AN EPISTEMOLOGY FOR CLINICAL MEDICINE:

AN ARGUMENT FOR REFLECTION ON THE ENDS OF MEDICAL PRACTICE AND WAYS OF KNOWING WITH IMPLICATIONS FOR THE SELECTION AND TRAINING OF PHYSICIAN

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Poetry is a way of knowing.
—Jorie Graham

ABSTRACT

Today physicians and scientists have a detailed understanding of human biology and have developed diagnostic and therapeutic tools that were unimaginable a century ago. Yet physicians have provided care and counsel for more than 3000 years. Some, such as Hippocrates and Osler, remain exemplars of the excellent physician. They did not have our scientific knowledge or tools, but they knew something important and performed some task of great value to their patients. What did they know and what did they do? This article explores the questions every ill patient asks, the timeless nature of patient as person, and the forms of non-factual knowing (described as know-how, know-what, know-who, and know-how-it-feels) that are essential to patient care. From this, it is suggested that the combination of understanding, insight, and judgment used for practical action, what Aristotle called "phronesis," is the core competency of excellent physicians which has remained unchanged across the centuries.

INTRODUCTION

The 20th and early 21st century explosion in medical science produced an increasingly detailed understanding of human biology. We understand the mechanisms of disease from whole body physiology to cellular and subcellular signaling pathways. The human genome was

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sequenced identifying mutations and polymorphisms causing specific diseases. Pharmacology advanced from isolating biologicals to creating small molecules and monoclonal antibodies directed at epitopes whose molecular structure and spatial dimensions are resolved to individual atoms. Similar advances were made in diagnostic laboratory science, imaging, and surgical techniques. Clinicians today have encyclopedic knowledge of diseases, and therapeutic tools unimaginable 100 years ago. We understandably take great professional pride in our expertise and therapeutic accomplishments.

But, are we really so special? Physicians have been providing care and counsel to individual patients throughout 3000 years of recorded history. Physicians such as Hippocrates, Maimonides, Avicenna, Sydenham, and Osler remain exemplars of the excellent physician. From our perspective, they were ignorant and powerless. Their theories of anatomy, physiology, and disease causation appear bizarre and their therapeutic tools few and largely ineffective. Yet, they must have known something important and performed some task of great value to their patients.

So, what did they know and what could they do? What is this timeless character of physicianship (1)? How did they create value worthy of their prominent social role and our continued veneration? They must have shared common practices, core competencies, and ways of knowing that remained unchanged across these millennia, untouched by the evolution of factual knowledge, technological innovation, and therapeutic advances.

The constant elements of medical practice have always been an ill person and a physician. Physicians help patients experiencing an illness by establishing a relationship that is informative and supportive whether providing comfort, care, or cure. The physician-patient relationship is founded upon the questions and fears of each patient and the experience, understanding, and empathy of the physician. By exploring the universal dynamic of this encounter, we can gain an understanding of what these great physicians had in common, and what we should aspire to today. Let's start with three core questions:

- What are the questions every ill patient has asked and physicians have answered?
- Lacking our factual scientific knowledge, what did these excellent physicians know?
- Did they share a core competency that remained unchanged over the centuries?

The answers to these questions will provide insight into the timeless nature of the physician-patient relationship.

WHAT ARE THE QUESTIONS EVERY ILL PATIENT HAS ASKED AND PHYSICIANS HAVE ANSWERED?

Each person confronted by serious illness faces the same fears and seeks answers to three fundamental questions: 1) What is happening to me and why?; 2) What is going to happen to me?; and 3) What can be done about it?

All physicians have been asked these questions and they will continue to be asked as far into the future as self-aware humans exist.

What is happening to me and why?

Each explanation is culturally bound, grounded in the shared beliefs of physician and patient. As knowledge and beliefs evolved, so have the explanations for disease and the reasoning applied to the "why me?" and "why now?" questions. The explanation need not be true in an absolute sense so long as it is coherent within the shared belief system. We know this as diagnosis (from the Greek word meaning "through knowledge").

The beliefs of physicians today are based upon scientific proofs and rigorous linkage of disease phenotype to pathophysiologic mechanisms through our understanding of microbiology, cellular physiology, systems biology, and the interaction of the individual's genetic makeup and the environment. This belief system is a recent development and is not shared by many cultural groups in our society. Members of these cultures may respect the efficacy of our treatments without sharing our beliefs or embracing our explanations.

What is going to happen to me?

Predicting the disease course and ultimate outcome is the physician's transcendent skill. No other discipline can claim so exact a knowledge of an individual's future. Prognosis (from the Greek word meaning "know in advance") is prophesy. To the uninitiated, it is powerful and mystical. From a few telltale signs in a specific context the future is revealed to the experienced eye and foretold to the patient and family. Hippocrates emphasized the power of prognostication:

> *It appears to me a most excellent thing for the physician to cultivate Prognosis; for by foreseeing and foretelling, in the presence of the sick, the present, the past, and the future. . . . he will be more readily believed. . . so that men will have confidence to entrust themselves to such a physician. (2)*

Prognostication has roots in ancient Greece. Apollo, the Greek god of medicine and healing, was an oracular god speaking through the

Oracle at Delphi. He mastered the Oracle by killing Python, the monster offspring of Gaia, Mother Earth, who guarded the Oracle for the old gods. The spokesperson for Apollo, the Pythia, sat on her golden tripod in an oracular trance, giving ambiguous prophecy in response to questions about future events. Physicians today continue this tradition, answering patients' prognostic questions with probabilities, odds, odds ratios, and other forms of statistical inference. Although our methods today are less poetic than those of the Pythia, these answers are no less mystifying to our patients and often to us.

Apollo's mortal son, Asclepius, brought the healing arts to mankind. Much as Prometheus received the wrath of Zeus for giving fire to man, Asclepius was punished by Zeus, at the behest of Hades, for his gift to men. His crime was in being too skilled, restoring health from near death, and reclaiming lives from the underworld. He was bad for Hades' business.

What can be done about it?

This is a request for therapy (from the Greek word meaning "curing, healing"), a request to change the prophesied future. The need to treat an illness is predicated on its having a current unpleasantness or an adverse prognosis. Historically, most patients consulted physicians for what was perceived to be a serious, potentially life-threatening condition. The need for treatment often implied a bad outcome in its absence.

Discovery science in latter half of the 20th century improved diagnostics and developed effective treatments for diseases and conditions that would have been fatal just a few years before. Practitioners have become so enamored of their therapeutic toolkit, and patients so demanding of treatment even for minor illness, that we may be losing the linkage between prognosis and treatment. In doing so we may begin to believe our treatments unreasonably effective, assigning credit to therapy rather than the self-limited nature of most illnesses.

CONSERVED WAYS OF KNOWING

The daily activity of physicians, that is, the practice of medicine, is a craft. The healing crafts have passed from master craftsman to novice since Asclepius. All crafts are learned by performing the craft's basic and increasingly complex activities under direct supervision and mentoring of journeymen and master craftsmen. Each craft has specialized knowledge, works with unique materials, and requires repet-

itive performance of tasks until they are effortless, performed with little conscious thought; the hand follows the thought, the reasoning is in the process as much as the mind.

Craftsmen know their craft in a way that transcends the facts of book knowledge, *knowing-that* something is true. *Knowing-how* to do the work, how to work the materials to solve the creative challenge, is more important than any factual knowledge of raw materials or tools. *Know-how* is only acquired through experience. Equally important to *know-how* is the ability to plan, prioritize, and organize the work by *knowing-what* is crucial to each step, how it fits into the whole project. This is a skill that requires conscious thought and reflection on the outcomes to be obtained given the materials at hand and the available tools.

The practice of medicine requires knowledge, know-how, and the ability to know-what is important. But medicine is unlike any other craft; our raw material is a person, not an object. Like stone, no two are alike, and the material may be obdurate and difficult to work. Just as the sculptor must negotiate a form from the stone, so the clinician negotiates care with each patient. To be effective a physician must have two additional unique ways of knowing. He must *know-who* the patient is by learning about his or her unique dimensions and life situation. Finally, compassionate care requires an emotional connection with each patient, empathy, the ability to *know-how-it-feels* to be in their unique situation (Table 1).

TABLE 1
Conserved Ways of Knowing for Patient Care

- Knowing-That: The facts
  - Craft specific knowledge
  - Knowing your materials
- Knowing-What: Setting the goal
  - Prioritization of problems
  - Recognize the challenges
  - Select the ends to be achieved
- Knowing-How: Getting it done
  - Task specific proficiency
  - Situation specific problem solving
  - Experiential learning, learned by doing
- Knowing-Who
  - Understand this person
  - Understand their life situation
- Knowing-How-It-Feels
  - Empathy
  - An emotional connection with this person

PERSONS

Disease is an abstraction created by physicians. *Illness* is the patient's experience as a person, and *suffering*, as defined by Eric Cassell in *The Nature of Suffering and the Goals of Medicine*, is the impending destruction of person (3). The questions patients ask when ill are very personal: what's happening *to me*, what's going to happen *to me*, can you change *my future*? To best understand the personal meaning of these questions and provide answers to *this person* we must understand persons. Cassell gives a "simplified description of a person" which includes 12 distinct dimensions, to which I add a 13th, sexuality (Table 2). All of these dimensions are in-folded upon themselves creating a complex, ever-changing, unique person much as, according to string theory, at least 11 unique dimensions are in-folded to create what we experience as four-dimensional space-time. In the words of the painter Paul Klee "it is not easy to arrive at a conception of a whole which is constructed of parts belonging to different dimensions" (4).

There is no science of persons. For the purposes of science, persons are usually reduced to a biologic body or aggregated into populations with a shared disease. Advances in medical science have been greatly facilitated by the randomized trial. However, the purpose of randomization is to eliminate the uniqueness of each individual. This is not the study of persons but the study of disease independent of the persons who happen to manifest it. A person cannot be studied in this way. Cassell says, unlike the other objects of science, "persons cannot be reduced to their parts so that they can be better understood" (3).

Each person is a complex, dynamic, self-adapting system in constant

TABLE 2
A Simplified Description of A Person; Each Has These Dimensions

1. Personality and character
2. Past
3. Family
4. Cultural background
5. Roles
6. Relationship of self to others
7. Relationship with himself or herself
8. Regular behaviors and activities
9. Body
10. Secret life
11. Perceived future
12. Transcendent dimension
13. Sexuality

Adapted from Eric J. Cassell, The Nature of Suffering and the Goals of Medicine (3).

interaction with other equally complex, biologic, and social systems, the chaotic daily experience of the real world. The physician-patient relationship reflects this complexity:

> *Seen fully and without hindrance of preconception, the relationship between doctor and patient is the totally unpredictabl[e] richness one should expect from the encounter between incalculable, irreducible personalities. Often, the business of diagnosis and treatment is the least of it. (5)*

The complexity and limited predictability of this dynamic creates a very messy situation for the physician and patient. Russell Ackoff defines messes as "dynamic situations that consist of complex systems of changing problems that interact with each other" and notes that "problems are abstractions extracted from messes by analysis" (6). The clinician's challenge is to identify and prioritize the problems that can be extracted from this real world mess to create and implement a plan with each patient. But, not even this is sufficient. The patient needs a physician with empathy. "Empathy. . .underlies the qualities of the humanistic physician and should frame the skills of all professionals who care for patients" (7).

When caring for the whole patient in the context of his or her complicated life, there is rarely an undeniably clear course or right answer to every question.

A CORE COMPETENCY

Acting wisely is the core competency of excellent physicians, regardless of time, place, or culture. It is absolutely essential for excellent patient care. Wisdom is acquired from knowledge, experience, and reflection. Knowledge and experience lead to *insight*. Reflecting on our knowledge we gain *understanding*. Reflecting on our experience imparts *judgment.* The excellent physician combines knowledge (knowing-that), experience (knowing-how), and reflection (knowing-what) with their derived proficiencies (insight, understanding, and judgment) to offer wise counsel in a range of complex, ultimately indeterminate situations where uncertainty is ever present and a right answer may not exist. Using this wisdom in the service of a unique person requires empathy and a thorough understanding of that person (Figure 1).

The core competency of excellent physicians across the centuries is *practical wisdom*, what Aristotle called *phronesis*, the ability to determine what is possible and proper to each unique clinical situation:

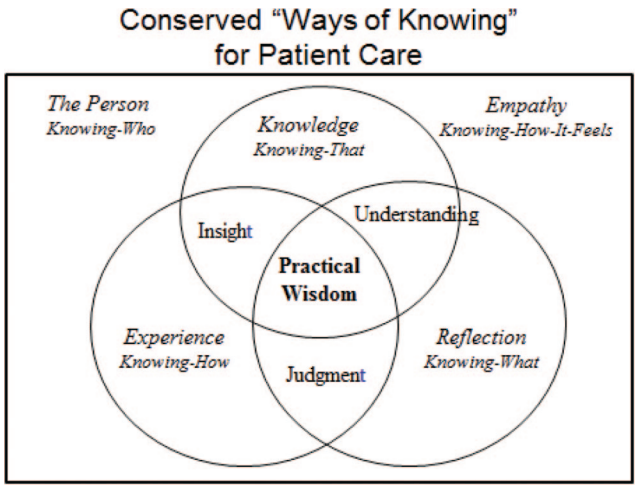

FIG. 1. Conserved "ways of knowing" for patient care.

> *. . .wisdom to take counsel, to judge the goods and evils and all the things in life that are desirable and to be avoided, to use all the available goods finely, to behave rightly in society, to observe due occasions, to employ both speech and action with sagacity, to have expert knowledge of all things that are useful. . . (8)*

Practical wisdom is neither easily nor quickly obtained. It is not attained in medical school, residency, or fellowship. There are no shortcuts. In *The Student Life,* Sir William Osler put it this way: "the hardest conviction to get into the mind of a beginner is that the education upon which he is engaged is. . .a life course" (9). Becoming a master clinician requires a physician to make sustained efforts over many years to continuously acquire knowledge, broaden and deepen clinical experience, and constantly, sometimes painfully, reflect on all that he experiences and professes to know. Baudelaire said "all experiences are good experiences" (10) and so they can be if we maintain humility in the face of success and learn from our mistakes while maintaining the confidence to continue.

CHALLENGES TO PHYSICIANSHIP

The information explosion and increasing economic pressures are forcing rapid change in medical practice and the environments in which physicianship is learned. Have these forces eroded the pursuit of a broad practical clinical wisdom? The increasing emphasis on narrowly restricted expertise and technical proficiency as the foundation

for medical careers may create the illusion that objective knowledge and technical competence are sufficient for clinical excellence. But, without an equal emphasis on mindful reflection, true understanding, mature judgment, and wisdom are not possible; physicianship will be replaced by technicianship.

Medicine faces many challenges, and the system through which it is provided must become more efficient. Necessary changes in the health-care system will impact the physician-patient relationship and the learning opportunities for students, residents, and early-career physicians. Patients who would have been hospitalized 20 years ago are now treated as outpatients. Hospital stays are short; most of the work-up is done as an outpatient. Demands for efficiency decrease the time for each clinic visit. Multiple handovers diminish the possibility of a continuous shared experience for physician and patient, even within a single episode of illness. As we become more short-focused on treating disease we may be losing touch with individual patients as unique persons. Multidimensional persons, encountered only in strictly clinical settings, removed from family, home, and community may be reduced to one-dimensional disease-bearing patients.

The economic and social forces for change are particularly challenging to academic medicine which must sustain each of its missions: providing care for each person; educating the next generation of physicians; discovering the fundamental causes of health and disease; developing new treatments through translational research; and creating a better health care system. As more work is compressed into each day, the time to engage patients and learners as persons is threatened. We need to reflect on our purposes and obligations as physicians and teachers. We must change our work to accommodate changing circumstances without losing our core values and competency. We must assure that neither the patient nor the learner as person is lost in the flood of information and that we do not allow expertise to replace wisdom.

We need a new distribution of learners skewed towards men and women with people and team skills rather than factual knowledge and individual accomplishments. We need independent learners, a lifelong skill that should have been acquired well before medical school. We must facilitate acquisition of insight into the real world complexities of the patient's life and the physician's obligations. The ability to acquire and retain factual knowledge is no longer the most necessary attribute of the physician-to-be; facts are now the easy part. In our digital world the key skills are judging what is important and what is not, understanding how to effectively evaluate and

manage each clinical challenge, and developing insight into each patient as a person so that the ends pursued are congruent with the patient's goals. We must move education beyond teaching the facts; those can be learned without the personal interaction of student, patient, and teacher.

Medical education could begin by having students take a history of present illness and past medical, family, and social history, not for diagnostic purposes, but to emphasize learning about each patient and their experience of illness. We should not teach medicine until they have learned persons. Face time with students and residents should emphasize integration of facts for understanding and development of clinical judgment through active reflection on their learning experiences. Lastly, we must encourage and mentor learners to strive for the practical wisdom that is the core competence of all excellent physicians.

Where is the wisdom we have lost
in knowledge?
Where is the knowledge we have
lost in information?

T.S. Eliot, Choruses from "The Rock" (11)

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DISCUSSION

Mackowiak, Baltimore: Knowing your patient at a personal level, it seems to me, is extremely important and to a certain extent a lost art. However, I think we also need to teach that knowledge can be dangerous, take for instance laboratory tests. Ordering tests without a look to the future, knowing what you're going to go with the result, can be dangerous. So the idea that you can never know enough about your patient is much more complicated than just knowing your patient personally.

LeBlond, Iowa City: I agree. In the clinic we oftentimes don't spend enough time asking ourselves, "What are we going to do with the information, is it really going to help the patient reach their goal?" That's a conversation to have with the patient as well. This is part of knowing-how and knowing-what is important.

Wilson, Chapel Hill: As I get older, I get interested in many of the same questions you are, so I really enjoyed your talk. I think that the cognitive psychologists are doing work in which they show that for really complex decisions people frequently reach better decisions if they spend a period of time not thinking about it and then having an answer come up as opposed to thinking about it intensely. For the last few years I've been interested in shamanism. Anthropologists have recently derived a biopsychosocial model suggesting that the main thing that these people did was try to make accessible information in their brains that just wasn't available in the neocortex to an actively thinking mind.

LeBlond, Iowa City: This is the question of metacognition, thinking about your thinking. I place that with reflection. Something we don't do well is to help our residents and students actively reflect on what they're doing. Care is not just about doing, it's about knowing the ends you are trying to achieve.

Hochberg, Baltimore: I'd like to explore empathy in the practicing clinician and whether empathy is something that you can teach in medical school and residency or is it something that the individual has to bring to the table that you can then nurture. There are ways of reliably and validly assessing empathy with questionnaires. Do you think that should part of what we do to evaluate applicants for residency and fellowships programs in cognitive specialties where we are training clinicians?

LeBlond, Iowa City: I think we do have a rather narrow selection criterion. I actually have been meeting with our housekeepers and what they tell me about their interactions with the house staff is they have no people skills. I asked them if they'd like to participate in interviews for medical students and they would be absolutely delighted. We do need to figure out better ways of judging emotional intelligence. There is some literature suggesting that empathy can be taught, though I am skeptical. Empathy can certainly be brought out and nurtured. Traditionally we've done a pretty good job of squashing it through the clinical years and residency; we can drive it out of people, creating the cynicism that we see increasing through training.

Hoffman, New York: I was truly inspired by your talk. The last time I heard this type of talk was actually when I was initiating my internship at McGill University, which was where the original Osler service was. We were very much influenced by the Chief of Medicine who would criticize you severely if you didn't ask the patient what their occupation was, because that was the individual's identity. I have been upset over the last couple of years as I've seen the electronic medical record implemented and an RVU system setup. Do we truly have the conditions in academic medical centers where

we can practice this kind of medicine? Can we really be doctors in this system as established?

LeBlond, Iowa City: I think that's a crucial question and I don't have the answer. I spent 20 years in rural Montana as a primary care physician before I came to the University. It afforded the opportunity to learn my patients over time, not just a couple of visits. The idea that a resident in a half-day a week continuity clinic can maintain continuity with their patients is, to me, bizarre beyond belief. You bring up the question of occupational history. We teach residents to take an occupational history when you think there is an occupational disease and take a sexual history when they think there may be aberrant sexual behaviors or sexually transmitted disease. Social history is often just an alcohol and tobacco history. Is that your social life? You don't smoke or drink? I mean, come on. So, why do we launch into teaching students in that first year of medical school all about medicine before we give them an opportunity to learn all about people? The ability to obtain a chief complaint, generate a history of present illness (the patient's experience of illness), and get a past medical, family, and social history does not require any medical training; it requires empathetic listening and recording. This is the core competency for understanding that person. I wouldn't let anybody progress to the medical sciences until they can take a history and tell me who this person is and what their illness experience has been. When they can do that, I'd start to teach them medicine, making sure they retain that skill.

Quesenberry, Providence: I just came off a rotation on our inpatient service. I would just make a note that the electronic medical record can be consistent with empathy and with good care. Our structure for rounds was that for the first hour we were on computers quickly getting the key data; then we had 2 hours visiting the patients and talking in-depth. I think that works pretty well.

LeBlond, Iowa City: If the EMR is used as an adjunct to the bedside visit, that is absolutely true. With all the information recorded systematically in the right EMR fields, as opposed to being buried in some flat text progress note, I can access it very quickly. I can know what you learned about that patient, at least the facts, and then have more time to deal with the person as a person. I think you are absolutely right.