures in which medical knowledge was viewed as divine or magical in origin. Echoing the Hippocratic Oath, the *Caraka Samhita*, a Sanskrit text written in India roughly 2,000 years ago, urges the following commandment to physicians, “Day and night, however you may be engaged, you shall strive for the relief of the patient with all your heart and soul. You shall not desert the patient even for the sake of your life or living.” Similar sentiments can be found in the Chinese text *Nei Jing* (The Yellow Emperor’s Classic of Inner Medicine), dating from the 2nd century BC. This work stressed the connection between virtue and health. Three centuries later, the work of the Chinese physician Sun Simiao emphasized compassion and humility, “...a Great Physician should not pay attention to status, wealth, or age.... He should meet everyone on equal ground...”

## History of all Medicine

In Europe during the Middle Ages, the ethical standards of physicians were put to the test by the bubonic plague, the highly contagious Black Death that arrived around the mid-1300s and remained a threat for centuries. When plague broke out, physicians had a choice: They could stay and treat the sick—risking death in the process—or flee. The bubonic plague and other epidemics provide an early example of the challenges that still exist today when doctors must decide whether they are willing to face personal risks when caring for their patients.

By the 18th century, particularly in Britain, the emphasis in medical ethics centered on proper, honorable behavior. One of the best-known works from the period is *Medical Ethics; or, a Code of Institutes and Precepts, Adapted to the Professional Conduct of Physicians and Surgeons*, published in 1803 by the British physician Thomas Percival. In his 72 precepts, Percival urged a level of care and attention such that doctors would “inspire the minds of their patients with gratitude, respect, and confidence.” His ethics, however, also permitted withholding the truth from a patient if the truth might be “deeply injurious to himself, to his family, and to the public.” At roughly the same time American physician Benjamin Rush, a signer of the Declaration of Independence, was promoting American medical ethics. His lectures to medical students at the University of Pennsylvania in Philadelphia, spoke of the virtues of generosity, honesty, piety, and service to the poor.

By the early 19th century, it seemed that such virtues were in short supply, and the public generally held physicians in North America in low esteem. Complicating the problem was the existence of a variety of faith healers and other unconventional practitioners who flourished in an almost entirely unregulated medical marketplace. In part to remedy this situation, physicians convened in 1847 to form a national association devoted to the improvement of standards in medical education and practice. The American Medical Association (AMA), as the group called itself, issued its own code of ethics, stating, “A physician shall be dedicated to providing competent medical service with compassion and respect for human dignity. A physician shall recognize a responsibility to participate in activities contributing to an improved community.” This text was largely modeled on the British code written by Percival, but it added the idea of mutually shared responsibilities and obligations among doctor, patient, and society. Since its creation, the AMA Code has been updated as challenging ethical issues have arisen in science and medicine. The code now consists of seven principles centered on compassionate service along with respect for patients, colleagues, and the law. The Canadian Medical Association (CMA), established in 1867, also developed a Code of Ethics as a guide for physicians. Today the CMA code provides over 40 guidelines about physician responsibilities to patients, society, and the medical profession.

In recent years, however, the field of medical ethics has struggled to keep pace with the many complex issues raised by new technologies for creating and sustaining life. Artificial-respiration devices, kidney dialysis, and other machines can keep patients alive who previously would have succumbed to their illnesses or injuries. Advances in organ transplantation have brought new hope to those afflicted with diseased organs. New techniques have enabled prospective parents to conquer infertility. Progress in molecular biology and genetics has placed scientists in control of the most basic biochemical processes of life. With the advent of these new technologies, codes of medical ethics have become inadequate or obsolete as new questions and issues continue to confront medical ethicists.

### HOW ARE ETHICAL DECISIONS MADE IN MEDICINE?

Throughout history the practice of medical ethics has drawn on a variety of philosophical concepts. One such concept is deontology, a branch of ethical teaching centered on the idea that actions must be guided above all by adherence to clear principles, such as respect for free will. In contemporary bioethics, the idea of autonomy has been of central importance in this tradition. Autonomy is the right of individuals to

## History of all Medicine

determine their own fates and live their lives the way they choose, as long as they do not interfere with the rights of others. Other medical ethicists have championed a principle known as utilitarianism, a moral framework in which actions are judged primarily by their results. Utilitarianism holds that actions or policies that achieve good results—particularly the greatest good for the greatest number of people—are judged to be moral. Still another philosophical idea that has been central to medical ethics is virtue ethics, which holds that those who are taught to be good will do what is right.

Many medical ethicists find that these general philosophical principles are abstract and difficult to apply to complex ethical issues in medicine. To better evaluate medical cases and make decisions, medical ethicists have tried to establish specific ethical frameworks and procedures. One system, developed in the late 1970s by the American philosopher Tom Beauchamp and the American theologian James Childress, is known as principlism, or the Four Principles Approach. In this system ethical decisions pertaining to biomedicine are made by weighing the importance of four separate elements: respecting each person's autonomy and their right to their own decisions and beliefs; the principle of beneficence, helping people as the primary goal; the related principle of nonmalificence, refraining from harming people; and justice, distributing burdens and benefits fairly.

Medical ethicists must often weigh these four principles against one another. For example, all four principles would come into play in the case of a patient who falls into an irreversible coma without expectation of recovery and who is kept alive by a mechanical device that artificially maintains basic life functions such as heartbeat and respiration. The patient's family members might argue that the patient, if able to make the decision, would never want to be sustained on a life-support machine. They would argue from the viewpoint of patient autonomy—that the patient should be disconnected from the machine and allowed to die with dignity. Doctors and hospital staff, meanwhile, would likely be concerned with the principles of beneficence and nonmalificence—the fundamental desire to help the patient or to refrain from harmful actions, such as terminating life support. Consulting on such a case, the medical ethicist would help decide which of these conflicting principles should carry the most weight. An ethicist using principlism might work toward a solution that addresses both sides of the conflict. Perhaps the family and medical staff could agree to set a time limit during which doctors would have the opportunity to exhaust every possibility of cure or recovery, thus promoting beneficence. But at the end of the designated period, doctors would agree to terminate life support in ultimate accordance with the patient's autonomy.

Although some medical ethicists follow principlism, others employ a system known as casuistry, a case-based approach. When faced with a complex bioethical case, casuists attempt to envision a similar yet clearer case in which virtually anyone could agree on a solution. By weighing solutions to the hypothetical case, casuists work their way toward a solution to the real case at hand.

Casuists might confront a case that involves deciding how much to explain to a gravely ill patient about his or her condition, given that the truth might be so upsetting as to actually interfere with treatment. In one such case cited by American ethicist Mark Kuczewski from the Center for the Study of Bioethics at the Medical College of Wisconsin in Milwaukee, a 55-year-old man was diagnosed with the same form of cancer that had killed his father. After a surgical procedure to remove the tumor, the patient's family members privately told his doctors that if the patient knew the full truth about his condition, he would be devastated. In weighing this matter, a casuist might envision a clear-cut case in which a patient explicitly instructs doctors or caregivers not to share any negative information about prospects for cure or survival. The opposite scenario would be a case in which the patient clearly wishes to know every bit of diagnostic information, even if the news is bad. The challenge for the casuist is to determine which scenario, or

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paradigm, most closely resembles the dilemma at hand, and, with careful consideration of the case, try to proceed from the hypothetical to a practical solution. In this particular case, the cancer patient was informed that his tumor had not been successfully removed and that more curative measures were called for. His treatments continued. In the end, however, he died of the disease without ever being told of a terminal diagnosis.

## CURRENT MEDICAL ETHICS ISSUES

Casuistry and principlism are just two of many bioethical frameworks. Each approach has its proponents, and volleys of disagreement and debate frequently fly among the various schools of thought. Yet each approach represents an attempt to deal with thorny, conflicting issues that commonly arise in the complex and contentious arena of medicine. These issues can include the rights and needs of the patient, who may, for example, decide to discontinue treatment for a life-threatening illness, preferring to die with dignity while still mentally competent to make that choice. There is the obligation of the doctor, whose duty it is to save and prolong life. There is the hospital or health-care system, whose administrators must weigh the obligation to sustain life against the often-enormous expense of modern medical methods. And there is the law, which seeks to protect citizens from harm while at the same time respecting autonomy. The remainder of this article discusses some of the most prominent dilemmas and decisions faced by modern medical ethicists.

## MORTALITY ISSUES



Man on Life Support

Life support equipment keeps an elderly man alive at a hospital. Proponents of euthanasia believe that unnecessarily prolonging life in terminally ill patients causes suffering to the patients and their family members. Many societies now permit passive euthanasia, which allows physicians to withhold or withdraw life-sustaining treatment when directed to do so by the patient or an authorized representative.

Jan Halaska/Photo Researchers, Inc.



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For many centuries death was clearly indicated by the absence of a pulse or signs of breathing. In the 1960s advances in life-support technology, such as mechanical respirators and the heart-lung machine, enabled physicians to artificially maintain function in the heart and lungs, and the clear signs of death became blurred. The resulting challenge—to forge a new definition of death—was a major spur to the growth of medical ethics during the 1960s and 1970s.

An early effort along these lines was a set of guidelines issued by a committee at the Harvard University Medical School in Boston, Massachusetts, in 1968. These guidelines introduced the concept of brain death—defined as an end of all function in the brain and central nervous system, even in a body sustained by artificial technology. In 1981 a United States federal advisory group on medical ethics, the President’s Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, created a guideline for defining death that specifies not only “irreversible cessation of circulatory and respiratory functions,” but also “irreversible cessation of all functions of the entire brain.” Within a few years, most states had adopted this definition. Most European nations, Canada, Australia, and Central and South American nations define death either as the loss of all independent lung and heart function or the permanent and irreversible loss of all brain function.

The concept of brain death did not solve the dilemma of patients being sustained by artificial means—particularly in cases of permanent vegetative states (when a patient has some brain function but shows no response to the external environment). Using medical technology, these patients can be kept alive for years, if not decades. A landmark bioethical and legal case in this area concerned Karen Ann Quinlan, a 21-year-old woman in 1975 who fell into a permanent vegetative state as a result of ingesting a mixture of tranquilizers and alcohol. Her parents, carrying out what they believed their daughter's wishes would be, requested that she be disconnected from her life-support system. Hospital officials, while sympathetic to the parents’ wishes, would not agree, and a long court battle followed. Ultimately a New Jersey court agreed with the parents, and Quinlan was disconnected from her respirator. (Unexpectedly, she began to breathe on her own and lived another ten years in a nursing home.)

The Quinlan case brought the “right to die” issue into the realm of public discussion. As a result, in many cases, patients can now make advanced directives, also known as living wills, directing that their lives not be sustained by artificial means. Other aged or gravely ill patients have used living wills to specify that if they should suffer heart failure or other crises while in the hospital, medical staff should make no extraordinary effort to resuscitate them.

Allowing a patient to die raises one set of ethical issues. Actively helping a patient achieve death, often referred to as euthanasia, raises still other moral questions. For many years, medical ethicists have debated whether there is a significant distinction between the two courses of action. In the United States (with the exception of Oregon), Canada, and most other nations, euthanasia is illegal. In the Netherlands, the parliament in 1993 established informal guidelines under which physicians would not be prosecuted for participating in voluntary euthanasia. The Dutch parliament formally legalized voluntary euthanasia in 2000, provided that it involved the full consent of the patient and agreement of all concerned medical personnel.



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Jack Kevorkian

In 1999 retired physician Jack Kevorkian was convicted of second-degree murder and delivery of a controlled substance after he injected a terminally ill man with a lethal dosage of medication. He was sentenced to 10 to 25 years in prison. Kevorkian remains an outspoken advocate of assisted suicide.

Reuters/Corbis

Still another controversy related to euthanasia concerns the decision of when, and if, it is ethically permissible to withhold treatment from a child. This issue came into public focus with the case of “Baby Doe” in 1982. The newborn infant was diagnosed with Down Syndrome, a chromosomal disorder that causes moderate to severe developmental disabilities. The baby also had a hole in the esophagus (the passageway through the throat) that prevented the baby from feeding. The parents, apparently unwilling to raise a child with Down Syndrome, refused to consent to the routine surgery that could have corrected the esophageal defect, and the baby died after six days. The case outraged many, and officials in the administration of President Ronald Reagan rushed to pass legislation preventing future similar scenarios.

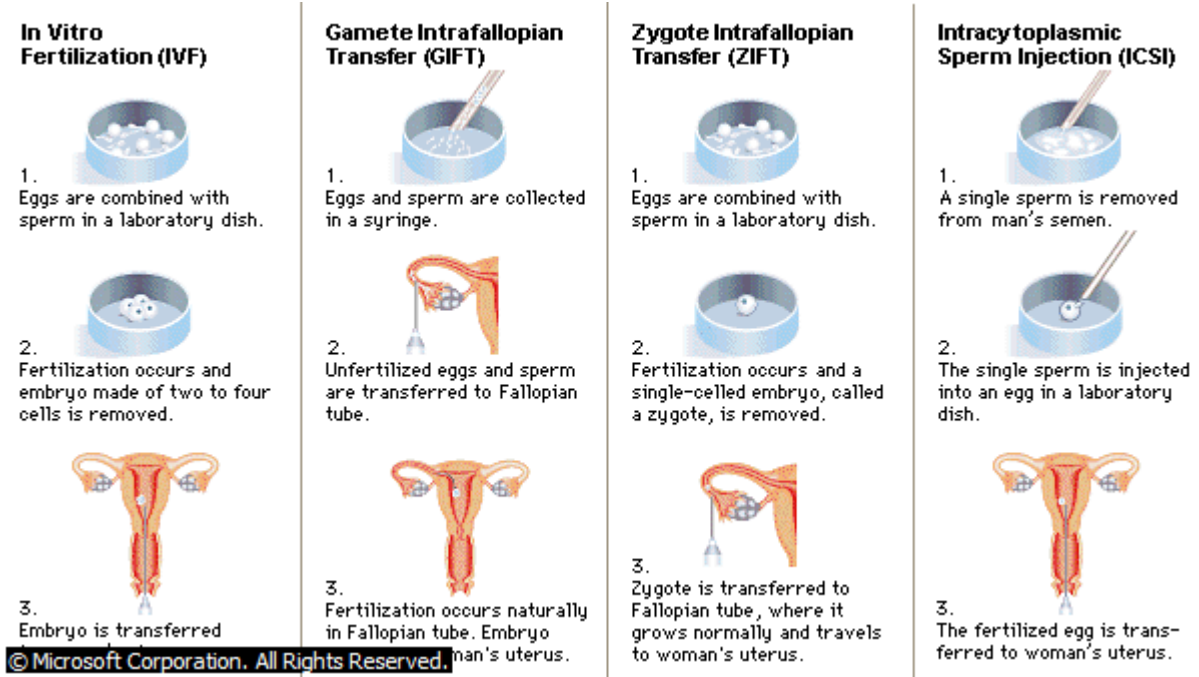
An issue related to euthanasia is assisted suicide, voluntary suicide with the help of another person. In the United States this matter has been highly publicized through the actions of American physician Jack Kevorkian, who in recent years assisted in more than 130 suicides. In 1999, after several previous acquittals in other cases, Kevorkian was convicted of second-degree murder after administering a lethal injection to a Michigan man suffering from amyotrophic lateral sclerosis, a progressively debilitating,

currently incurable disease. Kevorkian was sentenced to 10 to 25 years in prison but was released in 2007 after serving 8 years of his sentence.

In Canada, assisted suicide is illegal. In the United States, the legal situation regarding assisted suicide has been left largely to the individual states. In the 1997 decision of *State of Washington v. Glucksberg*, the Supreme Court of the United States determined that there is no constitutional right to die with the help of a physician. The Court has also upheld state laws that ban assisted suicide. However, in 1994 and again in 1997 voters in the state of Oregon approved a measure allowing physicians to prescribe lethal medications when requested by a mentally competent adult who is suffering in the final stages of terminal illness. In 2006 the Supreme Court upheld Oregon's assisted suicide law by a 6-3 vote, after the administration of President George W. Bush challenged the law's legality.

All these issues—determining when life has ended and deciding what constitutes a reasonable quality of life and whether the patient, the health-care system, or the courts should have ultimate authority in life or death—remain unresolved and continue to challenge medical ethicists.

REPRODUCTIVE MEDICINE



Assisted Reproductive Technologies <sup>c</sup>

In these methods used to treat infertility, three methods (IVF, ZIFT, and ICSI) artificially induce the union of sperm and egg in the laboratory before implanting the fertilized egg inside the female reproductive system. The fourth method (GIFT) mixes unfertilized eggs and sperm in the laboratory before transferring them to the fallopian tube, where fertilization takes place naturally.

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Many new questions of medical ethics have occurred as a result of developments in reproductive medicine. In the 1960s the development of the birth-control pill raised ethical issues, especially for people whose religions forbade the use of artificial birth control. In 1973 the United States Supreme Court legalized abortion with its landmark *Roe v. Wade* decision. In 1988 the Canadian Supreme Court removed

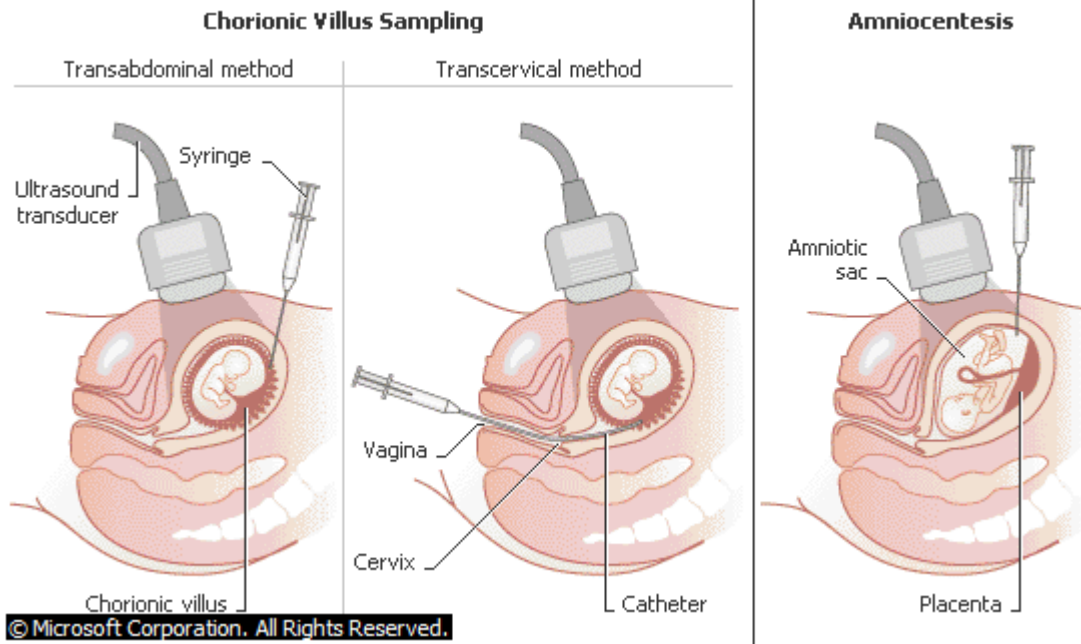
abortion from the Criminal Code of Canada, enabling the decision of abortion to be made confidentially between a patient and her physician within the confines of Canadian law. Controversy surrounding these rulings—including discussion of the origins and meaning of personhood, the rights of the fetus and pregnant women, and the role the state should play in reproductive decisions—have kept abortion a volatile political and ethical issue into the 21st century.

Contributing to this heated debate has been the development of a variety of drugs that either prevent or end pregnancies. Emergency contraceptive pills, commonly known as morning-after pills, use high doses of hormones that can prevent or delay ovulation, inhibit a sperm from fertilizing an egg, or make the uterine lining inhospitable to a fertilized egg. If taken by a woman within 72 hours after unprotected sexual intercourse, these drugs can prevent pregnancy. Doctors have long prescribed high doses of certain oral contraceptives to patients within three days after unprotected intercourse. More recently, drugs specifically created for the purpose of emergency contraception have become available. In some states of the United States, these drugs can be dispensed by a pharmacist without a doctor's prescription. Abortion rights advocates consider these drugs a welcome addition to the limited number of effective contraceptive methods, but abortion opponents strongly disagree. Since there is a small chance that these drugs may take effect after an egg is fertilized, when abortion opponents believe a human life has already begun, critics view the drug as just another form of abortion.

Even more controversial is the drug mifepristone, also known as RU-486. Mifepristone is used to induce abortion in the first seven weeks of pregnancy—when an embryo is less than 2.5 cm (1 in) in length—without requiring surgery. Developed by a French pharmaceutical firm, mifepristone was first approved for use in France in 1988; later it was approved in the United Kingdom, Sweden, and other European countries. The drug was approved for use in the United States in 2000 under the brand name Mifeprex.

Mifepristone blocks progesterone, a hormone required to maintain pregnancy. A woman receives mifepristone in her physician's office. She then returns to the doctor's office within 48 hours to take the drug misoprostol, a hormone-like substance that makes the uterus contract and expel fetal tissue. A woman typically experiences bleeding and cramping that may last from 9 to 16 days. Two weeks after receiving the second drug, the woman returns to her physician to make sure the drug treatment was successful in terminating the pregnancy.

Opponents of abortion contend that the easy availability of this drug increases the chance that women will choose this method as a form of belated birth control. Abortion rights advocates note that, since use of the drug is a private matter between a woman and her physician and requires no surgery, a woman no longer needs to visit an abortion clinic, which may be targeted by antiabortion protesters. Proponents also cite evidence from clinical trials of the drug showing that many women preferred the less invasive procedure to a surgical abortion because it helped them feel more in control of their personal health. As with other abortion procedures, the cost of mifepristone will not be covered by Medicaid, the federal health insurance program for low-income individuals and families, unless the pregnancy results from rape or incest or endangers the life of the mother. Advocates complain that as a result poor women do not have the same access to reproductive health care that wealthier women have.



### Prenatal Testing

Two types of medical tests may be used early in a woman's pregnancy to determine if her fetus has a defective gene or a chromosomal abnormality. Both procedures remove cells surrounding the developing fetus. The cells obtained have the same genetic makeup as the fetus and can be tested for genetic abnormalities. In chorionic villus sampling, a doctor removes tissue from the chorionic villi, fingerlike projections that are part of the developing placenta, between 10 and 12 weeks of pregnancy. Using ultrasound guidance, the doctor inserts either a needle through the woman's abdominal wall or a thin, hollow tube called a catheter through her cervix to reach the chorionic villi. The doctor suctions out cells using a syringe. Amniocentesis is usually performed between 15 and 17 weeks of pregnancy. In this procedure, a doctor uses ultrasound guidance to insert a needle through the abdominal wall into the amniotic fluid surrounding the fetus. Cells from the amniotic fluid are removed using a syringe. Both procedures pose a slight risk for the developing fetus, and health professionals recommend these tests only in cases in which a mother or father has a family history of a genetic disorder or a known risk for chromosomal abnormalities.

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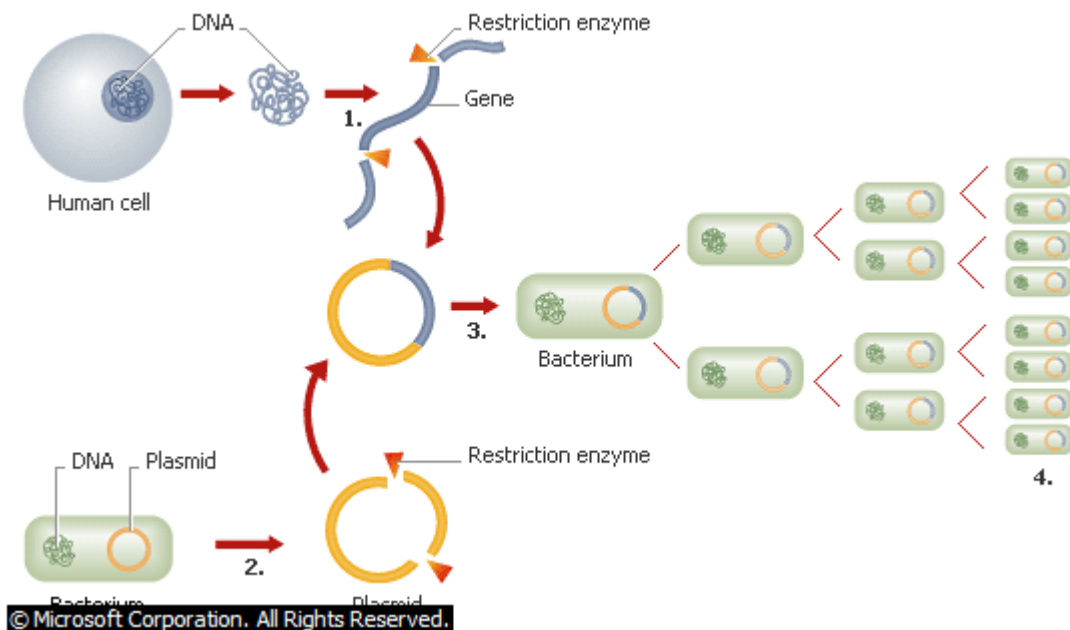
Infertility is also an important area of medical ethics. Many couples unable to have children turn to fertility-enhancing technologies for help. Artificial insemination, a method in which doctors introduce semen into the cervix, raised new ethical issues about how potential parents should choose sperm or egg donors, on what basis and with what assurances of privacy donors should be recruited, and whether donors are entitled to parental rights or financial compensation.

In 1978 the birth of the first so-called test-tube baby was an important technological breakthrough. Doctors used in vitro fertilization (IVF), a method in which fertilization of the ovum with sperm was conducted in a laboratory and the resulting embryo was subsequently implanted in the mother's uterus. Soon thereafter, a variety of other IVF techniques were developed. Not surprisingly, these procedures have raised significant ethical questions, including some about the safety of the costly technique. To increase the chance for success, doctors may fertilize and implant more than one embryo into a woman's uterus. Some experts have raised concerns about this practice because it increases the incidence of

multiple births, which can create a health risk for the mother and babies and can place a heavy burden on the parents. When more than one embryo implants in the uterus, doctors can selectively remove one or more of the embryos to improve the chances that the others will survive, but this raises additional ethical issues related to abortion. Questions have also arisen over the fate of the fertilized eggs that are not implanted and the fate of the human embryos if the couples who created them die, become incapacitated, or no longer want to have children.

Advances in prenatal diagnostic techniques, such as genetic testing, in the 1960s and 1970s made it possible to test a fetus (and more recently an embryo) for genetic diseases, such as sickle-cell anemia, and other disorders prior to birth. These techniques, including chorionic villus sampling and amniocentesis, led to discussions about the morality of using medicine to end pregnancies based on the predicted disability and quality of life that the baby might face. An experimental technique known as preimplantation genetic diagnosis could help couples avoid facing this difficult decision. This technique enables doctors to analyze the genetic material of embryos created through IVF before they are implanted in a woman's uterus. Only healthy embryos are then implanted. A related technique enables doctors to determine the sex of the baby before the embryos are implanted. Couples at risk of passing on a genetic disorder that affects males may choose to have only female embryos implanted. However, these prenatal techniques have raised additional ethical questions about the rights of parents to design their descendants.

### GENETIC TECHNOLOGY ISSUES



### Genetic Engineering

1. In genetic engineering, scientists use restriction enzymes to isolate a segment of deoxyribonucleic acid (DNA) that contains a gene—for example, the gene regulating insulin production. 2. A plasmid removed from a bacterium and treated with the same restriction enzyme binds with the DNA fragment to form a hybrid plasmid. 3. The hybrid plasmid is re-inserted back into the bacterium, where it replicates as part of the cell's DNA. 4. A large number of identical daughter cells (clones) can be cultured and their gene products extracted for human use.

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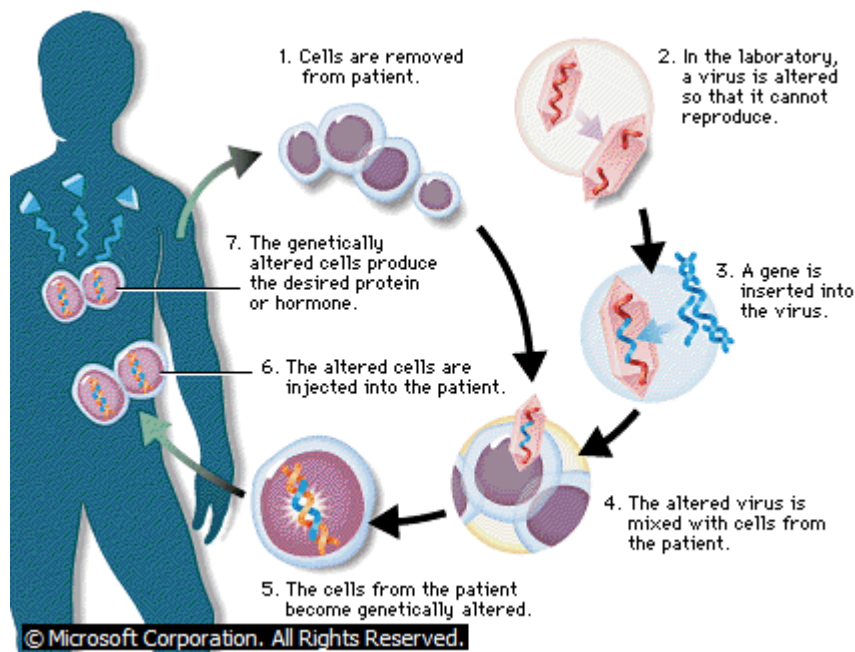


## History of all Medicine

Along with developing new methods for ending pregnancies or aiding fertility, modern medical science has created new means of manipulating the very building blocks of life itself. These techniques, in the fields of genetic engineering and biotechnology, have caused much public discussion on medical ethics in recent years.

Since the early 1970s, scientists have refined and improved methods for isolating and manipulating genes—the basic units of heredity made up of deoxyribonucleic acid (DNA) that hold the master instructions for the creation of proteins. Proteins act as molecular laborers, controlling every aspect of cell activity. Specific segments of DNA can be removed from one organism and inserted into the genes of another species. In this way the function of selected genes can be deactivated or amplified, changing the actions of hormones and other proteins and fundamentally altering the characteristics of life forms.

For some medical ethicists and other observers, such gene manipulation raises serious ethical and practical concerns. These doubters have asked the following questions: Just because scientists can perform such wonders, does it follow that they should do so? Are there unforeseen dangers in altering life at the biochemical level? Is genetic diversity threatened by such activity?



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### Correcting Genetic Diseases

Gene therapy may someday be able to cure hereditary diseases, such as hemophilia and cystic fibrosis, which are caused by missing or defective genes. In one type of gene therapy, genetically engineered viruses are used to insert new, functioning genes into the cells of people who are unable to produce certain hormones or proteins necessary for the body to function normally.

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Biotechnology and genetic engineering also raise issues concerning commercial exploitation, such as attempts to patent human gene sequences. Patents protect inventors and others by forbidding any imitators from using or profiting from the patent-holder's original material. But can life itself be patented? In 1980 the U.S. Supreme Court suggested in its decision *Diamond v. Chakrabarty* that life can be patented.

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The Court granted patent protection to a scientist who had developed a new bacterium strain that was capable of serving as a natural cleanup agent in accidental oil spills (see Bioremediation).

Six years later the Court ruled that any life form developed through biotechnology—excluding humans—could be considered a patentable invention. More recently, as work has proceeded on mapping the human genome (the entire set of genes found in the nucleus of each human cell), biotechnology companies have scrambled to file patents on individual genes that they have “discovered”—whether the companies know the function of the gene or not. In 2000, for example, a controversy erupted when a biotechnology company won a patent for a gene involved in the process by which the human immunodeficiency virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS), infects cells. The patent was granted even though other scientists had previously made discoveries regarding the gene’s function.

To some medical ethicists, the patenting of genes is troubling. A central argument against patenting is that competitive ownership of individual genes might prevent scientists from sharing knowledge. This, of course, would hamper basic biomedical research and the ongoing search for treatments and cures. President Clinton and British prime minister Tony Blair addressed this concern early in 2000 when they jointly called for an agreement for American and British scientists to openly share all information derived from the sequencing of the human genome (see Human Genome Project).

### CLONING

Perhaps no event in biotechnology has caused more uproar and bioethical discussion than the cloning of Dolly the sheep by Scottish scientists. Dolly was created when the scientists removed the nucleus from a cell taken from the udder of a six-year-old sheep, placed it into the egg cell of another sheep from which the nucleus had been removed, and planted the egg cell within a surrogate mother, which carried Dolly to term. Dolly was born an identical twin to her six-year-old parent.

Dolly’s birth created a sensation in the press and caused a wave of anxiety over the prospects for cloning humans. President Clinton announced an immediate ban on federal funding for research related to human cloning. The U.S. National Bioethics Advisory Committee recommended that federally funded research that had produced Dolly not be applied to humans. Several other nations have laws prohibiting human cloning, including Australia, Austria, Canada, Denmark, France, Germany, Norway, Slovakia, South Africa, Spain, Sweden, Switzerland, and the United Kingdom. The debate over the ethics of creating human clones and the circumstances under which human cloning might be used remains unsettled.

### PHYSICIAN-PATIENT ISSUES

Since the time of Hippocrates more than 2,000 years ago, a central concern of medical ethics has been the relationship between physician and patient. Aspects of this relationship continue to be the source of ethical dilemmas. For example, what is the extent of the doctor’s duty to a patient if treating the patient places the doctor at risk? This issue was brought to the forefront in recent years by the advent of the AIDS crisis. HIV, the virus that causes AIDS, can be spread by contact with blood and other bodily fluids of an infected person. This poses a potential hazard for doctors and other health-care workers. In the 1980s, during the early days of the AIDS epidemic, some doctors refused to treat persons in high-risk groups for AIDS, such as homosexual men and users of intravenous drugs—even though these patients were not known to be infected with HIV.

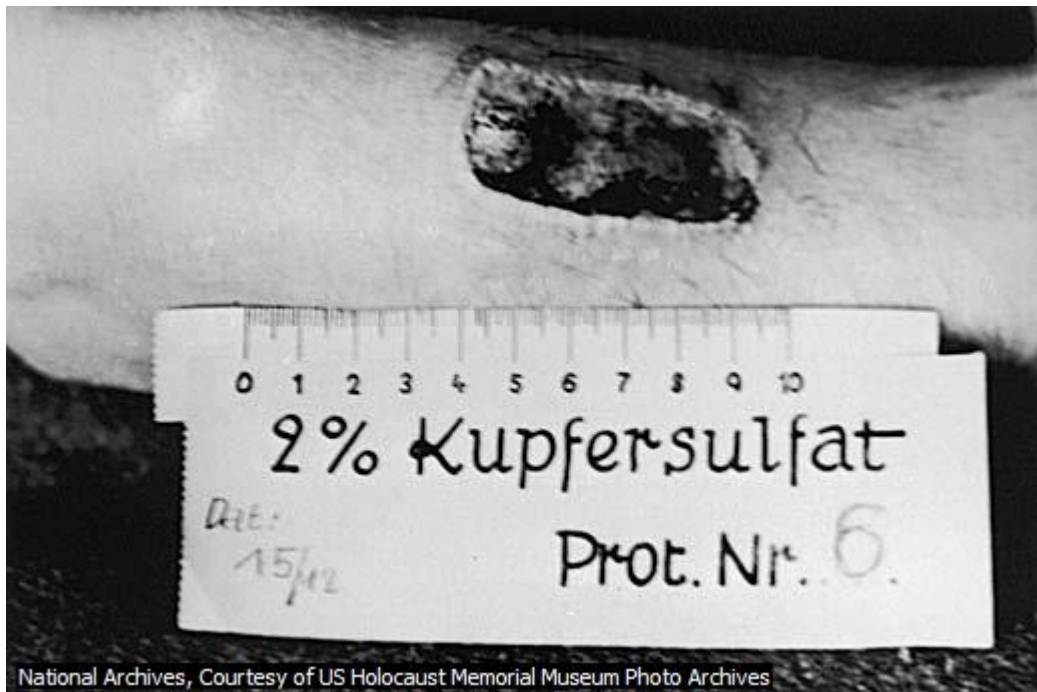
Is there an ethical obligation for doctors to treat patients with communicable and potentially fatal diseases? In a statement in 1988, the AMA’s Council on Ethical and Judicial Affairs declared that no patient



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should suffer discrimination or be denied care because of infection with HIV. Many states and cities have passed laws barring health-care discrimination against persons with HIV and AIDS. Nevertheless, the licensing boards that oversee the practice of medicine in each state have taken varied approaches. The boards in some states have passed regulations against any refusal to treat persons with HIV infection; other state boards specify that doctors may refuse to treat such patients provided that they make a reasonable effort to secure alternate care. In 1998 the U.S. Supreme Court ruled that denying care to an HIV-infected person violated the federal Americans with Disabilities Act. AIDS advocates hope that this ruling will protect the rights of many people with AIDS.

### HUMAN EXPERIMENTATION



#### Medical Experiment in Nazi Concentration Camp

A gaping wound on a woman's arm is the result of a medical experiment carried out by Nazi physicians on a female prisoner held at the concentration camp at Ravensbrück, Germany. In the experiment, a mixture of phosphorus and rubber was applied to the skin and ignited. After 20 seconds the fire was extinguished with water. Three days later the burn was treated with a liquid form of the herbal remedy echinacea to observe how fast the burn would heal. This photograph, taken by a camp physician, was entered as evidence during the Doctors Trial, in which a United States military tribunal opened criminal proceedings in 1946 against 23 leading German physicians and administrators for their willing participation in war crimes and crimes against humanity.

#### NATIONAL ARCHIVES, COURTESY OF US HOLOCAUST MEMORIAL MUSEUM PHOTO ARCHIVES

Ethical issues arise not only in the clinical setting of a hospital or doctor's office, but in the laboratory as well. A main concern of medical ethicists is monitoring the design of clinical trials and other experiments involving human subjects. Medical ethicists are particularly interested in confirming that all the subjects have voluntarily given their consent and have been fully informed of the nature of the study and its potential consequences. In this particular area of medical ethics, one infamous period in history has echoed loudly for more than half a century: the experiments conducted by Nazi doctors on captive, unwilling human subjects during World War II (1939-1945). Under the guise of science, thousands of Jews

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and other prisoners were subjected to grotesque and horrifying procedures. Some were frozen to death, or slowly and fatally deprived of oxygen in experiments that simulated the effects of high altitude. Others were deliberately infected with cholera and other infectious agents or subjected to bizarre experiments involving transfusions of blood or transplants of organs. Many underwent sterilization, as Nazi doctors investigated the most efficient means of sterilizing what they considered inferior populations. In all, these inhumane acts so outraged the world that, after the war, trials were held in Nürnberg, Germany, and many of the responsible Nazi physicians were convicted and executed as war criminals.

These trials essentially marked the beginning of modern medical ethics. The international tribunal that prosecuted the Nazi doctors at Nürnberg drew up a list of conditions necessary to ensure ethical experimentation involving humans. This document, which came to be called the Nuremberg Code, stressed the importance of voluntary, informed consent of subjects in well-designed experimental procedures that would aid society without causing undue suffering or injury.



Clinton Apologizes for Tuskegee Study

United States president Bill Clinton and a survivor of a government-sanctioned experiment on syphilis take part in a formal ceremony at the White House on May 16, 1997. During the ceremony, Clinton offered a formal apology to the surviving black men who participated in the experiment. The study, formally known as the Tuskegee Study of Untreated Syphilis in the Negro Male, was conducted from 1932 to 1972 and involved 399 black men from rural Alabama who were infected with syphilis. The U.S. Public Health Service closely monitored and evaluated the effects of the disease on the study's participants. In what Clinton described as a shameful act, throughout the 40-year study the men were never told that they had syphilis, and they were never offered penicillin to treat the disease. When left untreated, syphilis can lead to mental illness, paralysis, and death. By the time the study was halted, more than 120 men had died of

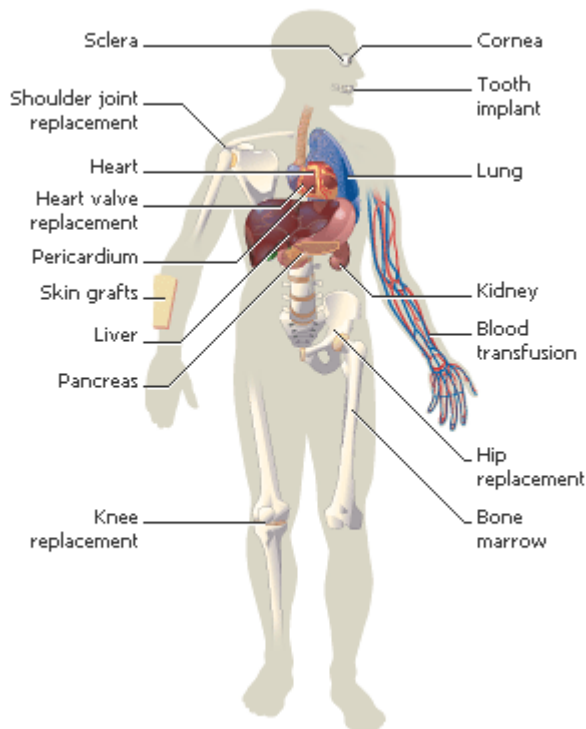
syphilis and related complications, at least 40 wives had been infected, and 19 children had contracted the disease at birth.

Paul J. Richards/AFP/Getty Images

Unfortunately, not all scientists adhered to the Nuremberg Code. In the United States, the decades following World War II saw several incidents of experiments on unwitting subjects who had not given informed consent. During the 1940s and 1950s, for example, hundreds of pregnant women were given a radioactive solution that enabled doctors to measure the amounts of iron in their blood. In the mid-1950s scientists infected developmentally disabled children at a New York state hospital with hepatitis in order to test a vaccine for the disease. In the early 1960s doctors injected cancer cells into the skin of elderly, debilitated patients in a hospital in Brooklyn, New York, to study the patients' immune responses. Perhaps the most shameful episode in American medical history was the federal government's Tuskegee syphilis experiment. This 40-year study began in 1932 in Tuskegee, Alabama, and tracked the health of approximately 600 African-American men, two-thirds of whom suffered from the sexually transmitted disease syphilis. Most of the subjects were poor and illiterate, and the researchers deliberately kept the syphilis victims uninformed of their condition. Worse yet, the researchers did not treat the disease, even though a cure for syphilis was readily available during the last 30 years of the study. Instead, the Public Health Service tracked the men, using them to study the physiological effects of untreated syphilis. When the press broke the story of the Tuskegee experiments in 1972, the revelations provided yet another spur to the development of modern bioethics standards. (In 1997 President Clinton issued a formal apology to the survivors of the Tuskegee Study and their families.)

Today clinical studies continue to present bioethical challenges. Designing safe clinical experiments and balancing the need for scientific objectivity against concern for the human subjects can be a difficult proposition. An ethical dilemma is often presented by the standard practice of using a placebo in a trial for a new drug or other medical innovation. A placebo is an inactive substance that is given to some subjects in a study in order to help researchers judge the real effects of the compound being tested. But is it ethical in the trial of an AIDS drug, for example, to give a useless placebo to persons suffering from a potentially fatal condition when other persons in the study are receiving what may be a beneficial drug? That is just one question that medical ethicists weigh in the design of experiments involving humans.

## ORGAN AND TISSUE TRANSPLANTS



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## Medical Transplants

For three decades after the first successful organ transplant was performed in 1954, medical transplants were rare and often unsuccessful. Thanks to advances in surgical techniques and the development of drugs that suppress organ rejection, organ transplant operations now are common and generally successful.

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Modern techniques of medical transplantation—surgically removing a diseased or malfunctioning kidney, heart, or other organ, and replacing it with a healthy organ from a donor—has brought new life and new hope to patients who, just a few generations ago, would have died. But the practice has also raised significant ethical questions. One such question centers on the cold reality of supply versus demand: At any moment, there are upwards of 150,000 people in the world awaiting transplants. A scarcity of donor organs usually means a long wait—during which some patients die. A large supply of organs is available from the roughly 200,000 patients worldwide who are declared brain-dead each year, but the problem has been to secure consent from family members and loved ones to remove organs for transplant.

For many years' medical ethicists have considered the question of whether ethical means can be found to increase the supply of donor organs. In the early 1980s, for example, American bioethicist Arthur Caplan of the University of Pennsylvania discussed the concept of presumed consent—the idea that, barring strenuous objection from family members, doctors could presume that a person declared brain-dead would be willing to donate organs to save others. Some Asian nations, as well as some European nations, including France, Belgium, Austria, and Spain, have such policies. The United States and Canada later enforced a concept advanced by Caplan of required request—a policy whereby hospital personnel would

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be legally required to seek permission from family members before harvesting organs. The adoption of this policy in the United States and Canada increased the supply of donated tissues, such as corneas and bone marrow, but failed to dramatically increase the supply of donor organs.

Current United States and Canadian law bars the sale or purchase of donor organs. The United States does permit the sale of plasma and other bodily products, such as hair and sperm. Would financial incentives provide a stimulus for more people to make organs available? Some ethicists believe so, while others find the idea of marketing organs ethically objectionable.

Other ethical issues are raised by the practice of xenotransplantation—the use of animal tissues and organs for human transplant. In 1984 the case of “Baby Fae” stimulated wide ethical discussion. Doctors transplanted a baboon heart into a newborn girl to replace her own fatally flawed heart. She died shortly after. Some critics contend that xenotransplantation poses a danger to human health because of the risk of transferring deadly animal viruses to the human population. This risk causes bioethicists to question if such practices are ethical.

In recent years, one of the most promising areas related to transplantation will likely trigger ethical debate well into the future: the experimental use of tissues from aborted human fetuses. In one particularly active area of this research, scientists have experimented for more than a decade with grafting nerve cells from human fetuses into the brains of patients suffering from Parkinson disease. This disorder, caused by the mysterious death of brain cells that produce a chemical called dopamine, gradually causes patients to lose control of their muscles. In early studies some patients who received fetal cells showed improvement in their symptoms, as the transplanted cells demonstrated the capacity to produce dopamine. But the treatment also produced unpleasant side effects. This research, like all research that depends on human fetal cells, has also provoked debate. Critics question the ethics of using tissues from human fetuses for any research purposes.

Ethical uncertainty hangs over a related area of research on human embryonic stem cells. Human embryos contain stem cells that have the ability to develop into almost any type of cell. Scientists hope to direct stem cells to produce certain types of human tissue. It is possible that someday these cells might be used for transplants or for growing new tissue that can be grafted into the human body. For example, scientists hope that stem cells might one day be used to replace nerve cells destroyed by spinal injury, or heart muscle cells damaged during a heart attack. Interest in this field was heightened considerably when scientists announced in 1998 that they had learned how to grow human embryonic stem cells in the laboratory.

At present the U.S. government has banned federal funding for human-embryo research, although private biotechnology companies are exempt from this ban and have been vigorously pursuing research on embryonic cells. In 2000 the federally funded National Institutes of Health (NIH) ruled that this ban was not necessary for studies using cells derived from human embryos, since these cells are not embryos. The NIH established guidelines enabling federal funds to be used in cases where cells were derived from frozen embryos that were created for the purposes of fertility treatment but were not going to be used and were therefore slated for destruction. Other nations currently differ widely in their policies: France, for example, has forbidden human-embryo research. No laws in Canada regulate human-embryo research, although scientists or institutions receiving federal funding must follow strict guidelines governing research on human embryos. The United Kingdom has laws permitting some forms of human-embryo research, going so far as to create guidelines allowing scientists to apply cloning technology to human embryonic cells to create genetically identical cells for a potential patient.

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But the ethical questions remain: Is it morally acceptable to use tissue taken from human embryos? One recent development might change the nature of this argument. Scientists discovered in 1999 that stem cells taken from adult mice, and not human embryos, also display an ability to change their function. Some stem-cell research continued with the use of adult mouse cells. In 2007 government medical authorities in the United Kingdom approved the creation of embryos that combine human and animal cells for use in medical research. British researchers claimed the hybrid embryos were vital in the fight against disease.

### UNRESOLVED ISSUES FOR THE 21ST CENTURY

A variety of issues face medical ethicists in the 21st century, such as advances in cloning technology, new knowledge of the human brain, and the wealth of genetic data from the Human Genome Project. Population changes worldwide will also affect the course of medicine and will raise issues of medical ethics. By roughly the year 2020, the number of Americans over the age of 65 is expected to double. This aging of the population seems certain to increase the demand on the U.S. health-care system—and to increase health-care costs. Issues concerning equitable access to medical care will likely come to the fore, as resources for senior citizens compete with other costs that must be borne by taxpayers. And, with an increase in the number of elderly citizens, ethical dilemmas surrounding end-of-life issues seem certain to become more prevalent. Determining the quality of life for aged patients sustained by artificial means, deciding when treatment has run its course for the aged—these will be issues that medical ethicists will need to address. As they have for centuries, medical ethicists will continue to ponder, debate, and advise on the most basic and profound questions of life and death.

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## 7.0 References

1. Dr. B. L. Dickson, The Black Race; DNA And Why!?' (3-21), 2022
2. Rochelle Forrester, The History of Medicine (6-62; 63-72), 2016
3. Wagner, The Origins and History of Medicine and Medical Practice (73-101), 2017
4. History of use of Traditional Herbal Medicines (101-127)
5. H. J. O'D. Burke-Gaffney, The history of medicine in the African countries (23 September 1966)
6. Ekeopara, Chike Augustine Ph.D1, Rev. Ugoha, Azubuike; The Contributions of African Traditional Medicine to Nigeria's Health Care Delivery System; Origins of Traditional Medicine (128-143) (2); May 2017
7. WHO, Traditional and Modern Medicine: Harmonizing the Two Approaches (143-172)
8. Caloriesmix, Daily Nutrition Fact (2022)
9. Thomas Nelson, A History of Medicine (1945)
10. Microsoft® Encarta® 2009. © 1993-2008 Microsoft Corporation (2009)
11. Dr. Jenny Scutcliffe and Nanacy Duin, A History of Medicine (1992 (2020))
12. Tarik Catic1, Ivona Oborovic2, Edina Redzic3, Aziz Sukalo4, Armin Skrbo2, Izet Masic5, Traditional Chinese Medicine - an Overview (2018)
13. Ravishankar, B and Shukla, V.J., INDIAN SYSTEMS OF MEDICINE: A BRIEF PROFILE (2007)
14. Yogacharya Dr Ananda Balayogi Bhavanani, YOGA THERAPY: AN OVERVIEW (2016)
15. Toyin Adefolaju, The Dynamics and Changing Structure of Traditional Healing System in Nigeria (2011)
16. Paolo Bellavite1, Anita Conforti2, Valeria Piasere1 and Riccardo Ortolani3, Immunology and Homeopathy. 1. Historical Background (2005)
17. Urs Haefeli, The History of Magnetism in Medicine (2016)
18. Florida Academy, The History of Massage Therapy (2019)
19. A van Tubergen, S van der Linden, A brief history of spa therapy (2001)
20. Jaime Schultz, A History of Kinesiology (2016)
21. Abbé Mermet, Radiesthesia History (2016)
22. Tarik Catic1, Ivona Oborovic2, Edina Redzic3, Aziz Sukalo4, Armin Skrbo2, Izet Masic5, Traditional Chinese Medicine - an Overview (2018)
23. Wikipedia, Asahi Health (2022)
24. Wikipedia, Thalassotherapy (2022)

## History of all Medicine

25. Wikipedia, Imhotep <sup>w</sup>, 2022
26. Wikipedia, History of Acupuncture <sup>w</sup>, 2022
27. Wikipedia, Reflexology <sup>w</sup>, 2022
28. Wikipedia, Shiatsu <sup>w</sup>, 2022
29. Wikipedia, Traditional Tibetan medicine <sup>w</sup>, 2022
30. Wikipedia, Traditional Korean medicine <sup>w</sup>, 2022
31. Wikipedia, Indian Systems of Medicine: A Brief Profile <sup>w</sup>, 2022
32. Wikipedia, Siddha system of medicine <sup>w</sup>, 2022
33. Wikipedia, Unani system of medicine <sup>w</sup>, 2022
34. Wikipedia, List of forms of alternative medicine <sup>w</sup>, 2022
35. Wikipedia, Feng shui <sup>w</sup>, 2022
36. Wikipedia, Qigong <sup>w</sup>, 2022
37. Wikipedia, History of Use of Traditional Herbal Medicines <sup>w</sup>, 2022
38. Wikipedia, Herbal Medicine <sup>w</sup>, 2022
39. Wikipedia, Medicinal Plants <sup>w</sup>, 2022
40. Wikipedia, Origin of Traditional Medicine <sup>w</sup>, 2022
41. Wikipedia, Traditional Medicine <sup>w</sup>, 2022
42. Wikipedia, Traditional African Medicine <sup>w</sup>, 2022
43. Wikipedia, Alternative Medicine <sup>w</sup>, 2022
44. Wikipedia, Health in Nigeria <sup>w</sup>, 2022
45. Wikipedia, Healthcare in Nigeria <sup>w</sup>, 2022
46. Wikipedia, Siddha medicine <sup>w</sup>, 2022
47. Wikipedia, Crystal Healing is Metaphysics <sup>w</sup>, 2022
48. Wikipedia, The History of Physical Therapy <sup>w</sup>, 2022
49. Wikipedia, Electrohomeopathy <sup>w</sup>, 2022
50. Wikipedia, The Autogenic Training Method <sup>w</sup>, 2022
51. Wikipedia, Anthroposophy <sup>w</sup>, 2022
52. Wikipedia, Apitherapy <sup>w</sup>, 2022
53. Wikipedia, Bibliotherapy <sup>w</sup>, 2022
54. wikipedia, Chelation therapy <sup>w</sup>, 2022



55. Wikipedia, Thai Massage <sup>w</sup>, 2022
56. Wikipedia, Japan Kampo <sup>w</sup>, 2022
57. Wikipedia, Reiki <sup>w</sup>, 2022
58. Wikipedia, Rolfing <sup>w</sup>, 2022
59. Wikipedia, Biodanza <sup>w</sup>, 2022
60. Wikipedia, Speleotherapy <sup>w</sup>, 2022
61. Wikipedia, Arab medicine <sup>w</sup>, 2022
62. Wikipedia, Unanai Medicine <sup>w</sup>, 2022
63. Wikipedia, Traditional Mongolian medicine <sup>w</sup>, 2022
64. Wikipedia, Herbal Medicine <sup>w</sup>, 2022
65. Wikipedia, Medicinal Plants <sup>w</sup>, 2022
66. Wikipedia, Traditional Medicine <sup>w</sup>, 2022
67. Wikipedia, Alternative Medicine <sup>w</sup>, 2022
68. Wikipedia, Health in Nigeria <sup>w</sup>, 2022
69. Wikipedia, A History of Metaphysics <sup>w</sup>, 2022
70. Wikipedia, Spiritual Medicine <sup>w</sup>, 2022
71. Wikipedia, A Brief History of Aromatherapy <sup>w</sup>, 2022
72. Wikipedia, Osteopathic Philosophy and History <sup>w</sup>, 2022
73. Wikipedia, Craniosacral therapy <sup>w</sup>, 2022
74. Wikipedia, Origins and History of Chiropractic <sup>w</sup>, 2022
75. Wikipedia, Electrohomeopathy <sup>w</sup>, 2022
76. Wikipedia, Bioresonance Therapy <sup>w</sup>, 2022
77. Wikipedia, Anthroposophic medicine <sup>w</sup>, 2022
78. Wikipedia, The Autogenic Training Method <sup>w</sup>, 2022
79. Wikipedia, Alexander Technique Science <sup>w</sup>, 2022
80. Wikipedia, Apitherapy <sup>w</sup>, 2022
81. Wikipedia, Aquatic therapy <sup>w</sup>, 2022
82. Wikipedia, Chromotherapy <sup>w</sup>, 2022
83. Wikipedia, Energy medicine <sup>w</sup>, 2022
84. Wikipedia, Feldenkrais Method <sup>w</sup>, 2022

History of all Medicine

85. Wikipedia, Horticultural therapy <sup>w</sup>, 2022
86. Wikipedia, Myofascial release <sup>w</sup>, 2022
87. Wikipedia, Hydrotherapy <sup>w</sup>, 2022
88. Wikipedia, Numerology <sup>w</sup>, 2022
89. Wikipedia, Orthopathy <sup>w</sup>, 2022
90. Wikipedia, Radionics <sup>w</sup>, 2022
91. Wikipedia, Urine therapy <sup>w</sup>, 2022
92. Wikipedia, Paraherbal, <sup>w</sup>, 2022
93. Wikipedia, Wellness (alternative medicine) <sup>w</sup>, 2022
94. Dr. Robert F. Stern and Mitchell Bebel Stargrove, The History of Naturopathic Medicine <sup>ϕ</sup>, 2022
95. Microsoft Encarta, Circulation of the Blood <sup>c</sup>, 2009
96. Microsoft Encarta, Physicians <sup>c</sup>, 2009
97. Microsoft Encarta, Medical Ethics <sup>c</sup>, 2009
98. Peter Whoriskey of Washignton Post, The U.S. government is poised to withdraw longstanding warnings about cholesterol - The Washington Post <sup>x</sup>, 2015
99. Dariush Moza arian and David S. Ludwig, The 2015 US Dietary Guidelines – Ending the 35% Limit on Total Dietary Fat <sup>y</sup>, 2015
100. Prof. Oko Offoboche, Natural Medicine <sup>z</sup>
101. Roy Porter, The Cambridge Illustrated History of Medicine <sup>f</sup>, 1996
102. Music Therapy in Traditional African Societies: Origin, Basis and Application in Nigeria <sup>o</sup>



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