

ANCIENT WISDOM AND MODERN MEDICINE

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This paper focuses on four health-related topics derived from Greco-Roman literature or archaeology: keeping healthy, Stoicism, healing sanctuaries and identifying new medicines. Based on an analysis of the available information it is suggested that developing a better understanding of Greco-Roman healthcare and health-related activities within the Greco-Roman world has the potential to impact on modern-day healthcare, population well-being and scientific knowledge.

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Introduction

The last century has been characterised by phenomenal advances in the health sciences and the delivery of healthcare. A raft of new therapies, surgical techniques and diagnostic tools are now available to many patients.

But there are costs and consequences of such an increasingly narrow focus on biomedicine and a “pill for every ill”.¹ For example, although we have witnessed a remarkable increase in lifespan over the last one hundred years there is an additional requirement to ensure that individuals lead healthy lives as opposed to just long lives.² Within the UK lifestyle-related conditions arising from smoking, alcohol misuse, inactivity, obesity and poor diets are becoming a major concern. In 2010, 7.4% of the population had been diagnosed with type 2 diabetes and this is expected to rise to 10% by 2030.³

More broadly, by viewing the body more akin to a machine it is suggested that some fundamental aspects of the healer-patient relationship including humanity and empathy are being eroded.⁴ It is also important to appreciate that healing is multidimensional encompassing psychological, emotional and social elements alongside the biological.⁵

Although many of today’s doctors and health scientists seem keen to exploit the past as a source for amusing anecdotes there has been less interest in considering ancient writings or archaeological findings as tools to assist with modern-day healthcare or population well-being dilemmas. This partially arises from a view that the thinking, medicine or science of

¹ Joan BUSFIELD, ‘*A pill for every ill*’: *Explaining the expansion in medicine use*, *Social Science & Medicine* 70, 2010, pp. 934–941.

² Eileen M. CRIMMINS, *Lifespan and Healthspan: Past, Present, and Promise*, *The Gerontologist* 55, 2015, pp. 901–911.

³ Nick SUMMERTON, *Better Value Health Checks: A Practical Guide*, Abingdon 2018, p. 160.

⁴ Edmund D. PELLEGRINO, *Toward a reconstruction of medical morality*, *The American Journal of Bioethics* 6, 2006, pp. 65–71.

⁵ Wilbert M. GESLER, *Healing Places*, Rowan – Littlefield 2003, pp. 1–19.

an earlier time is inherently inferior to that of the present and the past is best portrayed as a series of events leading to a better future.⁶ The underlying assumption is that things only change by improving and this progress has brought us to where we are today.

Seeking to derive information from the past that might be able to furnish today's healers and health scientists with fresh insights is also extremely tricky. There are particular requirements to guard against imposing our modern values, beliefs, and attitudes onto medical history by recognising that "*the past is a foreign country, they do things differently there*".⁷ We also need to be careful that we do not mould the past into an imaginary country. Mistranslations or misunderstandings of ancient literature, rearranging archaeological sites for tourists or re-interpreting artifacts based on today's sensibilities can easily lead to misinterpretations of the past. For example, the ancient medical words *phthisis*, *apoplexy* and *podagra* cannot simply be equated to modern-day tuberculosis, stroke or gout respectively. The archaeological identification of aqueducts, bathhouses and drainage systems probably says more about the aspirations of an ancient provincial town to appear 'Roman' than any particular concern for today's ideas about 'public health'.⁸

This paper highlights four topics distilled from the literature and archaeology of our Greco-Roman past that have the potential to impact on modern-day healthcare, population wellbeing or scientific knowledge: keeping healthy, Stoicism, healing sanctuaries, and identifying new medicines.

Keeping Healthy

The Greco-Romans and their healers attached a great deal of importance to following a particular lifestyle (termed 'regimen', 'hygiene' or 'dietetics') with a view to maintaining health. The first century medical writer Celsus stated: "*medicine was divided into three parts, so that there was one which healed by regimen, another by drugs and a third manually. The Greeks named the first dietetics, the second pharmaceuticals and the third surgery*".⁹ Scribonius Largus, a physician to the Emperor Claudius, also emphasised the importance of balance in ensuring that drug treatments are used appropriately "*the physician helps patients by following certain steps. First, he tries to treat by allowing the appropriate food at the appropriate time; then, if the patient does not respond to this treatment, medicaments are given*".¹⁰

The second century physician and author Galen proposed that lifestyle measures should be targeted at three groups: those who appear healthy already, those who are recovering from an illness and those who are in a state intermediate between health and illness (e.g. the elderly or individuals experiencing fatigue).¹¹ In *Ars medica* (The Art of Medicine) he outlined the six key elements (later termed the non-naturals) to address: "*one from association*

⁶ Jacalyn DUFFIN, *History of Medicine*, Toronto 2010, pp. 444–445.

⁷ David LOWENTHAL, *The Past is a Foreign Country*, Cambridge 1985.

⁸ Nick SUMMERTON, *Greco-Roman Medicine and What It Can Teach Us Today*, Barnsley 2021, pp. 68–69.

⁹ Walter George SPENCER, *Celsus: De Medicina (A Translation)*, Cambridge (MA) 1971, Pro 9.

¹⁰ Johann Michael BERNHOLD, *Scribonii Largi. Compositiones Medicamentorum (Epistula dedicatoria)*, Milton Keynes: Lightning Source, 1786.

¹¹ Ian JOHNSTON, *Galen: Thrasybulus (A Translation)*, Cambridge (MA) 2018.

with the ambient air, another from movement and rest of the whole body and its parts, a third from sleeping and waking, a fourth from those things taken in, a fifth from those things excreted or released, and a sixth from the affections of the soul.”¹² It was also seen as extremely important to tailor the approach to individuals considering age, gender, lifestyle, constitution, co-morbidities and place of residence. In addition, there was a requirement for balance between the various components of any lifestyle approach and to ensure that a person was not under- or over-emphasising any specific element. Galen wrote: “For just as it is impossible for the cobblers to use one last for all people, so it is impossible for doctors to use one plan of life that is beneficial to all. Because of this, then, they say it is most healthy for some to exercise sufficiently every day, whereas for others, there is nothing to prevent them passing their lives wholly in idleness. Also, for some it seems to be most healthy to bathe, whereas for others it does not.”¹³

The purposes of the various lifestyle measures were to keep the *krasis* of the body and its parts within the normal range (i.e. ensuring the appropriate mixture of humours and qualities), to maintain an acceptable level of ‘innate heat’, to preserve satisfactory levels of *pneuma* and to regulate the amount and nature of the superfluities arising from concoction within the body. Unfortunately, to modern doctors such ancient theoretical underpinnings are both confusing and make little scientific sense leading some to abandon their quest to learn anything useful from Galen’s writings.¹⁴

Keeping healthy is always important but even more so when an individual is faced with any serious illness. Galen’s approach (honed during his time caring for individuals suffering from the late second century Antonine Plague)¹⁵ assumed fresh relevance when the modern world was confronted by the COVID-19 pandemic. However, adhering to Galen’s lifestyle guidance and focusing on the six ‘non-naturals’ can be very hard work.¹⁶ During the late Middle Ages, many individuals certainly preferred the quick results of purging or bleeding to correct their excesses and, today, some people would probably opt to simply swallow a pill while resting on the sofa in a warm home. Worryingly a recent study has shown that individuals at risk of strokes or heart diseases who have been put on medicines to lower cholesterol or cut blood pressure were more likely to become physically inactive and gain weight.¹⁷

Wilkins and his colleagues at the University of Exeter Classics Department have sought to adapt Galen’s ideas on hygiene for today’s world.¹⁸ They focused on five issues for maintaining wellbeing: food and drink, exercise, sleep, mental health and the environment in addition to developing an appropriate balance between the individual elements. This

¹² Ian JOHNSTON, *Galen: On the Constitution of the Art of Medicine; The Art of Medicine; A Method of Medicine to Glaucan (A Translation)*, Cambridge (MA) 2016, sub-section 23.

¹³ I. JOHNSTON, *Galen: Hygiene (A Translation)*, Cambridge (MA) 2018, sub-section 5.11.

¹⁴ I. JOHNSTON, *Galen: Hygiene (A Translation)*.

¹⁵ Robert J. LITTMAN – Michael J. LITTMAN, *Galen and the Antonine Plague*, *The American Journal of Philology* 94, 1973, pp. 243–255.

¹⁶ Antoinette EMCH-DÉRIAZ, *The non-naturals made easy*, in: Roy Porter (ed.), *The Popularization of Medicine 1650–1850*, London – New York 1992, pp. 134–159.

¹⁷ Maarit KORHONEN – Jaana PENTTI – Juha HARTIKAINEN et al., *Lifestyle Changes in Relation to Initiation of Anti-hypertensive and Lipid-Lowering Medication: A Cohort Study*, *Journal of the American Heart Association* 9, 2020: e014168. 10.1161/JAHA.119.014168.

¹⁸ Debbie MARSDEN – John WILKINS – Christopher GILL – Paul DIEPPE, *Galen and wellbeing: whole person care*, *International Journal of Whole Person Care* 1, 2014, pp.76–78.

lifestyle programme was followed by 50 people over a 2-week period, with questionnaires and workbooks subsequently being completed. Of all the outcome measures used, including cumulative physical and mental wellbeing, a substantial majority of the participants registered a significant improvement in comparison with a control group.¹⁹ Further work is now required to understand better what we might be able to re-learn and apply to keeping healthy today.

Stoicism

Within the Greco-Roman world the distinction between physical and mental wellbeing was much more blurred than is the case today. Looking after the psyche – or the soul – was viewed as integral to the care of the body and, as mentioned in the previous section, was a key element of Galen’s lifestyle approach alongside movement, pure air, sleep and diet.²⁰

Many Romans citizens – in addition to physicians such as Galen – were seeking after a philosophy of life. One approach popularised by the likes of the statesman Seneca, the slave Epictetus and the Emperor Marcus Aurelius that found favour in the early Roman Empire was Stoicism.²¹ According to Sellars the works of these three Roman Stoics suggested “*how to live, how to understand one’s place in the world, how to cope when things don’t go well, how to manage one’s emotions, how to behave towards others, how to live a good life worthy of a rational human being*”.²² To the Stoics having a virtuous character was the supreme aspiration. This was about living in accordance with nature with an emphasis on using reason for the common good. The Stoics argued that, although we share many instincts with other animals, our ability to think rationally is what makes us human.²³

Marcus Aurelius emphasised that the key to having a good life and to prevent ‘misliving’ was to learn to cherish things that are genuinely important. He noted how the individuals he most admired exhibited the four cardinal virtues of wisdom (e.g. judgement, resourcefulness and discretion), justice (e.g. kindness and humanity), courage (e.g. bravery and perseverance) and moderation (e.g. self-control).²⁴ The Stoics considered that, although it might be nice to enjoy riches, respect and good health too, these, so-called, ‘preferred indifferents’ would not, in themselves, lead to contentment and a good life.

Marcus Aurelius also distinguished between what humans can control in their lives and what they cannot. This was about accepting that plans can easily be thwarted by events beyond human control and to focus more on those things that are within our power to change, particularly judgements and emotional states. None of us have any influence over things such as natural events or disasters and we only have partial control over many other matters such as winning a match, getting a book published or securing a promotion.

¹⁹ Available from: <<https://www.exeter.ac.uk/research/centres/hellenistic/pastresearch/healthcareandwellbeing/>> [cit. 2025-08-19].

²⁰ Peter N. SINGER (ed.), *Galen. Psychological Writings*, Cambridge 2013.

²¹ William Braxton IRVINE, *A Guide to the Good Life. The Ancient Art of Stoic Joy*, Oxford 2009.

²² John SELLARS, *Lessons in Stoicism*, London 2020, p. 3.

²³ Donald ROBERTSON, *How to think like a Roman Emperor. The Stoic Philosophy of Marcus Aurelius*, New York 2019.

²⁴ Christopher GILL, *Marcus Aurelius Meditations*, books 1–6. Translated with an Introduction and Commentary, Oxford 2013.

Controlling our reactions to events includes working to suppress the desire to add a personal twist or to make inappropriate value judgements when things go awry.²⁵ As Epictetus explained: “*It is not things themselves that trouble people, but their opinions about things*”²⁶

Stress, anxiety and depression are the consequences of worrying unduly about things over which we don’t have complete control. There is also a link between modern cognitive behaviour therapy (CBT) and the writings of Epictetus and Marcus Aurelius. The pioneers of CBT have certainly stressed the role of Stoicism as their philosophical foundation.²⁷

Nowadays very few of us spend time seeking to discover a philosophy of life as opposed to striving for the latest consumer gadget, working to maximise our income or seeking to enhance our reputation and standing. But, perhaps ancient Stoicism can offer some suggestions on improving our modern mental wellbeing. There has certainly been an extraordinary rise in the sales of Marcus Aurelius *Meditations* over the last few years since the start of the COVID-19 pandemic.²⁸

Healing Sanctuaries

Religion was closely intertwined with all aspects of Greco-Roman life and, in appreciation of the limitations of terrestrial medicine, many individuals turned to the gods for help and guidance. Apollo was the original classical deity associated with medicine but, as time passed, Asclepius (or Aesculapius to the Romans), the son of Apollo by Coronis, gradually became the god more clearly linked with health care. Asclepius was born by Caesarean section and trained in medicine by the centaur Chiron. The young Asclepius is also said to have been guarded by serpents and dogs – two animals that subsequently became associated with the Asclepian creed. The offspring of Asclepius included Aceso (Telesphorus), Hygieia (Salus) and Panacea.²⁹

The original Asclepian sanctuaries were established at Epidaurus, Cos and Pergamum with the first Roman temple dedicated to the god being built on Tiber Island. However, although Asclepius and his family were closely associated with health, it would be wrong to assume that healing was dissociated from the other ancient gods. Healing prayers or health-seeking offerings could be directed at any deity according to the individual’s preference. There was also evidence for religious syncretism with the blending of Roman beliefs and approaches with local gods. For example, Eshmun at Sidon (Lebanon), Nodens at Lydney & Sulis Minerva at Bath (UK), Apollo Grannus at Grand (France), Lennus Mars at Trier (Germany), Serapis & Isis at Canopus (Egypt) and the merging of Asclepius with the Thracian horseman at Glava Panega (Bulgaria).³⁰

²⁵ Maxwell STANFORTH, *Marcus Aurelius: Meditations*, London 1964.

²⁶ Anthony A. LONG, *How to be Free. An Ancient Guide to the Stoic Life*, Princeton 2018, sub-section 5.

²⁷ Donald ROBERTSON, *The Philosophy of Cognitive-Behavioural Therapy (CBT)*, London 2010, pp. 3–18.

²⁸ Available from: <<https://www.theguardian.com/books/booksblog/2020/apr/16/how-stoics-are-speaking-to-locked-down-readers>> [cit. 2025-08-19].

²⁹ Gerald David HART, *Asclepius the God of Medicine*, London 2000, pp. 1–18.

³⁰ Nick SUMMERTON, *Greco-Roman Medicine*, p. 104.

At healing sanctuaries, the emphasis was on holistic care alongside mental, spiritual, emotional and social healing.³¹ From the large number of inscriptions left by individuals within the Asclepian sanctuaries at Epidaurus, Corinth and Athens, it seems likely that many benefited from their visit. The types of conditions where successful treatments are most-often mentioned were for people with chronic wounds, sores or skin problems; eye diseases including unilateral blindness; limb disorders such as paralysis or being lame; and infertility. Healing sanctuaries were also viewed as the place to seek help for longstanding or intractable health problems.³²

In considering the potential relevance of the healing sanctuaries to modern-day health-care and wellbeing three aspects of these sites warrant highlighting:

The Natural Environment

The locations for healing sanctuaries seem to have been carefully selected to encourage contact with the natural world.³³ The Roman historian Ammianus Marcellinus wrote: “*At a distance of twelve miles from Alexandria is Canopus [...]. The place is most delightful because of its beautiful pleasure-resorts, its soft air and healthful climate, so that anyone staying in that region believes that he is living outside of this world, as oftentimes he hears the winds that murmur a welcome with sunny breath.*”³⁴ Plutarch also commented: “*the Greeks, as might be expected, have their shrines of Asclepius situated in places that are both clean and high.*”³⁵

Today, wandering amongst the ruins of many healing sanctuaries, it is still possible to enjoy sunshine, breathe in cool clean air and to experience a view of the sea, a river or a stunning landscape. Visitors to Epidaurus are frequently struck by the open vistas, fresh air and natural forest scents. The ancient town at Corinth is often hot, dusty and affords little shelter, but by walking north for half a mile to reach the remains of the healing sanctuary constructed at the edge of a plateau, the environment becomes dramatically different. On the day I arrived a gentle cooling breeze was flowing up from the sea below with views across the Gulf of Corinth and towards the distant hills. In a landscape analysis of eight Greek Asclepian sanctuaries four incorporated a slope, four enjoyed a sea view and all looked out onto mountains.³⁶

Nowadays there is certainly a growing appreciation of the importance of the environment for good health and healing in terms of sunshine, fresh air, the sights and sounds of water in

³¹ Helen CHRISTOPOULOU-ALETRA – Aspasia TOGIA – Christina VARLAMI, *The “smart” Asclepieion: A total healing environment*, Archives of Hellenic Medicine 27, 2010, pp. 259–263.

³² Emma J. EDELSTEIN – Ludwig EDELSTEIN, *Asclepius. Collection and Interpretation of the Testimonies*, Baltimore 1998.

³³ Peter BAREFOOT, *Buildings for Health: Then and Now*, in: Helen King (ed.), *Health in Antiquity*, Abingdon 2005, pp. 205–215.

³⁴ Andrew WALLACE-HADRILL, *Ammianus Marcellinus: The Later Roman Empire (AD 354–378)*, London 1986, sub-section 22.16.14.

³⁵ Frank Cole BABBIT (1931), *Plutarch Moralia*, IV, *Roman Questions*, Harvard 1936. Sub-section 94.1.

³⁶ Patricia Anne BAKER, *Viewing Health: Asclepia in their Natural Settings*, Religion in the Roman Empire 3, 2017, pp. 143–163.

addition to landscape and contact with nature.³⁷ Getting outside into the sunshine will help to boost vitamin D levels and being amongst trees has been demonstrated to enhance both our wellbeing and immunity – known in Japan as *shinrin yoku* (forest bathing).³⁸

The Built Environment

The key facilities available at the major Greco-Roman healing sanctuaries were a source of water – with wells, fountains and baths; temples; an *abaton* (dream room or dormitory), an area to exhibit testimonials plus a space for exercising, rituals, festivals, and processions.³⁹ Water was drunk for its healing properties as well as being used for bathing, hydrotherapy and ritual cleansing. Some sanctuaries, such as Bath (Aquae Sulis), were associated with hot springs or waters with specific mineral constituents.⁴⁰

Many sites also boasted splendid theatres and the example at Epidaurus still enjoys perfect acoustics allowing an audience of up to fourteen thousand to hear actors without electronic amplification. Such theatres would probably have been used for plays, celebrations of cures (including the signing of paeans), processions, festivals, games and choral performances. Viewing tragedies and comedies might have formed part of an individual's treatment plan too by putting their problems and worries into some sort of perspective.⁴¹

Sleeping in an *abaton* (or, in some situations, elsewhere in the sanctuary) and undergoing a process of ritual incubation was a central element of the healing process. During incubation Asclepius was said to appear in a dream-vision and either heal the individual directly or provide them with guidance about what was required to effect a cure.⁴² The process also involved priests and priestesses circulating among the sleepers with snakes and dogs, the curative dreams apparently being augmented by the touches of the priests or the licks of the animals.

Encouraging and facilitating movement was probably a particularly important aspect of the therapy delivered at healing sanctuaries. In addition to engaging in specific exercises, individuals moved around the site (often in a specific direction, perhaps for ritual purposes) participating in various activities such as ceremonies, games, processions and festivals. Exercise would have been undertaken individually as well as with others as a social activity.

Visitors would have been encouraged to arrive by following a particular route and using a specific entrance too. The approach to the sanctuary at Pergamon was via an immense covered walkway, a colonnaded street, a covered passage and a forecourt prior to reaching the *propylaea* (monumental gateway). During this short journey individuals would have had their senses assailed by the sights of sculptures, water features and inscribed plaques; the sounds of vendors and of a busy city; and the smells of incense and medicinal herbs. The cacophony would then have faded as the pilgrims reached the forecourt; perhaps allowing

³⁷ Neil M. VORA – Shweta NARAYAN – Aggrey ALUSO *et al.*, *Nature-based solutions are essential for climate and health action*, *Lancet* 2024: S0140-6736(24)01599-X, doi: 10.1016/S0140-6736(24)01599-X.

³⁸ LI QING, *Into the Forest: How Trees Can Help You Find Health and Happiness*, London 2019.

³⁹ G. HART, *Asclepius the God of Medicine*, pp. 53–77.

⁴⁰ Barry CUNLIFFE, *Roman Bath Discovered*, Stroud 2000.

⁴¹ Bryan DOERRIES, *The Theater of War*, New York 2015.

⁴² Louise CILLIERS – François Pieter RETIEF, *Dream Healing in Asclepieia in the Mediterranean*, in: Steven M. Oberhelman (ed.), *Dreams, Healing and Medicine in Greece*, Farnham 2013, pp. 69–92.

them time and space to stop and view the sights ahead of them. Once inside the sanctuary it seems likely that pilgrims were encouraged to follow a specific trail during which they could take in the sights, sounds and smells of the sanctuary in a specific order. Walking barefoot and touching objects as they passed might have also added a tactile sense to the experience. Their route would have probably involved jostling with priests, officials, the infirm (and, perhaps, their concerned relatives), all going about their daily business, seeking treatment or making supplications to the gods.⁴³

A careful analysis of the architecture at Pergamon suggests that the sanctuary was designed to encourage movement as well as facilitating occasional slowing down (e.g., by the narrowing of passages or the need for climbing). This would have also let individuals contemplate their surroundings in addition to pausing to admire the architecture, statuary and epigraphy.⁴⁴

Pilgrims could have examined the testimonials left by individuals detailing portentous dreams and successful cures alongside a range of health-related votive offerings.

There seems little doubt that an expectant pilgrimage combined with immersion in the sights, sounds, smells and feel of a healing sanctuary would have had powerful psychological effects. It has recently been discovered that having our senses assailed by awesome experiences during a walk can shift our psychological focus away from ‘internal personal clutter’ with significant mental health benefits.⁴⁵

The Psychological Environment

In the context of a healing sanctuary individuals would have been subject to a raft of psychological interventions: group therapy, talking therapy, various arts therapies, dream healing; all combined with rest and relaxation.

A variety of arts-type therapies were practised at many of the ancient healing sites involving music, visual arts, reading & writing (including producing and reciting poetry) in addition to drama.⁴⁶ Arriving at Athens, Pausanias was particularly struck by the art works on display there, writing: “*The sanctuary of Asclepius is worth seeing both for its paintings and for the statutes of the god and his children. In it there is a spring*”.⁴⁷ The sights of soaring marbled buildings, sculptures, paintings and images of healing gods must have been quite a dramatic – and uplifting – experience for many visitors.

⁴³ Georgia PETRIDOU, *Healing Shrines*, in: Georgia L. Irby (ed.), *A Companion to Science, Technology, and Medicine in Ancient Greece and Rome*, Chichester 2016, pp. 434–449.

⁴⁴ Ece Sayram OKAY, *Healing in Motion: The Influence of Locotherapy on the Architecture of the Pergamene Asklepieion in the second century*, Los Angeles 2016, available from: <<https://escholarship.org/uc/item/8sp373gm>> [cit. 2025-08-19].

⁴⁵ Virginia E. STURM – Samir DATTA – Ashlin R. ROY *et al.*, *Big smile, small self: Awe walks promote prosocial positive emotions in older adults*, *Emotion* 2020, available online from: <<https://doi.org/10.1037/emo0000876>> [cit. 2025-08-19].

⁴⁶ Karelisa HARTIGAN, *Drama and Healing: Ancient and Modern*, in: Helen King (ed.), *Health in Antiquity*, London 2005, pp. 162–179.

⁴⁷ William Henry Samuel JONES, *Pausanias: Description of Greece (A Translation)*, Cambridge (MA) 1918. Sub-section 1.21.4.

Inspiring confidence with the expectation of a positive outcome remains a key element of any treatment and this is more than simply a placebo effect.⁴⁸ The healing sanctuaries seem to have been specifically designed to bolster a person's belief that a treatment will work and that they will get better. Also, the rapid cures of conditions such as unilateral blindness, mutism, paralysis or chronic headaches suggest the resolution of some underlying psychological disturbances.

Some of the specific treatments available at the various Greco-Roman healing sites are certainly showing value today. For example, there is now evidence for the effectiveness of music therapy in individuals with anxiety, depression, autism and dementia. For people living with cancer music may have beneficial effects on anxiety, pain, fatigue, depression, and quality of life. Drama, painting and drawing have been used to promote modern mental wellbeing.⁴⁹

Immersion in the hot waters of, for example, Bath, UK may have assisted with a wide variety of health problems too.⁵⁰ There is recent evidence that, aside from the warmth and the dissolved minerals, additional benefits might have been derived from the bacterial communities inhabiting the hot springs.⁵¹

Some of the other therapies offered at the Greco-Roman healing sanctuaries seem somewhat mysterious – and foreign – to many doctors today such as sleeping in an *abaton* and undergoing a process of ritual incubation (dream healing). However, the psychologist Edward Tick has been arranging 'dream healing' pilgrimages to the Asclepian sites in Greece for several years to assist individuals – especially war veterans – to overcome specific psychological problems such as post-traumatic stress disorder. In addition to encouraging and interpreting a person's dreams other key elements of Tick's approach include immersion in the archaeology, the history, the thoughts and the words of our classical forbears.⁵²

Licking by snakes was also a key part of the ritual incubation process and there is evidence that snake saliva might have healing properties. Epidermal growth factor, a substance that stimulates several biological functions related to wound repair such as cell growth and the development of new blood vessels, was found to be present in the saliva of *Elaphe longissimi*, the species of snake associated with many of the Greek healing sanctuaries.⁵³

According to testimonials from Epidaurus some individuals were also subject to surgical cures within the *abaton*. Askitopoulou and her colleagues contend that it would have been quite possible to undertake some of the operations described – such as draining abscesses or

⁴⁸ Olympia PANAGIOTIDOU, *Religious Healing and the Asclepius Cult: A Case of Placebo Effects*, Open Theology 2, 2016, pp. 79–91.

⁴⁹ Daisy FANCOURT – Saoirse FINN, *What is the evidence on the role of the arts in improving health and well-being? A scoping review: Health Evidence Network (HEN) synthesis report*, Copenhagen 2019.

⁵⁰ Aruchunan MOOVENTHAN – Loganathan NIVETHITHA, *Scientific evidence-based effects of hydrotherapy on various systems of the body*, North American Journal of Medicine and Science 6, 2014, pp. 199–209.

⁵¹ Enus FINA – Michele KIERNAN – Bonnie WHATMOUGH et al., *Physicochemical and metagenomic analysis of samples from the Roman Baths (Bath, UK) reveals high bacterial and archaeal diversity and a potential for antimicrobial discovery*, The Microbe 3, 2023, available online from: <<https://doi.org/10.1016/j.microb.2024.100075>> [cit. 2025-08-19].

⁵² Edward TICK, *The Practice of Dream Healing. Bringing Ancient Greek Mysteries into Modern Medicine*, Wheaton 2001.

⁵³ Luciana Rita ANGELETTI – Umberto AGRIMI – Deborah FRENCH et al., *Healing rituals and sacred serpents*, Lancet 340, 1992, pp. 223–225.

removing foreign bodies – with the help of soporific substances (such as opium) provided to patients as part of the incubation process.⁵⁴

Perhaps we need to recognise that there is much more to healing than medicines, scans and outpatient visits. Recently a group of 105 final-year medical students from the University of Athens studied the structure, role and organisation of the site at Epidaurus with participants acquiring new understanding and insights into health and healing.⁵⁵ For patients there is also evidence for the health benefits of week-long, holistic, multifaceted, residential retreats.⁵⁶

Identifying New Medicines

The major surviving sources of information on the pharmaceutical remedies being used during the Roman period are contained in the writings of Scribonius Largus, Dioscorides, Celsus, Pliny the Elder and Galen. Supplementary evidence is provided by inscriptions on the small stones used to emboss eye medications (collyrium stamps) in addition to occasional archaeological finds of actual drugs.⁵⁷

For many generations after the fall of the Western Empire Roman remedies continued to be used. But, over the last couple of centuries, developments in chemistry and pharmacology combined with a paradigm shift in our thinking about how drugs might work have led to a loss of interest in ancient pharmaceuticals.

On the face of it, it would seem odd that advanced civilisations such as the Egyptians, Greeks or Romans would use, and continue to use, the same medications over many hundreds of years if they were totally ineffective. Galen certainly selected remedies that had survived the passage of time and been assessed by experience – both of a particular physician and of a long tradition of doctors.

Honey is a complex mixture containing a variety of substances including fructose, glucose, proteins, amino acids, vitamins, minerals, antioxidants and organic acids. Dioscorides wrote that “*honey is cleansing, opens pores, and draws out fluids. As a result it is good for all rotten and hollow ulcers when infused. Boiled and applied it heals flesh that stands separated.*”⁵⁸ And, in relation to the care of wounds, Celsus stated that they “*must be cleaned. And this is best done by putting on lint soaked in honey.*”⁵⁹

Recent research has revealed that honey can inhibit the growth of around 60 species of bacteria in addition to some fungi and viruses. It has also been successfully used to eradicate Methicillin-resistant *Staphylococcus aureus* (MRSA) from chronic wounds and to treat

⁵⁴ Helen ASKITOPOULOU – Eleni KONSOLAKI – Ioanna A. RAMOUTSAKI – Maria ANASTASSAKI, *Surgical cures under sleep induction in the Asclepieion of Epidaurus*, International Congress Series 1242, 2002, pp. 11–17.

⁵⁵ Charalobos PAPAGEORGIOU – Gerasimos KONSTANTINOU – Vassilis LAMBRINOUDAKIS – Christos PAPAGEORGIOU – Konstantina G. YIANNPOULOU, *Asclepion of Epidaurus: the application of a historical perspective in medical education*, Philosophy Ethics and Humanities in Medicine 17/7, 2022: doi:10.1186/s13010-022-00120-6.

⁵⁶ Marc M. COHEN – Fiona ELLIOTT – Liza OATES et al., *Do Wellness Tourists Get Well? An Observational Study of Multiple Dimensions of Health and Well-Being After a Week-Long Retreat*, Journal of Alternative and Complementary Medicine 23, 2017, pp. 140–148.

⁵⁷ Nick SUMMERTON, *Greco-Roman Medicine*, pp. 76–85.

⁵⁸ Lily Y. BECK, *De materia medica by Pedanius Dioscorides*, Hildesheim 2005, sub-section 2.102.

⁵⁹ W. G. SPENCER, *Celsus: De Medicina*, sub-section 5.26.29.

diabetic foot ulcers in addition to neutralising any foul odours.⁶⁰ The healing properties of honey were clearly demonstrated in a study comparing it against the standard treatments for burn victims too. The results showed that honey treatments produced greater sterility of the wounds, a faster rate of healing, and a more rapid onset of healing. These experiments also indicated that wild honey was superior to artificial honey (that omits many of the ‘non-sugar’ components contained in wild honey).⁶¹

Within the Roman medical literature there was a significant emphasis on the treatment of a variety of eye diseases using eye ointments – or collyria. For example, Scribonius Largus mentioned 22 collyria and Galen over 200. In *De medicina* Celsus devoted a whole chapter to ophthalmology.⁶² Further information derives from the small stone stamps used to mark an individual collyrium⁶³ in addition to occasional archaeological finds of preserved collyria.⁶⁴

In analysing the available information on the commoner constituents of the eye collyria many of the remedies contained antiseptics in one form or another. For example, the vinegar lotion of Gaius Valerius Amandus or the copper oxide within Aurelius Polychronius’s collyrium might have been very effective anti-bacterials either in treating conjunctivitis or in preventing a corneal scar becoming infected while it healed. The collyrium of the British eye doctor Axius referred to by Galen probably also had many anti-microbial components in terms of its metallic constituents: copper oxide, zinc oxide, zinc carbonate and mercuric sulphide.⁶⁵

Sally Pointer and I manufactured and tested out a modified version of the Philo collyrium described by Celsus. The ingredients used were equal parts (4g each) of cerussa (lead acetate), spodi (zinc oxide), and gum Arabic. We carefully followed Celsus’ instructions in “*pounding each of the ingredients separately and then mixed together gradually adding water*”.⁶⁶ It was fascinating to discover that the Philo collyrium exhibited the same microbiological efficacy (in vitro) as does one of the most commonly prescribed ophthalmological antibiotics – fusidic acid.⁶⁷

Much more advanced work on possible ancient anti-microbials has been undertaken by Harrison and her colleagues at the University of Nottingham using Bald’s Leech book. This is a large collection of Anglo-Saxon medical recipes written in the 10th century with many of remedies being derived from Roman authors including Pliny, Galen, Celsus, Oribasius, Marcellus Empiricus. One of the particularly interesting features of Bald’s Leech book is the focus of several treatments on clearly recognisable infective conditions. For example, the recipe for wen (stye) is described as follows: “*Make an eye salve against a wen: take equal amounts of cropleac (an allium species) and garlic, pound well together, take equal*

⁶⁰ Manisha Deb MANDAL – Shyamapada MANDAL, *Honey: its medicinal property and antibacterial activity*, Asian Pacific Journal of Tropical Biomedicine 1, 2011, pp.154–160.

⁶¹ Tahereh ETERAF-OSKOEI – Moslem NAJAFI, *Traditional and modern uses of natural honey in human diseases: a review*, Iranian Journal of Basic Medical Sciences 16, 2013, pp.731–742.

⁶² Harald NIELSEN, *Ancient ophthalmological agents: a pharmaco-historical study of the collyria and seals for collyria used during Roman antiquity, as well as of the most frequent components of the collyria*, Odense 1974, pp. 9–10.

⁶³ George C. BOON, *Potters, oculists and eye-troubles*, Britannia 14, 1983, pp. 1–12.

⁶⁴ Raymond BOYER, *Découverte de la tombe d’un oculiste à Lyon*, Gallia 47, 1990, pp. 215–249.

⁶⁵ H. NIELSEN, *Ancient ophthalmological agents*, pp. 19–58.

⁶⁶ W. G. SPENCER, *Celsus: De Medicina*, sub-section 6.6.3.

⁶⁷ Nick SUMMERTON, *Reconstructing ancient medical remedies*, ARA News 30, 2013, pp. 28–30.

amounts of wine and oxgall, mix with the alliums, put this in a brass vessel, let (the mixture) stand for nine nights in the brass vessel, wring through a cloth and clarify well, put in a horn and at night apply to the eye with a feather; the best medicine."⁶⁸

This formulation was carefully reconstructed and its ability to neutralise the bacterium *Staphylococcus Aureus* was then examined. Not only did the resulting mixture destroy bacteria in a laboratory planktonic culture but it also worked on an in vitro model of a soft tissue infection (known as a synthetic biofilm). Moreover, the eye salve eliminated MRSA from mice with chronically infected wounds. A particularly fascinating finding was that, although it was recognised that many of the individual components of the remedy had anti-bacterial properties, the effect of the whole was greater than the sum of the parts. Therefore, the overall anti-microbial activity might be dependent on a cocktail of substances working in different ways to destroy bacteria, or there may be specific chemical processes occurring during the preparation that magnify the effects of the individual ingredients.⁶⁹

Dioscorides, Pliny, Celsus, Galen and Scribonius Largus all mentioned the use of Lemnian earth from the island of Lemnos as a treatment. This is a complex material consisting of clay minerals (montmorillonite, kaolin) together with alum (20%) and haematite (5%). Galen wrote that "*whenever I have used Lemnian earth in malignant and putrid ulcers it has proved to be of great value; its use is here determined by the size of the ulcerating surface. If this be fetid, and very boggy and foul, it is checked by Lemnian seal dissolved in very sour vinegar and brought to the consistence of mud.*"⁷⁰ He also described the process for the preparation of Lemnian Earth, the medication, from Lemnian Earth, the raw material, as follows: "*The priestess collects this, to the accompaniment of some local ceremony, no animals being sacrificed, but wheat and barley being given back to the land in exchange. She then takes it to the city, mixes it with water so as to make moist mud, shakes this violently and then allows it to stand. Thereafter she removes first the superficial water, and next the fatty part of the earth below this, leaving only the stony and sandy part at the bottom, which is useless. She now dries the fatty mud until it reaches the consistency of soft wax; of this she takes small portions and imprints upon them the seal of Artemis; then again she dries these in the shade till they are absolutely free from moisture.*"⁷¹

Over recent years a considerable amount of work has been undertaken by Photos-Jones and her colleagues on Lemnian Earth. It certainly seems to be an effective anti-microbial and it is suggested that the process of enrichment described by Galen was important in maximising its effectiveness. Perhaps the alum and haematite act as the antibacterial and astringent components with the clay serving as a poultice to reduce swelling.⁷²

⁶⁸ Freya HARRISON – Aled Edward Lloyd ROBERTS – Rebecca GABRILSKA et al., *A 1000-Year-Old Antimicrobial Remedy with Antistaphylococcal Activity*, mBio 6, 2015, available online from: <<https://doi.org/10.1128/mbio.01129-15>> [cit. 2025-08-19].

⁶⁹ Jessica FURNER-PARDOE – Blessing O. ANONYE – Ricky CAIN et al., *Anti-biofilm efficacy of a medieval treatment for bacterial infection requires the combination of multiple ingredients*, Scientific Reports 10/1, 2020: 12687, available online from: <<https://doi.org/10.1038/s41598-020-69273-8>> [cit. 2025-08-19].

⁷⁰ Available online from: <http://www.myrine.at/Gi/Gi_e.html> [cit. 2025-08-19].

⁷¹ Effie PHOTOS-JONES – Allan J. HALL, *Lemnian Earth, Alum and Astringency: a Field-based Approach*, in: Demetrios Michaelides (ed.), *Medicine and Healing in the Ancient Mediterranean World*, Oxford 2014, pp. 183–189.

⁷² Effie PHOTOS-JONES, *From mine to apothecary: an archaeo-biomedical approach to the study of the Greco-Roman lithotherapeutics industry*, World archaeology 50, 2018, pp. 418–433.

Most of the antibiotics prescribed today are single compounds, and modern doctors are encouraged to avoid using combinations such as *Co-amoxiclav* or *Co-fluampicil*. Therefore, it is interesting to discover that some effective anti-microbials used by our ancient forebears (i.e., honey, Philo's collyrium, Bald's sty treatment and Lemnian Earth) were not single simple substances but, rather, cocktails of different components. Perhaps their continuing effectiveness over many generations reflects the greater challenges for bacteria in developing resistance against treatments that attack them in multiple ways.

Identifying remedies from ancient sources is an area of growing interest spurred on by, for example, Tu Youyou's dramatic re-discovery of artemisinin to treat malaria.⁷³ The Nottingham-based *Ancientbiotics* consortium is now using bioinformatics tools combined with complex statistical analyses to examine ancient literature.⁷⁴ Their overarching objective is to find groups of ingredients that are combined in the same remedy and/or used to treat infection more often than expected by chance.

Conclusion

The four topics highlighted in this paper suggest that developing a better understanding of Greco-Roman healthcare and health-related activities has the potential to impact on the quality of modern-day healthcare (including clinical practice, public health, health education and health policy); population wellbeing and scientific knowledge.

As a next step it is proposed that a multi-disciplinary group is assembled to assist with the rediscovery of ancient knowledge, understandings, approaches, techniques and materials of relevance in addressing today's pressing health, technological, and societal challenges. Moreover, it will be necessary to develop a comprehensive approach to data acquisition with information being derived from archaeology and the archaeological sciences (including experimental archaeology) alongside the ancient literary sources.

NICK SUMMERTON

Starověká moudrost a moderní medicína

RESUMÉ

Príspevok sa zaoberá na štyri témy súvisiace s zdravím, ktoré vychádzajú z rímskej literatúry alebo archeológie: udržanie zdravia, stoicizmus, lečebné svätyně a objavovanie nových liekov. Na základe analýzy dostupných informácií dospievá k názoru, že lepší pochopenie rímskej zdravotníckej starostlivosti a činností súvisiacich se zdravím v rímskom svete môže mať potenciál ovplyvniť kvalitu modernej zdravotníckej starostlivosti (včetně klinické praxe, veřejného zdraví, zdravotního vzdělávání a zdravotní politiky), blahobyt obyvatelstva a vědecké poznání. Jako další krok se navrhuje sestavení multidisciplinární skupiny, která by pomohla znovuobjevit starověké znalosti,

⁷³ Wenxiu LIU – Yue LIU, *Youyou Tu: significance of winning the 2015 Nobel Prize in Physiology or Medicine*, *Cardiovascular Diagnosis and Therapy* 6/1, 2016, pp.1–2.

⁷⁴ Erin CONNELLY – Charo I. DEL GENIO – Freya HARRISON, *Data Mining a Medieval Medical Text Reveals Patterns in Ingredient Choice That Reflect Biological Activity against Infectious Agents*, *mBio* 11, 2020, available online from: <<https://doi.org/10.1128/mbio.03136-19>> [cit. 2025-08-19].

poznatky, přístupy, techniky a materiály relevantní pro řešení dnešních naléhavých zdravotních, technologických a společenských výzev. Kromě toho bude nutné vyvinout komplexní přístup k získávání dat, přičemž informace budou čerpány z archeologie a archeologických věd (včetně experimentální archeologie) spolu se starověkými literárními zdroji.

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