

## **Medicine in ancient Egypt and its relevance today\***

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**A**ESCULAPIUS was not the Father of Medicine, nor was the first Health Centre at Epidauros or even on Kos. There was a man called Imhotep, a Leonardo da Vinci of a man, political counsellor, architect and physician to the Pharaoh Zoser of Egypt in 2760 BC. He was the architect of the Step Pyramid at Sakkara, said to be the oldest stone building in the world. In the eighth century BC, during the Persian occupation of Egypt, this man was deified. When the Greeks came he was identified with Aesculapius.

On the walls at the temple at Kom-Ombo there are stone cut-outs of Imhotep and two goddesses apparently about to operate on the eye of a Pharaoh.

Medicine in Ancient Egypt was inevitably mixed with magic. There was no sharp line between medicine and religion. Disease was often believed to have been sent by the Gods as a punishment, or by evil spirits in the body which had to be evicted in various ways. There were many rituals, spells and charms of all and every kind mixed up with extremely practical medicine.

The first doctors were specialized priests of the Goddess Sekmet (lion-headed) or of Thoth, the Ibis-headed God, who is said to be the inventor of mathematics. He used his long, curved beak to wash the residues of digestion from the lower part of the gut (enema). Horus, the Falcon-headed God, protected the oculists, while the goddess Thoeris, in the form of a pregnant hippopotamus standing on her hind legs, looked after women in labour.

The Egyptians relied on several Gods for their Ministry of Health, not on Aesculapius alone as did the Greeks. The first medical schools were in the temples where there were "Houses of Life". Here met together scribes, scholars, philosophers and scientists, so they were not narrow in outlook. Perhaps they were forerunners of the universities.

The Priest-Physicians came highest in the medical hierarchy, being doubly trained in both magic and practical medicine. They would attend the Pharaoh and the Royal Family. They apparently practised both medicine and surgery, since their Heiroglyphic sign is a pot for drugs and a lancet. The physicians to the Court and the nobles had high status and remuneration. They also received lavish presents of all sorts from their satisfied patients. Many examples of these can be seen carved on the walls of the tombs.

After them came the lay physicians. They had access to the Temples for advice and for use of the libraries, but their chief training would be by apprenticeship to their father, uncle or a near relation. Qualifying examinations have not been described, but it is likely that there was some sort of proficiency test before a man was permitted to

\*The quotations and most of the factual information for this paper were derived from the fascinating book *Magic and Medical Science in Ancient Egypt* by Professor Paul Ghalioungui of Cairo. The carvings on tombs and in temples were seen by J.F. and E.B.H. during a visit to Egypt, and the London Papyrus in the British Museum.

practise. Some women practitioners were mentioned. This type of doctor was a state employee. A definite state medical service with a strictly graded hierarchy and definite rates of pay for posts of varying responsibility was in action.

Large building works, burial grounds, the armies, etc. all had their own medical services (industrial medical officers). These were not nearly so highly rated, and some of them received little more pay than the manual workers they attended.

There was also a medical administrative service with its own ranks of inspectors, chiefs or regional administrators. In addition to organization the members of this Service seem to have had more active treatment to do than our own public health service.

There were special Temples of Healing at Denderah, Deir-el-Bahari and Memphis. At Denderah there are remains of sanitary installations with water channels. These may have been for purification baths prior to entering the temple, or for some form of hydrotherapy. Denderah has a most beautiful ceiling illustrating the practicality of the Egyptians coupled with their strange beliefs. The Goddess Nut, who supported the sky, was supposed to swallow the sun every night and give birth to it in the morning. On the ceiling her body extends from end to end with her arms hanging down at one end and her legs at the other. The whole sky in between is still a brilliant blue dotted with golden stars. The orange sun with radiating rays is entering her mouth and emerging again from her vulval region. The whole was most beautiful and impressive. It was amazing how much vivid colour could have remained so unfaded for several thousand years. At Deir-el-Bahari and in the Cairo Museum there are carvings and a statue of Queen Hatseput drinking directly from the udders of the Goddess Hathor in the form of a cow, and thereby receiving divine (or psychological) as well as physical nourishment. In a Temple at Sakkara, carved and painted on the stone wall is a hippopotamus in labour. This is quite small but most life-like. The infant's head is just emerging as a vertex presentation. Alas, a crocodile with gaping jaws is waiting to receive it.

Much of our knowledge of Egyptian medicine has come from the writings on medical papyri of which there are famous examples in the British Museum, and in Berlin, New York and California. There are also carvings of various illnesses and treatments on the walls of the tombs and temples.

The anatomy of the Egyptians was much more advanced than their ideas of physiology and pathology. This was largely due to their practice of embalming the dead which led to a very thorough examination of the whole body by a specially trained sect of priest technicians. Some wore a head-dress of Anubis, the Jackal God, to carry out this lengthy procedure. As the viscera were removed *in toto* soon after death but examined *in vitro*, it was not surprising that they became a little muddled about which tubes joined up with which. There was no clear distinction between blood vessels, gut, nerves and lymphatics. The stomach was supposed to be the mouth of the heart (*cf.* our cardiac orifice). They did, however, realize that the heart was the start of the circulatory system of vessels that went to all parts of the body. They had an extremely good knowledge of the pulse in every place in the body where it can be felt superficially. The feeling of this played a large part in prognosis and diagnosis and has been very fully described on the papyri.

The terms "escape of the heart", "heart prick", "forgetfulness of the heart" suggest that they recognized tachycardia and extra-systoles, angina and dropped beats. What could be more suggestive of a coronary attack than "If a man has pains in his arm, breast and one side of his heart death threatens him".

Disease could enter from the outside and be spread by the vessels. It could be got rid of by the excreta, faeces, urine, saliva, sweat or nasal mucus. If no cause was found it was thought to be occult, punishment by the gods for sins or insults, vengeance of the

dead or of living enemies acting through sorcerers. Many exogenous causes of disease were realized. The patient's diet might be unsuitable or excessive. The latter was very common among the rich who were much given to feasting and banqueting. Obesity was a frequent complaint. It was quite common for a wealthy man to spend several days a month fasting and employing purges, emetics and enemata to counteract his previous excesses. On the other hand, among the poor, famine and all degrees of starvation and deficiency diseases were common, particularly if there had been a failure of the Nile flood in any year, leading to a severe diminution of food crops.

Worms of all sorts were prevalent and frequently found by the embalmers, who probably even over-rated their rôle in the causation of disease. Bilharzia was known and described "abdominal distension, pain, blood-stained evacuations" etc. but they are more likely to have considered this disease to be due to some of the many larger and more obvious worms so frequently found alive and wriggling in the alimentary tract after death than to the small bilharzia themselves.

Physicians were taught to be kind and considerate to their patients and not to mock at them ("caritas"). They took a detailed history and examined the outside of the body thoroughly. The expression, colour, state of mind and memory, hearing, sight, all secretions and excreta, swellings or tumours, the smell of sweat, breath or wounds was noted. Palpation followed, especially of the abdomen, any tumours and of the pulse. Percussion was also used. "Knock with thy fingers over his cardia". Functional tests were then performed. "His mouth is open and cannot close" suggests a dislocated jaw. Hernia was recognized by a tumour which gave an impulse on coughing.

There were few named diseases but syndromes were described. Fractures of the skull were known to cause neurological complications; injuries of the spinal column might lead to paralysis of the limbs. There was a general recognition of a connection between the brain and nerves and voluntary movements. Having taken the history and made his examination the doctor placed the disease into one of three categories:

1. One which he could treat and certainly cure.
2. One which he could attempt to cure.
3. One which he considered hopeless. In this case no treatment was attempted at all. It included the more serious injuries and cases of snake bite, for which at that time there was no remedy.

Tetanus usually fell into this latter group. "If his mouth is bound and he suffers from stiffness of the neck this is an ailment not to be treated". The unfortunate patient was then often handed over to the mercies of the pure magicians and sorcerers. "Leave him at his mooring stakes until he recovers" suggests a conservative approach for some cases.

Surgery as we know it today was very limited in ancient Egypt. There was, however, one branch in which there was plenty of opportunity for practice and experience. This was 'casualty', ie: accident and injury surgery including the treatment of wounds and fractures. The extremely valuable and interesting document called "The Edwin Smith Papyrus" (alas, in America) which gives the most detailed information on these subjects. It is more practical and less full of magic and spells than the other medical papyri in London and Berlin. Breasted, who translated it in 1930, attributes much of it to Imhotep. Imhotep would have had great opportunities, while building his pyramid, for the observation and treatment of all sorts of injury that would have befallen large numbers of men working with extremely primitive methods on enormous masses of stone. He recommends that a fractured clavicle should be reduced thus: "Place him prostrate on his back with something folded between his shoulder blades; spread out his shoulders to stretch apart his collar-bone until the break falls into place. Make two splints of linen and apply to his upper arm. Bind it and treat with honey till he recovers."

To reduce a dislocation of the jaw: "Put thy thumbs upon the ends of the two rami

of the mandible and thy fingers under his chin and cause them to fall back so that they rest in their places."

Fractures being very common, and still diagnosable in mummies and skeletons, much is known about their treatment. Many splints have been found in the graves, either of linen stiffened with resins or bark sticks padded with linen. Fractures of the nasal bones were treated with rolls inside the nose. Fractured femurs have been found with a good deal of shortening as traction had not been devised.

There were many fractures of the ulna, thought to be due to direct blows when the forearm was raised in defence. Wounds were treated in many and various ways, some of which we should approve today, some not. A clean-cut wound was brought together by adhesive tape or stitching. A dirty wound was treated first with fresh meat (as a haemostatic), later with astringent herbs and honey. The latter is said to be hygroscopic and so would act somewhat like glycerine.

Before the days of antibiotics many of us will remember the glycerine and phenol treatment of carbuncles. There are also a number of intelligent people today who seriously consider honey to be almost a cure-all. Poultices of sour or mouldy bread were widely used. Though at first this sounds rather unpleasant, they may have contained penicillin.

Circumcision was evidently widely practised, though it may have been more of a religious rite than a surgical necessity. There are several carvings in tombs and temples of what appears to be mass circumcision of boys or young men. The best known of these is at Sakkara. One of the unfortunate victims has his hands pinioned behind his back by an assistant while the operator is wielding a knife, probably of flint or copper. Some sort of opium ointment was known, and may have been used as a local anaesthetic to allay the pain.

There is also a peculiar instrument in the Cairo Museum. It is like a slit, elongated triangle which is said to resemble one used by Jewish and Arabic priests until recent times. On the walls of the temple at Kom-Ombo are stone carvings of many instruments. This temple was built about 64 AD, when iron and metals other than bronze were known. There is a definite saw, though amputations have not been described; knives, drills, pincers and forceps of various shapes, hooks (abdominal retractors or squint hooks?), spatulae, scales, something like an eye bath, shears or scissors and various spoons. These have been considered as surgical instruments and described as such by the guides for many years. Professor Ghalioungui casts doubt on this assumption and thinks they are more likely to have been builders' tools. Perhaps we shall never know for certain.

Obstetrics and gynaecology were important subjects to the ancient Egyptians, since the pharaonic descent was through the female line. Examinations were made of the vulva and of the vagina as far as the cervix. Prescriptions were given for discharge, prolapse, to empty the uterus or prevent a threatened miscarriage. The confinement was generally supervised by women. The patient knelt or squatted on bricks to raise her from the floor. The infant was received in front while a friend supported her back. Later 'delivery chairs' were devised which are still used by some of the fellaheen. The umbilical cord was severed with an obsidian knife. There were so-called 'birth rooms' in several temples, but whether they were actually used as such is not clear.

Both contraceptives and abortificients are mentioned in the medical papyri, though they were not in great demand. Children were highly valued as a potential source of labour. Sub-fertility was more important. To assess this the woman was made to sit on a mixture of dates and beer. If she vomited she would conceive, but not otherwise. Alternatively, a 'fumigation' was made under her. If urine was passed at the same time as wind and faeces, she would conceive. The introduction of garlic into the vagina was another test for fertility. If it was perceptible in the woman's breath

the next day she was fertile. This may have showed the potency of the Fallopian tubes.

Antepartum sex determination was also attempted. The woman was instructed to urinate on wheat and barley. If the wheat sprouted she would give birth to a son; if the barley, to a daughter. History does not relate if she always had heterosexual twins should both grains sprout!

Pediatrics is not mentioned as a speciality, but 'poppy' was used to stop children screaming, and fried mouse for teething pains. If a baby was so ill that it turned its head to the ground and groaned it was likely to die. It was usual to continue breast-feeding for about three years.

Eye diseases were very prevalent, and there were many blind. Being difficult to treat they were usually considered as punishment by the gods. There are many carvings and paintings of blind people at work; a blind harpist, blind singers and a blind measurer of land. The latter was thought to be more likely to be impartial, and less likely to cheat. Night blindness was treated by ox liver (vitamin A?) and by the blood and urine of bats. Blepharitis was treated with drops of aloes, copper sulphate and acacia juice. For trachoma, which was very common, yellow ochre, calcinated red natron and lead sulphide were used. Also recommended were vultures' eggs, pelicans' and crocodiles' excreta, and powdered black flint. Perhaps it is not surprising that there were so many blind people! Cataract was common, but the first account of any operation for this was not until the second century AD.

The nose was recognized as giving air entry to the lungs, and it was realized that if breathing stopped the patient was dead. Deafness, inflammation and discharges from the ear were described. Many local remedies were advised for these, including various oils, honey, powders, and sometimes the dung of animals or the stinging tail of a scorpion (counter-irritation).

The skin was subject to many injuries, ulcers and weeping lesions. For these there were many applications such as the blood of a black calf, shell of tortoise, womb of she-cat, genitals of a bitch (for ovarian hormones?) or the fat of a black snake. Black animals seemed to produce more powerful remedies than those of a lighter colour. For alopecia castor oil was used, or alternatively the dirt of flies or that from under the finger-nails.

Filled dental cavities have been found in the teeth of mummies, but abscesses were more common. Dentists had a lower status than doctors, and might be attached to them as assistants, as were nurses, masseuses and bandagists.

The materia medica was rich if somewhat bizarre. Our knowledge of the drugs and applications used comes from the medical papyri. Inhalation anaesthesia was not described, but opium, hyoscyamus and a concoction of powdered stone and vinegar were applied locally to lessen pain. Pomegranite and turpentine were used as anthelmintics; calcium carbonate and magnesia as antacids; colocynth, castor oil, aloes, senna and figs as laxatives. They also used salts of lead, copper, mercury, antimony, alum, ammonium sulphate, soda and potash for various purposes. Milk, honey, flax and wax were among the organic substances in regular use, as well as some of those mentioned before of rather more doubtful efficacy. Accurate instructions were given for dispensing these substances as into drinks, pills, inhalations, fumigations, pessaries, suppositories, ointments and eye-drops. All quantities were by volume. Weights were not used until the Greeks came.

In the foregoing few examples of medical practice in Ancient Egypt most of the mumbo-jumbo has been omitted, and the more practical parts only indicated. Some of them may seem somewhat strange to us, yet it is surprising how much there is that still has some counterpart in modified form. When one thinks of some of the practices of 'fringe medicine' today, for example radiaesthesia, acupuncture, homeopathy, the

wearing of copper bracelets for rheumatism and the number of people who believe in them, it is evident that there is still an enormous demand for magic by the general public. Probably in another 3,000 years' time our present practices and beliefs will be considered by the future inhabitants of the globe as strange as those of Ancient Egypt seem to us today. One can but hope that as many of our ideas will survive.

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**“Editors whose deeds excelled”**

“Though an editor may find that his finest words lead only to more words, his deeds less consciously aimed at influencing doctors may paradoxically be much more important. If he insists that no criteria other than quality and pertinence be used in selecting journal articles, that his published reports express certain standards of ethical research, and that the best technics of communication at his command be used, how can he help promoting similar goals for the teachers and researchers who write his articles, and for the varied classes of readers who put the information he publishes to use? Conversely, a medical literature responsive to vested interests, to priority claims, to iteration of the same idea, and to vulgarization merely designed to attract customers will nourish similar attitudes in those who create and those who apply medical knowledge.”

“A fortnight ago marked the retirement of Alexander Gutman and Russell Elkinton, editors of two of America's most distinguished journals. Gutman founded *The American Journal of Medicine* 25 years ago and has been its editor ever since. Elkinton, in an 11-year span, vitalized a routine operation and made the *Annals of Internal Medicine* a publication that is at once current and yet dependable. What two better journals devoted to internal medicine exist in the world? Their circulation figures and number of citations provide objective measures of what their editors have accomplished. But such figures merely prove that good guys do win ball games—although it may take 11 or more innings. Far more important, by their example these good guys must have persuaded both their contributors and readers that the ideals of quality and rectitude, much denigrated these days in favor of immediate applicability and easy adjustment, are the verities that must guide medical practice or, for that matter any worthwhile human effort.

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*The New England Journal of Medicine* July 1971. P. 177.