



# PROHEALTH PROJECT

## THE ROOTS OF MEDICINE

### Introduction to Greek Medicine

The foundation of modern medicine is to be found in the medicine of the ancient Greeks. There were doctors who made scientific observations and practiced medicine. Surgery was done and herbs were applied. There were even specialists including gynaecologists who specialized in childbirth and diseases of women.

While Greek Medicine, particularly from the 5th century B.C onwards, increasingly used scientific method to develop cures, there still however remained people that considered medicine to be a religion. The ancient Greeks (Hellenic) made important discoveries about the human body and health, so by the sixth century BC, medicinal practices focused largely on a more clinical approach involving observation. Their discoveries were made by firstly studying the human anatomy using dissection and vivisection, finding ways to heal using things such as plants and herbs, then finally practising surgery on the human body using different instruments.

Before the scientific method developed, most people still saw medicine as a religion, and believed that superstitions, evil spirits and punishments caused illness from the gods. The best-known ancient Greek physician Hippocrates, made several important medical discoveries in Ancient Greece. He was born on the island of Cos, living from 460 B.C. - 377 B.C., and is revered as the 'Father of Medicine'. He was the first man to make medicine a profession and to see medicine as a science and not a religion. Hippocrates devised an oath, which every new doctor still swears to this day.

### The Hippocratic Oath

1.
  - i. I swear
  - ii. by Apollo the Physician and by Asclepius and by Health and Panacea and by all the gods as well as goddesses, making them judges [witnesses],
  - iii. to bring the following oath and written covenant to fulfillment, in accordance with my power and my judgment



2.
  - i. to regard him who has taught me this techne as equal to my parents, and
  - ii. to share, in partnership, my livelihood with him and to give him a share when he is in need of necessities, and
  - iii. to judge the offspring [coming] from him equal to [my] male siblings, and
  - iv. to teach them this techne, should they desire to learn [it], without fee and written covenant, and to give a share both of rules and of lectures, and of all the rest of learning, to my sons and to the [sons] of him who has taught me and to the pupils who have both make a written contract and sworn by a medical convention but by no other.
  
3.
  - i. And I will use regimens for the benefit of the ill in accordance with my ability and my judgment, but from [what is] to their harm or injustice I will keep [them].
  
4.
  - i. And I will not give a drug that is deadly to anyone if asked [for it],
  - ii. nor will I suggest the way to such a counsel. And likewise I will not give a woman a destructive pessary.
  
5.
  - i. And in a pure and holy way
  - ii. I will guard my life and my techne.
  
6.
  - i. I will not cut, and certainly not those suffering from stone, but I will cede [this] to men [who are] practitioners of this activity.
  
7.
  - i. Into as many houses as I may enter, I will go for the benefit of the ill,
  - ii. while being far from all voluntary and destructive injustice, especially from sexual acts both upon women's bodies and upon men's, both of the free and of the slaves.
  
8.
  - i. And about whatever I may see or hear in treatment, or even without treatment, in the life of human beings -- things that should not ever be blurted out outside --I will remain silent, holding such things to be unutterable [sacred, not to be divulged],
    - i. a. If I render this oath fulfilled, and if I do not blur and confound it [making it to no effect]
    - b. may it be [granted] to me to enjoy the benefits both of life and of techne,
    - c. being held in good repute among all human beings for time eternal.
  - ii.
    - a. If, however, I transgress and perjure myself,
    - b. the opposite of these



## Hippocrates and his Medicine

Hippocrates and his followers looked at the cause of the disease rather than the symptoms. Hippocrates saw that diseases came from natural causes; he discovered that thought came from the brain and not from the heart, and he saw that the body needed to be treated as a whole and not just a series of parts. The theory of the four humours originated from the works of Aristotle. The idea of Humours is usually credited to Claudius Galen, a Greek physician of the second century A.D. But although he organized the idea more accessibly, he was probably not its creator. Centuries earlier, in the fourth century B.C., Hippocrates wrote of the bodily humours in his Hippocratic Corpus.

The physician believed that the body was made up of four components or “four humours”. The four components are: Blood formed at the heart – Spring – Air, Phlegm in the brain – Winter – Water, Yellow Bile in the liver – Summer – Fire and Black Bile in the spleen – Autumn – Earth. Hippocrates argued that when these four fluids were out of balance disease occurred. The ideal place for a good balance of humours was (naturally) found in the centre of Greek culture, namely in the Aegean and in and around Athens. The components were each linked to a different season, these physicians believed that some diseases were more common in different seasons e.g. fevers were common in Summer/Fire.

Doctors used an important practice called vivisection. Even though this was a cruel practice, medicine couldn't be as advanced as it is today without it. Vivisection – the act of cutting open live animals for medical research (Collins Australian Dictionary 2004). In Ancient times as well as animals, this also involved cutting open humans. Vivisection and dissection were the ways in which anatomists discovered the anatomy of the human body and the way it functioned. Vivisection was an extremely emotional issue; people didn't believe that cutting up a human being whilst dead, let alone alive was respectful, so it was condemned in some countries. However, during the Ptolemaic age in Egypt it became possible for Greek and other anatomists to dissect and vivisection in a free and unrestricted environment. This change in attitude was due to the philosophical teachings of Aristotle. The ready supply of criminals able to be used for vivisection also made this controversial practice possible.

Aristotle never possessed any inclination to open a human being, although he performed many dissections and vivisections on animals seen as ‘near to man’, these being Barbary apes, dogs and pigs. The only chances of his observations came from a wounded mutilated person. Via vivisection, anatomists found that the heart pumps blood, humans breathe through their lungs, they cut flesh from animals and watched it move independently from the heart as proof of arteries and discovered the nervous system from live brains.

Greeks knew that health and fitness (philosophy regimen) affected their quality of life. Most people became concerned with the amounts of exercise they had, what they ate, drank and made sure they had enough sleep. Ancient Greeks started healing with religious methods and then scientific methods were used. Healing that was successful never involved medicines that perform the functions of today's modern anti-biotic. They were capable of disinfecting wounds with alcohol and certain herbs, however once an infection is set in, there was little they could do but



bolster the immune system and hope. Consequently many people died in Ancient times from only minor injuries, with even small cuts proving fatal. Health was seen as a proper balance of the four humours, so if these were out of balance, disease occurred. Treatment of a disease is an attempt to rebalance the four humours; this could be done by diet, exercise, administering purgatives, diuretics or emetics, and bloodletting.

Herbs and ointments were used to heal. For example, they used the stinging nettle as a tonic and blood purifier, and mustard was used as an anti-bacterial and anti-fungal. They gained much of their knowledge of essential oils from the Egyptians. They used olive oil in their enleurage processes and the aroma of some flowers was used to relax or uplift.

Those who saw medicine as a religion worshipped Apollo - god of medicine and his son Aesculapius – god of healing. The cult of Aesculapius, a religion and a system of therapeutics was at its peak from the fifth century B.C. to as late as four hundred A.D. Worshippers built large temple complexes all over the Mediterranean in Aesculapius's name. Throughout the period and into the era of the Roman Empire, people would visit these temples to be healed. At the Aesculapion (one of the temples) a patient would be expected to partake in a number of rituals, which were believed to cure the sick. These rituals involved the making of sacrifices, massaging from physicians, purificatory preparation baths, fasting and finally the patient spending a night in the god's precinct (temple), a process known as 'sleeping in' (enkoimesis, incubatio). Snakes tongues became a symbol of healing and remained an ingredient in medicinal potions well into the middle Ages. Aesculapius was often pictured carrying a staff with a snake wrapped around it and the snake staff became the caduceus, the symbol of medicine.

Healing by medicine was not always successful, so if at last a person was not able in any way to be cured and was so sick that nothing could be done to help, permission for Euthanasia would be granted. Pythagoreans didn't agree with euthanasia, but if they foresaw he/she was going to have a miserable and dishonourable life, the sufferer's decision was respected.

Some health problems couldn't be healed using herbs or ointments and required other means. Only when absolutely necessary, after a reasonable period of observation and thought did a doctor resort to surgery, which in a time without anaesthetics was extremely painful and not always successful. Surgery was usually done only as long as the patient had courage and the doctor had good tools and experience. The patient's chances of survival increased if their head or abdomen was not involved. Trepanning was a surgical operation carried out to let evil spirits out of the patient's head. It was a connection with religion, if someone had bad headaches, it meant they had evil spirits inside and they had to let them out.

A cursory reading of Celsus summary of surgical techniques as they existed in the first century showed sure knowledge of the human anatomy. A surgical ointment was sometimes used after cleansing a wound called aposticon chirurgicum. The designs of many of the medical instruments in ancient times have remained unchanged, still being used today. Today's instruments are used only for surgery, unlike the ancient times. With lack of knowledge in hygiene, the same instruments for other purposes. Galen mentioned that the strigil, a curved piece of metal with a handle used for scraping oil and sweat off the body after exercise was often used to



get into small openings, so as Galen said, “After having heated the fat of a squirrel in a strigil, insert it into the auditory canal.”

The invention of these instruments meant they improved as new shapes were devised. Gradually new metals and alloys were found to provide sharper edges and cheaper equipment. Most instruments were made of bronze and occasionally silver. Iron was never used as it was forbidden by the Greeks and so never used on religious grounds. Some instruments were manufactured by specialist blade makers who specialized in medical instruments rather than by an ordinary craftsman.

The Romans employed many Greek physicians and through them the Greek discoveries in medicine gradually spread throughout the ancient world. Greece was a country that gave birth to some of the most important medical pioneers in human history. Through Continuous studies, they changed people from seeing medicine as a religion. Their study of disease and the human body to the scientific method has resulted in the advanced medical knowledge we have today.

## Herbal Medicine

The Greeks had an extensive knowledge of herbs and were aware of many herbal properties. But though they did perform scientific observations, they did not perform scientific experiments.

The common herbs used in Ancient Greece:

- anise
- black hellebore
- cassia
- cucumber, wild, root of (squirting cucumber)
- cumin
- cyclamen, root of
- frankincense
- germander
- honey
- lettuce, wild
- myrrh
- olive oil
- opium poppy
- parsnip
- seseli

Aristotle's pupil Theophrastus wrote extensively about herbal medicine.

## Greek Orthopaedics

Orthopaedics originally was the branch of ancient Greek surgery that concerned itself with reducing or realigning bodily distortions. It is thought that it was strongly influenced by the techniques of treating athletes in the gymnasia. As far as written sources are concerned, the basic information comes indirectly from three



Hippocratic treatises: *Joints, Fractures, and Surgery*. These original works are no longer in existence. Their content was introduced to the Western world through Greek manuscripts, compiled by Apollonius in the first century BCE and by Soranus in the second century CE. Of all the subjects covered in the Hippocratic corpus, those volumes treating dislocations and fractures demonstrate the most affinity to modern technique and practice.

## What We Can Learn From Ancient Greek Medicine

History doesn't record whether the first Olympic athletes in 776 B.C. went to sports medicine doctors, or if they took performance-enhancing substances.

But the record does indicate that even 3,000 years ago, medicine was considered to be a good career path: "A physician is worth more than several other men put together, for he can cut out arrows and spread healing herbs," says a character in Homer's *Iliad*, referring to a battlefield medico who was the Trojan War equivalent of Hawkeye Pierce from *M\*A\*S\*H*.

Today's doctors don't spend much time yanking out arrows, and while some still spread healing herbs, we call it "alternative and complementary medicine" and hope that Medicare will cover it.

Still, modern medicine is riddled with relics of ancient Greek science, from versions of the Oath of Hippocrates that some graduating medical students still utter ("I swear by Apollo, the Physician and Asclepius and Hygeia and Panacea and all the gods and goddesses ..."), to the techno-jargon that doctors spout. According to Dorland's *Illustrated Medical Dictionary*, nearly 90% of medical terms used today have Greek or Latin roots. So the next time someone tells you you've got hyperkeratosis, you can reply, "I don't know what it is, but it's Greek to me!"

Yet apart from confusing technical terms and solemn oaths, do we really owe the ancients any thanks for modern medical wisdom? It depends on what bits of medical wisdom you value, historians say.

According to legend, the field of medicine was created by the centaur Chiron after he was wounded by Hercules and needed to heal himself. Chiron is also said to have passed on his medical wisdom to the hero Achilles. Whether the centaur invented the waiting room or managed care is unknown.

Greek gods, goddesses, and demigods such as Apollo, Asclepius, Hera, and Hygea were also credited by ancient worshipers with healing power. But it was the revered Greek doctor Hippocrates, who lived around 400 B.C. who is given the nod as history's first medical superstar.

"Hippocrates is generally credited with turning away from divine notions of medicine and using observation of the body as a basis for medical knowledge. Prayers and sacrifices to the gods did not hold a central place in his theories, but changes in diet, beneficial drugs, and keeping the body 'in balance' were the key," notes an article on the National Library of Medicine's History of Medicine division web site.

OK, so the old boy knew a thing or two about maintaining health. But the same source goes on to note that Hippocrates had some ideas that, while all the rage in fifth century B.C., aren't given much credence in 21st century A.D.: "Central to his physiology and ideas on illness was the humoral theory of health, whereby the four bodily fluids, or humours, of blood, phlegm, yellow bile, and black bile needed to be



kept in balance. Illness was caused when these fluids became out of balance, sometimes requiring the reduction in the body of a humour through bloodletting or purging."

In truth, what Hippocrates and his contemporaries didn't know about medicine could fill a book, but what they thought they knew could also fill a book, or even a whole set of encyclopaedias.

Nearly 60 treatises on everything from diagnosis, infectious diseases, paediatrics, and surgery have been attributed to Hippocrates, but these works, known as Hippocrates' "corpus" were probably penned by several different authors spread out over a couple of centuries, and the treatises often contradict one another, according to the NLM.

"If you read through the corpus, what you find is not so much medical knowledge that's of use to us, but you find a way of thinking about medicine -- the obligation of the doctor to his patient and to his fellow doctors and so forth," Ann Ellis Hanson, PhD, senior research scholar and senior lecturer in Classics at Yale University in New Haven, Conn., tells WebMD.

## Teaching New Docs Old Tricks

Hanson says that like the writings of Plato on questions of justice and ethics, and the writings of Aristotle on biology and physics, the medical knowledge of ancient Greece was an attempt to put the world "into if not the physical control, the mental control of human beings."

She notes that while the ancients also performed medical research, they did so only to confirm what they actually knew, rather than to test an unproven idea as we do today.

But by the middle of the third century B.C., doctors in Alexandria, Egypt, were beginning to conduct systematic dissections of animals and human bodies, and even (if you're squeamish, you may want to skip this part) vivisection (dissection of a living body).

The knowledge of anatomy gained through these practices was put to use by another famous doc of antiquity, known only as Galen. Born in Asia Minor in the year 131, Galen earned his reputation as a surgeon to the gladiators of Pergamos, an ancient Greek city located in what is now Turkey.

After nearly four years of patching up hacked-up combatants, Galen moved to Rome where he soon gained fame as an anatomist and as a doctor to Roman emperor Marcus Aurelius and three of his successors.

Galen wrote on anatomy, physiology (how the body functions), and treatment; his surviving works (many which were lost after the fall of the Roman Empire in the fifth century, later to be rediscovered in the libraries of the Moorish empire) had a profound influence on European medicine.

Like any good scientist, Galen was an observer and an experimenter, commenting, for example, with a good deal of insight into the nature and function of the kidneys and the secretion of urine. In his treatise titled *On the Natural Faculties*, Galen matter-of-factly points out that "practically every butcher is aware of this, from the fact that he daily observes both the position of the kidneys and the duct (termed the ureter) which runs from each kidney into the bladder, and from this arrangement he infers their characteristic use and faculty."



"Galen, for all his mistakes, remained the unchallenged authority for over a thousand years. After he died in 203 C.E., serious anatomical and physiological research ground to a halt, because everything there was to be said on the subject had been said by Galen, who, it is reported, kept at least 20 scribes on staff to write down his every dictum," describes an article on the web site of the historical collection of the University of Virginia.

## **What's Old Is New**

Even though we frown on bloodletting and the notion of humoral balance these days, at least a few of the ancient's ideas as embodied in the Hippocratic Oath, such as abortion and euthanasia, still resonate today, Hanson tells WebMD.

In about the middle of the first century A.D., she notes, the Latin writer Scribonius Largus cited the Hippocratic Oath in support of his anti-abortion position. "His argument is that medicine is an art of healing, therefore abortion is not right," Hanson says. "And then 50 years later you get the Greek doctor Soranus actually quoting the Oath, and saying yeah, but there's another treatise in the corpus that does permit abortion, and therefore I'm going to follow that because there are times when you have to abort because the woman is going to die without it."