

The Future of Medicine

A Fresh Look at Hippocratic Medicine and the Roots of Whole-Body Care

Medical advances in the last centuries have always outpaced medical challenges. Today, however, with an aging population, increasing prevalence of chronic illnesses, and growing strain on the healthcare system, many question the efficiency and sustainability of the medical practice. Successful physicians are now expected to utilize resources judiciously, think integratively and ultimately adopt an integrative approach to diagnosis, treatment, and healing (Freedman, 2015; Hickner et al., 2014; Matulis, Liu, Mecchella, North, & Holmes, 2017; Meidani, Farzandipour, Farrokhian, & Haghghat, 2016). This growing trend can be generally referred to as “whole-body care”. Yet, this modern ideal takes its roots from an ancient doctrine that gave birth to Western medicine: the doctrine of Hippocrates, the Father of Medicine. This essay will trace the origins of whole-body patient care from its beginnings in Hippocratic medicine to its minimization in the 19th century and its attempted revivals, ultimately demonstrating that the modern initiative, far from being new, rests upon principles inherent to the very foundations of medicine.

Hippocratic Medicine, Rationalism, and the Importance of Writing

Hippocrates lived in the fifth century BCE, a period attributed to the birth of Greek rationalism (Jouanna, 1999). There was also, as William Heidel put it, an “extraordinary awakening of intellectual interest” during this period, as much for science as for philosophy (Heidel, 1941). Thinkers wanted to understand how things worked, and what they were made up of. Most importantly, they sought to explain natural phenomena rationally, free from any arbitrary divine powers (Bourgey, 1953; Heidel, 1941). The same tendency resonated with some in the field of medicine. Ancient medicine before the fifth century BCE had a powerful connection to the divine (Falagas, Zarkadoulia, Bliziotis, & Samonis, 2006). Healers would pray to the gods, whoever they may be, for blessings and treatment advice (Ibid.). By contrast, medical writers in the Hippocratic mold began to use logical and analytical approaches when characterizing diseases, formulating their diagnoses, and carrying out their treatment plans (Bourgey, 1953; Heidel, 1941). However, this is not to say that religion *per se* was vilified.

Rather, in specific domains including medicine and philosophy, the sacred was merely set aside in favour of a different doctrine (Nutton, 2013).

The birth of rationalism in Greece also coincided with the development of prose writing. Jacques Jouanna noticed that the first medical texts dated from this period (Jouanna, 1999). The bulk of them, composed from about the fifth to the third century BCE, together form the Hippocratic Corpus: roughly sixty texts of various styles that summarize the medical thought at the time (Ibid.). What is interesting to many historians is the very existence of a written medical Corpus. Since medicine had existed long before this period, notably with the oral medicine alluded to in the Homeric poems (Nutton, 2013), physicians must have made a conscious decision to write. Lonie argues that doctors saw a distinct advantage to place their thought in writing (Lonie, 1983). Literacy enhanced the ancient medical practice: by writing down procedures, for example, a physician would always remember how to perform them, which ultimately benefited patients (Lonie, 1983; Miller, 1990). Lonie observed that most texts from the Corpus were lists and physician progress notes (Lonie, 1983). They were generally self-addressed writings: spontaneous, exploratory, and reflective pieces, mimicking a physician's internal conversation with himself (Lonie, 1983; Miller, 1990). According to Lonie, these texts were not objective: the authors, Hippocratic physicians, made subjective decisions during the writing process (Lonie, 1983). They systematically recorded all their observations, but then inferred which signs were most significant and how a set of symptoms combined into disease (Lonie, 1983; Miller, 1990). Miller argues that these diagnostic generalizations, crucial for patient care, were possible because doctors wrote down everything methodically (Miller, 1990). Thus, writing was essential for Hippocratic physicians: it crystallized their thought process, enabled them to structure their ideas and allowed them to "work out the enquiry". In other words, a written Corpus demonstrates superior reasoning and logic that characterized Hippocrates and that defined Hippocratic medicine.

Observation and Reasoning as Two Foundations of Hippocratic Medicine

In addition to the writing language, the Hippocratics relied almost exclusively on meticulous observation. Physicians noted every minute element about a patient's physical appearance and behaviour, since they believed that "the least detail might provide a valuable clue" for diagnosis (Jouanna, 1999). The Hippocratics also paid close attention the exact composition of body excretions, notably urine, stool, vomit, and sputum (Ibid.). The following passage from the treatise *Prognosis* illustrates this propensity:

"It is a bad sign if the stools are very watery, or white, or particularly yellowish or frothy. It is also bad if they are small, sticky, while, yellowish, and smooth. Signs more indicative of death are when they are dark, or livid, or oily, or rust-coloured and foul-smelling" (*Prognosis* 11, Trans. J. Chadwick & W.N. Mann).

But as Jouanna points out, there was an entire *art* of diagnosis that Hippocratic physicians mastered (Jouanna, 1999). "Observation" was not simply looking: it involved all five senses in an integrative manner (Bourgey, 1953; Jouanna, 1999). Sight was often the first to be called upon, because it "furnished the greatest number of observations", the most famous being the detailed description of a patient's face, the "Hippocratic facies" (Jouanna, 1999). In *Prognosis* and the seven books of *Epidemics* there are also multiple examples of physical palpation of the patient and of direct auscultation (Ibid.). Jouanna shows that Hippocratic physicians sometimes induced internal sounds for the purpose of diagnosis – much like how clever modern physicians can skilfully use a stethoscope (Ibid.). Although the Hippocratics had very limited knowledge of anatomy and physiology, their observations were incredibly accurate (Bourgey, 1953; Heidel, 1941). It is then clear how fundamental clinical observation was in Hippocratic medicine, especially of a comprehensive and integrative type.

After knowing how to observe, Hippocratic physicians needed to know what to observe. As Heidel said, they did "nothing at random [and] overlook[ed] nothing" (Heidel, 1941); in other words, observation was purposeful and comprehensive. The Hippocratic treatise *Prognosis* exemplified this feature particularly well, providing the exact significance of specific signs and symptoms for "seeing the invisible". As its author argued, from certain critical symptoms

physicians could foretell with remarkable accuracy the course of a disease. But it would be unthinkable that one physician alone had devised all these inferences. Rather, Hippocratic physicians relied on a wealth of experience, both individual and of their school (Heidel, 1941; Jouanna, 1999). Only by selecting elements from this “information fund” could they “distinguish what was important and what one might neglect” (Heidel, 1941). And this bank was further enriched by the writing language of the time: scores of previous cases could be preserved for future reference, as best exemplified by the case studies in the *Epidemics* collection (Jouanna, 1999). Heidel also shows that the Hippocratics were highly skilled at comparing between cases, inferring similarities and differences, providing them with yet another valuable tool for diagnosis (Heidel, 1941).

Historians also observed that the Hippocratics displayed superior reasoning skills, which correlated to the expansion of Greek rationalism during this period (Bourgey, 1953; Jouanna, 1999). What is perhaps most interesting for modern physicians is that Hippocratic doctors practiced a particular form of medical reasoning: one that was integrative, synthetic, and which took the whole patient into account (Bourgey, 1953; Heidel, 1941; Jouanna, 1999). As Heidel repeatedly states, the Hippocratic ideal was to paint “a total, unified picture of the diseased patient” (Heidel, 1941). As an analogy, when painting a canvas, many colours can be used, and their harmony is key for an overall coherent picture, which is usually the most important. Similarly, when treating patients, each individual sign or symptom alone may not convey a clear meaning, since they are rarely determinant. These signs must therefore be combined with different interdependent factors to generate a cohesive view of the patient, leading to an effective diagnosis. These variables may be, for example, other signs from elsewhere in the body, elements from the patient’s lifestyle, or aspects from the disease history (Jouanna, 1999). According to Jouanna, Hippocratic physicians interpreted and combined the various signs on a patient-by-patient basis, following an almost mathematical procedure:

“[Hippocratics determined] the relative value of the observed signs. [...] The theoretical value of each sign depends on the gap that separates the pathological state from the normal state. But this theoretical value may vary as a function of particular circumstances [peculiar to the patient] or accidental circumstances [such as insomnia, fasting, diarrhoea, and so on] [...]”(Jouanna, 1999).

The process ended with a global judgement of the full range of signs, one that will clearly differ for every individual patient (Ibid.).

Much evidence of this integrative, inductive reasoning exists in the Corpus itself. For example, in *Prognosis*, the author concludes with: “He who would make accurate forecasts as to those who will recover, and those who will die [...] must understand all the symptoms thoroughly and be able to appreciate them, estimating their powers [influence] when they are compared with one another [...]” (*Prognosis* 25). Clearly, to “understand all the symptoms thoroughly”, the physician must consider the whole patient, for each individual sign is often insufficient. The author of *Epidemics I*, besides reiterating the need to appreciate the whole constitution of each patient, describes a plethora of factors to analyze in the diagnostic procedure:

“The following were the circumstances attending the diseases, from which I framed my judgments, learning from the common nature of all and the particular nature of the individual, from the disease, the patient (...); from the constitution, both as a whole and with respect to the parts, (...) from the customs, mode of life, practices, and ages of each patient (...). From these things (we must) consider what their consequents also will be” (*Epidemics* 1, Ch. 3, 25).

Overall, Jouanna dubs this reasoning pathway “Hippocratic empiricism”, requiring acute observation, connection of the facts, and an inductive mind (Jouanna, 1999). Most important of all, as the author of *Prognosis* alluded to, only by applying this integrative reasoning can a physician effectively manage and heal the patient.

The Pillars of Medicine and the Connection to Whole-Body Patient Care

The three pillars of Hippocratic medicine – meticulous observation, integrated reasoning, and practical experience – intimately connect with the emerging whole-body approach in today’s medicine. The Corpus reiterates again and again a recurring theme: Hippocratic physicians must consider each patient individually and integratively to reap the maximum benefits for them. The attention to the individual, according to Heidel, reflects a focus on the patient, and not on the disease (Heidel, 1941). Every patient has a unique constitution, one that will react differently to the environment and to treatments, which therefore cannot be healed following broad “disease”

generalizations (Heidel, 1941; Jouanna, 1999). The Hippocratics also understood the interdependence and interactions of various organs (Bourgey, 1953; Heidel, 1941; Jouanna, 1999). For instance, the author of *Ancient Medicine* affirms that “the relationship [of different organs] with one another must be understood. [...] Only thus can proper care be given” (*Ancient Medicine* 24). By appreciating this interaction, Hippocratic physicians construct a whole picture of the patient, one that will guide and enhance their diagnosis. Overall, we can define whole-body care as a specific physician’s mindset: one that unites the parts to see the greater whole, one that focuses on the individual patient, and one that extensively employs observation, synthetic reasoning, and intuition skills. And this medical framework existed as part of authentic Hippocratic medicine, and thereby is intrinsic to Western medicine from its very origins.

The evolution of medicine in the 19th century caused a shift in medical outlook, which minimized the importance of whole-body patient care in Western medicine.

For the last two millennia, whole-body care remained a subconscious background feature of Western medicine, one that survived countless evolution and reforms. However, during the late 18th and the 19th centuries, this approach was challenged by arguably the greatest revolution in the history of medicine: the germ theory and all that resulted from it: modern etiology, bacteriology, and modern pharmacology to name a few. In fact, these new doctrines fragmented the physicians’ outlook of the body and led to the emergence of the disease as the focal point, which set aside whole-body care, once intrinsic to medicine.

From the 17th century onwards, scientists and philosophers alike nurtured dramatic changes to the perception of the human being. Scientists’ vision of the human body became more and more theorized, compartmentalized, and fragmented. According to Paul Delauney, René Descartes compared the body to a hydraulic machine, obeying the laws of mechanics (Delauney, 1949). Years later, the biologist Rostan declared that the human body was only “an assemblage of organs and tissues” (Ibid.). With the growing trend of microscopy, biologists were fascinated with the infinitely small (Sournia, 1995). Eventually, these studies gave birth to modern medical etiology, since scientists grew obsessively concerned with the precise nature of disease. From etiology came bacteriology and the characterization of micro-organisms (Delauney, 1949; Sournia, 1995). And then entered Louis Pasteur, a bacteriologist who crystallized the microbe

theory as the ultimate cause of disease (Pasteur, 1878). The resulting medical practices were immensely successful in curing acute infections and saved millions of lives (Delauney, 1949). However, they demonstrated great failure to treat chronic illnesses, which persists today. While shifting the medical outlook yielded timeless benefits, it also refocused from the patient to the disease and from the whole to the parts, which in turn minimized the role of observation and the importance of integrative reasoning.

Pasteur's undeniably revolutionizing germ theory inaugurated, among others, bacteriological causalism, aiming to categorize diseases based on their microbial causes (Delauney, 1949). With the rise of etiology and disease classification, 19th century physicians categorized patients by their disease, and thus their microbe, which in turn defined the treatment. (Delauney, 1949; Sournia, 1995). Whilst this approach was highly effective for certain infections, the patients themselves were totally disregarded in this practice. Causalist physicians did not consider how the individual patient reacted to the disease and ignored important elements from the patient's lifestyle. As long as the presence of a specific microbial agent was ascertained, every case was treated in almost the exact same manner (Delauney, 1949; Sournia, 1995). This approach clearly distanced itself from whole-body care and Hippocratic medicine, where elements from each individual patient were crucial for every prognosis. It was unnecessary for causalist physicians to spend time meticulously examining the patient as preached by the Hippocratics, since all they required was evidence of a microbe, easily obtained (Delauney, 1949). They no longer needed to "connect the facts" integratively and envision a global picture of the patient. In other words, focusing on the diseases minimizes the need – and therefore the importance – of two elements intrinsic to whole-body care: rigorous clinical observation and integrative reasoning. Hence, by only treating the microbe, physicians from this time set aside fundamental aspects of Western medicine present since its origins.

In addition to bacteriological causalism and an emphasis on disease, the 19th century was characterized by increasingly reductionist and fragmented views of the human body (Delauney, 1949). Clinical signs and symptoms, correlated to disease, were associated with post-mortem findings in local organs and specific systems. Coupled with the rise of the surgical outlook, anatomical localism introduced a modern medical etiology where disease was due to compartmentalized dysfunctions in specific organs (Ibid.). Each system – or "part" – was analysed separately from the others and the interdependence of different organs was minimized:

“[This doctrine] treated the components of the body – cells, organs, tissues, for example – as independent of each other and of the rest of the organism; [...] the action of a microbe as separate from the response of the body on which it acted; and the disease as quite separate from the body” (*Reinventing Hippocrates*, 2002)

Although this doctrine was critical for the advancement of anatomical knowledge, the rejection of the humoral theory, and the emergence of modern medical specialization, it shifted outlook from the whole to the parts; diseases no longer affected the whole body, as described in Hippocratic medicine, but rather rigorously pre-defined organ systems (Delauney, 1949). Thus, here again anatomical localism sets whole-body care aside. The physicians’ attention turned towards individual organs and specific lesions, which in themselves defined diseases. And, whereas meticulous observation was still required during diagnosis, the role of integrative reasoning was very much minimized, since a global view of the patient was no longer needed. Overall, in the 19th century modern medicine advanced tremendously with new theories and new practices, but unbeknownst to these physicians, they discarded the fundamentals of whole-body care.

20th century revivals of Hippocratic medicine under the “Neo-Hippocratic” banner reacted against the mindset of the previous period and, in some cases, demonstrated an unconscious return to whole-body patient care

In the early-to-mid 20th century, various medical schools of thought in Europe reacted against these theories and developed “Neo-Hippocratism”, promoted as a “return to the origins” by reviving certain Hippocratic ideals. In fact, certain schools – especially those most relevant for today – subconsciously revived whole-body care.

Neo-Hippocratism is an immensely wide term, including dozens of medical discourses from around the world. Curiously, as Claire Salomon-Bayet affirms, many of them have nothing at all to do with authentic Hippocratic medicine or the Hippocratic Corpus: they merely use the term as a label to polish their ideas (Salomon-Bayet, 2003). David Cantor goes on to argue that Neo-Hippocratism generally serves as an appeal to the past and a rejection of the problems of

modernity (*Reinventing Hippocrates*, 2002). Nevertheless, during the interwar period, certain groups in Europe did indeed revive certain specific Hippocratic ideas, often in reaction to doctrines of the previous decades, but for totally distinct objectives. For example, according to Susan Lederer, American physicians in the 1920s and 1930s, notably D.W. Cathell, cited Hippocrates and the *Oath* to fuel discussion about collectivism, professionalism, and integrity in medicine (Ibid.). In France, as George Weisz writes, non-orthodox physicians used Hippocrates to criticize orthodox Western medicine and associated him to other schools, notably vitalism (Ibid.). And in interwar Germany, under the Nazi rule, Carsten Timmermann shows that Neo-Hippocratism justified a distorted version of medical ethics, one that put the community above the individual and even encouraged testing on humans (Ibid.).

A particularly relevant revival relating to whole-body care is the interwar Neo-Hippocratism in Great Britain. Cantor writes that British Neo-Hippocratists rejected many 19th century doctrines, notably bacteriological causalism, medical specialization, and reductionism (*Reinventing Hippocrates*, 2002). To them, reductive bacteriology clearly had its limits for healthcare, exemplified by the 1918 Spanish influenza outbreak (Cawadiaz, 1937; *Reinventing Hippocrates*, 2002). Alexander Cawadiaz, a prominent Neo-Hippocratist, thought that symptoms and etiology were only a portion of the entire diseased patient (Cawadiaz, 1937). In other words, fragmentation and specialization made it impossible for physicians to see the whole patient: “[the physician] will run after the shadow of the local or fictional diseases and thus let the reality, the condition of the diseased individual, escape them” (*Reinventing Hippocrates*, 2002). More broadly, the Neo-Hippocratists criticized those who reduced the clinical practice to mere abstractions.

In response, British Neo-Hippocratists first preached a return to the individual patient; they desired “a return to a broader mentality able to take on board all of the complexities of human life” (*Reinventing Hippocrates*, 2002). In other words, they demanded that physicians construct a global picture of each individual patient – one of the fundamentals aspects of whole-body care (Cawadiaz, 1937; *Reinventing Hippocrates*, 2002). Cawadiaz in particular proposed the practice of “etiological constellation”, which, as opposed to bacteriological causalism, acknowledged the need for multiple factors that cause disease and their interdependence (Cawadiaz, 1937). Neo-Hippocratists also wanted doctors to cultivate intuition, a skill critical to

clinical practice that was “destroyed” by over-specialization and localism (*Reinventing Hippocrates*, 2002). Finally, they required physicians to value practical experience over “medical abstractions”, the former which enhances usage of meticulous observation and complete clinical reasoning (Ibid.). Overall, it is undoubtedly clear that interwar British Neo-Hippocratists revived whole-body care in their return to Hippocrates, indicating not only that that whole-body is intrinsic to Hippocratic medicine, but also that it is universally applicable.

Conclusion: A fundamental *modus operandi* for the medical practice was established by Hippocratics, somewhat revived by certain Neo-Hippocratics, and is starting to be re-discovered today

The modern medical world is diametrically different from the time of Hippocrates. Today’s physicians are challenged and preoccupied with chronic, long-term illnesses for an aging population (Hickner et al., 2014). In contrast, the Hippocratics focused primarily on acute care, in part due to their incomplete knowledge of anatomy and pathophysiology (Jouanna, 1999). The diagnostic framework also evolved dramatically, with the arrival of a plethora of medical tests and pharmacological drugs for modern doctors to choose from (Freedman, 2015; Hickner et al., 2014). Towards the contemporary times, medicine in general became much more complex, all-encompassing yet more specialized, and with a deep interest in the etiology and the disease itself (Delauney, 1949). We have seen that this shift in medical outlook during the last two centuries – from the patient to the disease and from the whole to the parts – induced a minimization of the whole-body care element once inherent to Hippocratic medicine. And in the early 20th century, certain so-called Neo-Hippocratists, in reaction to the causalist and localist theories, revived authentic Hippocratic ideals and, in doing so, actually brought back whole-body care. Taking a step back and looking at this evolution as a whole, what is the main takeaway?

The Hippocratics, in their practice and their writings, laid out a fundamental mindset that defines the medical practice, a central *modus operandi* for all physicians. This mind-frame, which can be equated to whole-body care, sees every individual patient for themselves and, most importantly, appreciates and combines all the individual factors to create a global, unified picture of the diseased person. And the *modus operandi* possesses an irreducible core dependent on

meticulous observation, integrative reasoning, and extensive practical experience. No matter the medical context, no matter all the changes in medical knowledge or outlook, this *ethos* will always be relevant. As proof: the 20th century Neo-Hippocratists, fully aware of the limitations of bacteriological causalism and localism, were groping towards whole-body care as their solution for contemporary medical challenges. They did not seek to return to Hippocratic regimens or to the humoral theory (*Reinventing Hippocrates*, 2002). Rather, they wanted to couple the benefits of modern medicine – with its more complete knowledge and treatments – with the ancient, whole-body *modus operandi*. Physicians should therefore combine modern treatment options and diagnostic procedure with the authentic mind-frame, one emphasizing observation and global reasoning.

Today, novel initiatives aim to improve the medical practice, equipping physicians with tools to tackle the growing challenges of chronic illnesses and an aging patient base that threatens to saturate the medical system. One of those movements, the “Choosing Wisely” initiative started here in Canada, encourages clinicians to choose judiciously what tests to order (Matulis et al., 2017). Many procedures, according to the campaign’s leaders, are unnecessary for certain diagnostic cases and can be replaced more efficiently or eliminated altogether (Ibid.). Excessive medical testing, which usually stems from rigid, traditional diagnostic algorithms, not only place great strain on medical resources, but also decrease the overall well-being of patients, from long wait times to directly causing more harm than good (Ibid.), (Freedman, 2015), (Meidani et al., 2016). The Choosing Wisely campaign encourages physicians to evaluate their patients comprehensively and integratively before ordering a specific, personalized set of tests (Matulis et al., 2017). It also publishes recommended changes to the diagnostic procedure, rendering resource stewardship more effective and ultimately improving patient care (Ibid.). The mind-frame promoted by Choosing Wisely required clinicians to consider all the factors surrounding each patient. They must utilize their skills of comprehensive observation. When unifying the facts leading up to a decision, physicians must demonstrate analytical logic, intuition, and, above all, integrative reasoning. Overall, they must consider the global picture of each individual patient, and cannot focus on a specific localized organ or even just on the disease. It is therefore evident that Choosing Wisely subconsciously urges physicians to adopt elements from the whole-body care approach. Many other medical initiatives with a common objective –

to increase the efficiency of the medical practice to benefit patient care – also promote similar mind-frames related in some way to whole-body care (Hickner et al., 2014). We can therefore affirm that whole-body care mind-frame, when combined with modern medical knowledge, advances, and treatments, could provide physicians with a complete *modus operandi* applicable to today's medical challenges. And this *modus operandi*, far from being novel, is an authentic feature from the origins of Western medicine: the Hippocratics. The future of medicine may be discovered by reviving the past and unifying it with the present.

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