PERSPECTIVES

Science in the Service of Patients: Lessons from the Past in the Moral Battle for the Future of Medical Education

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Medical schools instill a classic moral standoff in which the responsibility for the betterment of the patient stands at odds with the responsibility for the betterment of society. In critical ways, the latter, in the form of a robust research and technology-driven enterprise, has taken precedence over the former, resulting in harm to patients and individual dignity. This trade-off can be traced to Abraham Flexner, the father of American medical education. In the wake of the Flexner report, American medicine set out on a course of exponential scientific advancement, but the mistreatment of research subjects and the erosion of the doctor-patient relationship in a health care system that is increasingly unaffordable, complex, and impersonal suggest that such progress has come at a price. Recent efforts by medical schools to emphasize humanism in their curricula and admissions processes have shown promise in orienting the values of academic medicine toward the individual patient’s well-being.

INTRODUCTION

“I’m in pain,” the young woman said with an exasperation that revealed not only physical anguish but also distinct antagonism toward me, even though we had met only moments earlier. With one more clue — “It’s in my belly,” she told me — my mind began to race. One of the most thrilling aspects of being a medical student is building a mental library, complete with its own unique lexicon, of the ailments of the human body and bringing this specialized knowledge to bear in caring for patients. As soon as I heard “belly,” my thoughts were flooded with the algorithms that would lead to a diagnosis. Hardly pausing to think, I began to filter the patient’s words through a rote set of cues packaged in one of medicine’s less-than-inspired acronyms, OPPQRST: onset, position, paliation, quality, radiation, severity, timing.

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†Abbreviations: NIH, National Institutes of Health; IRB, Institutional Review Board; SUPPORT, Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments; AAMC, American Association of Medical Colleges.

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Someplace along the way, I remembered I had to slow down and take a breath. This was not a real patient, but an actor, and the purpose of this simulation session was not to test my skills at determining a differential diagnosis, but to test my ability to communicate in a difficult scenario. I fell back on another acronym: NURSE, the mnemonic that codifies empathy. “I see that this pain is really troubling, and I can understand why you might feel quite anxious and upset. I’m glad you’re here so we can try to figure out what’s going on. Could you tell me more?”

NURSE stands for name, understand, respect, support, and explore, and it is the rhetorical centerpiece of a class of patient-centered communication taught over the course of the first 2 years of medical school. Many people would scoff at the notion of training such a basic element of human relations, not to mention the insincerity of such a generic acronym. Nevertheless, this training is part of a broad, nationwide response to the rift that has developed between patients and an impersonal medical establishment.

The last century saw an explosion in medical research and with it the rapid development of novel drugs, devices, vaccines, and diagnostic modalities. The modern medical community rightly celebrates these triumphs, but this enthusiasm for technology and innovation often eclipses an appreciation of, and attention to, the individual needs of patients. Medical schools instill a classic moral standoff in which the responsibility for the betterment of the patient often stands at odds with the responsibility for the betterment of society. In critical ways, the latter, in the form of a robust research and technology-driven enterprise, has taken precedence over the former, resulting in significant harms to patients and individual dignity. The concept of this tradeoff lies at the center of academic medicine and can be traced to Abraham Flexner, the father of American medical education. This essay will follow the consequences of Flexner’s model using my own experiences in medical school and reflecting on the past. This reflection is informed by examples from Nazi Germany and the modern history of medicine in the United States using the analysis of bioethicists and historians. Finally, I will present and evaluate recent efforts aimed at restructuring medical education to shift focus back to the patient.

A VEILED LEGACY: “THE INSTITUTE OF HUMAN RELATIONS”

The induction into medical school takes the form of a ceremony during which each student receives a freshly starched, bright white coat. On a sunny September day, I entered the austere Sterling Hall of Medicine, where the ceremony was to be held, and I walked past a large inscription on its exterior. At the time, I didn’t register its peculiarity. The inscription reads, “Institute of Human Relations.” I would later find out that the building where I donned my white coat for the first time, the center of the campus of the Yale School of Medicine, was a monument to a grand and failed idea born almost a century earlier.

Milton Winternitz, dean of the medical school from 1920 to 1935, conceived of the Institute of Human Relations with the aspiration of bringing social and medical scientists together for the holistic study of humanity. His vision, which was shared by the eminent physician William Osler, was to assert the primacy of humanism in the study of medicine and to guard against nurturing “Doctor-Technicians” [1]. Today, Winternitz is better remembered as a Jewish dean who restricted the number of Jews admitted to the medical school [2], and the legacy of the Institute of Human Relations remains visible only in the carved stones of Sterling Hall of Medicine. The humanistic mission of the Institute began to falter as soon as it was created, and it quickly succumbed to forces in medicine driving in an opposite direction, which would insulate medical schools from their respective universities and champion research in medical science. Sterling Hall of Medicine, as I found it, buzzes with the sounds of refrigerators, centrifuges, and ventilators from the laboratories that are the pride of the Yale School of Medicine.

The Institute of Human Relations faded with the rise of a new set of ideals repre-
Presented most prominently by the work of Abraham Flexner, who was handed the responsibility of reforming American medical schools. Looking back at Flexner’s work on the 100th anniversary of his final report, Dr. Thomas Duffy described him as “the hatchet man … sweeping clean the medical system of substandard medical schools that were flooding the nation with poorly trained physicians” [3].

Prior to being commissioned by the Carnegie Foundation for the job of evaluating U.S. and Canadian medical schools, Flexner had traveled to Europe to observe higher education. His experience in Germany and his careful study of Theodore Billroth’s The Medical Sciences in the German Universities [4] served as key influences in his analysis of American medical schools. According to Duffy, “science, as the animating force in the physician’s life, was the overarching theme, the zeitgeist, in Flexner’s conception of the ideal physician” [3]. As such, in evaluating medical schools, Flexner valued resources such as laboratories and physician scientists, which would bolster the scientific enterprise of the University. Johns Hopkins, a school modeled after the German system, became the benchmark, in his estimation, for the structure of medical education. The 4-year program that I am now completing, consisting of 2 years of basic science and 2 years of clinical science, was in place at Hopkins at the time of Flexner’s report.

There was reason to believe the humanism that Winternitz valued was lacking in the German system, and not everyone who visited Germany was as enamored as Flexner. One American visiting physician commented that in German clinics, “the patient was something to work on, interesting experimental material, but little more” [5]. Billroth’s text, The Medical Sciences in German Universities, also contained ominous messages, claiming that eastern Jews were unfit for medical education as they were “lacking the talent for the natural sciences, and [were] absolutely unsuitable to become physicians” [4]. Nevertheless, the glimmering promise of progress in medical science obscured any potential warning signs.

A third of all medical schools closed in the wake of the Flexner Report [3], and those that remained went about conforming to the new standard. The report sealed the fate of U.S. medical education to be forever tied to medical research. Faculty would soon adopt a precarious role that has come to be known as the three-legged stool, or triple threat — at once scientist, educator, and clinician.

**PROTECTING RESEARCH SUBJECTS: LESSONS FROM A JOURNEY TO AUSCHWITZ**

Before I was granted access to a Veterans Administration database for a research study I was conducting, I was asked to complete an online course on the history of medical ethics. As I clicked through the pages describing the Nazi Trials at Nuremberg, the images of Auschwitz-Birkenau vividly flashed before me. I had recently returned from Poland as part of the FASPE program, a medical ethics fellowship to study the moral failings of physicians during the Holocaust. Medicine is so forward-looking that even events that took place just a few years in the past can seem like they belong to a remote epoch. However, I have come to believe that the history of medicine in all its triumphs and tragedies is plainly reflected today. This point of view was powerfully informed by my experience as a FASPE fellow. The faculty who lead this fellowship caution that the program represents only an entry point for the study of human dignity and ethics in medicine. For me, the emotional horror of Auschwitz has become a practical anchor point, a tool for reflection triggered occasionally in the hospital.

One such instance occurred during grand rounds. One will usually find the medical students in the back rows at these weekly departmental meetings. I was awed by a visiting physician presenting groundbreaking work in drug development for devastating auto-immune conditions. The researcher winked at the crowd as he related how a loophole had allowed him to escalate drug dosages in the “MANchurians” participating in phase 1 clinical trials. Referring to human research sub-
jects as puppets was met with uncomfortable chuckles from the crowd. My mind raced forward. In 10 years, this drug might be brought to the market and improve the lives of millions of people. Then my mind turned back in time. The legal restrictions that this researcher felt he had bypassed had their roots in the darkest era of modern history.

Bioethicist Arthur Caplan maintains that an ethical discussion of the abuses of Nazi scientists “must be approached with great caution.” He argues that “using the same analytical tools to look at mass murder and [contemporary ethical issues] may lead some to conclude that the offenses of the past were no worse than the problems that arise today in the practice of medicine” [6]. But, as Caplan goes on to suggest, perhaps more danger lies in writing off the Holocaust as anomaly of severely perverse values — “a hideous blot on the on the page of modern history” in the words of Telford Taylor’s opening statement at the Nuremberg Trials [7] — instead of confronting it as part of the history of biomedicine.

During the Holocaust, physicians working in concentration camps as well as in the ivory towers of German universities forcibly subjected Jewish, gypsy, and other prisoners to suffocation, hypothermia, radiation, and starvation while coolly recording their findings for the sake of scientific inquiry. “One’s worse nightmare is mild by comparison to what I had to endure in Mengele’s labs” [8], wrote one survivor of Josef Mengele’s notorious twin experiments.

Nazi doctors performed their experiments without reservation or remorse. In fact, what is so troubling to the modern-day ethicist, according to Caplan, is that these physicians “carried out mass murder, sterilization, and cruel experiments … for reasons they believed were moral” [6]. Doctors at Nuremberg not only defended themselves by claiming that they had been following orders, but also by asserting that they had been contributing useful data to help the State in Total War and creating value out of prisoners condemned to death. Of the many justifications offered at the trials, one is striking for its salience in the discussion of the German model of scientific research and progress that Flexner championed years earlier: “Without human experimentation, there would be no way to advance the progress of science and medicine” [9]. Others echoed this view by fervently standing behind their data when its validity was challenged by the prosecution.

Dr. Jay Katz, who devoted his career to protecting subjects of medical research, offers an analogy to help approach the topic of ethics in the context of the horror of the Holocaust. The ruins at Auschwitz-Birkenau illustrate “what can happen when many of the treacherous roads to hell converge. On one of these roads human beings are subjected to harm to personhood” [10]. Perhaps it is necessary to confront that hell to illuminate the road along which we currently travel.

“THE RESEARCH IMPERATIVE” AND THE DOCTOR-PATIENT RELATIONSHIP

“I’m not a guinea pig!” a young woman with sickle cell disease firmly announced to me, with a haunting mix of anger and resignation in her voice. It was the summer after my first year of medical school, and I was conducting a qualitative research project about hospitalization in sickle cell disease. Her outcry was thankfully not directed toward my research project, but expressed her refusal to try hydroxyurea, a relatively new and promising therapy for patients with sickle cell disease. The drug does have serious side effects, but for the right patients, it has been shown to decrease pain and increase lifespan. I was shocked by her skepticism. At the root of my incredulity was the apparent fact that she did not trust modern science and physicians as I did. Countless encounters with the medical system from a young age and keen knowledge of the history of research abuses in the United States had depleted her trust in her doctors.

Bioethicist Daniel Callahan looks to Flexner’s transformation of American medical education as the birth of a seductive but morally dangerous “research imperative,” a
force implicating academia, government, and private industry, “precisely because of its value” [11], in scientific progress. Callahan explains this imperative as “the felt drive to use research to gain various forms of knowledge for its own sake, or as a motive to achieve a worthy practical end” [11]. On the 100-year anniversary of the Flexner Report, Dr. Thomas Duffy looked back on the century that had passed, writing, “the profession appears to be losing its soul at the same time its body is clothed in a luminous garment of scientific knowledge. … It is the tale of Faust and the irresistible allure of knowledge in exchange for one’s soul” [3].

Referring to the public investment in scientific research, Harold Varmus, former director of the National Institutes of Health (NIH), remarked before leaving office in 2000, “Troubling is the idea that we’re going to cut a very significant portion of our population out of the benefits of certain kinds of approaches to health that were paid for by public money and ought to be publicly accessible” [12]. In the United States, millions of uninsured and underinsured individuals are unable to afford the fruits of publicly funded research. The consequences of such inequity have proven to be dire. One analysis showed that Medicaid patients and uninsured patients diagnosed with cancer were over 60 percent more likely to die in 5 years compared to patients with private insurance [9]. How did we arrive here? Callahan suggests that the moral foundation of the research imperative is to blame:

Medical research tempts us to invest too much hope in it as a way of relieving the human condition or leads us to excessively commercialize it, to cut moral corners in pursuit of therapies and cures, or with human research subjects, or to divert attention from the social and economic sources of sickness [14].

In the 2 decades following WWII, the American medical system completed the transformation, begun by Flexner 50 years earlier, to the German medical model by establishing a robust state-sponsored system of medical research. Medical school faculty salaries and promotions were increasingly determined on the basis of the faculty member’s contributions to biomedical research, and operating budgets of medical schools ballooned. The NIH funds supporting research activities grew from $701,800 in 1945 to $436,600,000 in 1965 [15].

The explosion of research activity brought controversy. In 1966, 2 years after the Declaration of Helsinki, which built upon the Nuremberg Code to lay out a more rigid legal framework for protections in human subject research, Dr. Henry Beecher published a now infamous article in the New England Journal of Medicine exposing abuse of research subjects, not under a fascist regime, but here in the United States. He conducted a review of the literature and found numerous examples of ethical lapses. They included withholding potentially life-saving treatment for rheumatic fever and typhoid fever, using exploitative study protocols like those that exposed children with congenital heart disease to thymectomy and skin allografts, and administering outright harmful treatment such as deliberately infecting developmentally handicapped children with hepatitis virus [15].

Not included in Beecher’s article was an experiment still taking place at the time of publication: the Tuskegee Syphilis Study. From 1932 until the 1970s, 400 black men were followed to observe the natural course of untreated syphilis, a painful and horrifically debilitating disease in its advanced stages. When penicillin — a definitive and curative treatment — became available, the researchers withheld it from the participants in order to continue the experiment. Beecher argued that abuses in research represented a systemic trend. “Medical schools and University Hospitals are increasingly dominated by investigators,” he observed. Quoting Pope Pius XII, he warned, “Science is not the highest value to which all other orders of values … should be subordinated” [15].

In the wake of Nuremberg and Beecher’s report, many efforts have been made to protect the rights of research subjects. In the
same year that Beecher’s article appeared in the *New England Journal of Medicine*, the NIH issued a statement outlining the expectation that institutions applying for grants must conduct a review of the research activity. This was the birth of the modern day Institutional Review Board (IRB). In 1974, the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research was established to strengthen the nebulous protections that the IRB system afforded. From this commission came the Belmont Report, which advanced three pillars of modern day bioethics: respect for persons, beneficence, and justice [16].

Over the years, successive efforts added to the protections of research subjects. The Declaration of Helsinki, for example, was amended in 1975, 1983, 1989, 1996, and 2000. Nevertheless, new technologies, such as human genome sequencing, and new venues for research, including developing countries, continue to bring controversy. In the late 1990s, a clinical trial conducted in Africa using a short course of the drug AZT for the prevention of mother to child transmission of HIV included a placebo arm when there already existed evidence of efficacy for a standard length treatment with AZT. An editorial in the *New England Journal of Medicine* decried that “the justifications are reminiscent of those for the Tuskegee study” [17].

Daniel Callahan recognizes a recurring historical theme. He describes a “ritual” of scandal in which “the public is shocked, familiar moral principles are reiterated and polished up a bit, and revised regulations are put in place.” But sooner or later, “the cycle repeats itself” [18].

Human subject research only tells part of the story of the “research imperative.” Jay Katz believes that the history of the “treatment of research subjects, so often recruited from the patient population, has its antecedents in the treatment of patients” [10]. Clinical medicine, like medical research, had been seduced by the notion of scientific progress.

Atul Gawande, a surgeon and writer, profiled the legendary doctor Francis Moore in a 2003 article in the *New Yorker* entitled “Desperate Measures.” Moore, Chief of Surgery for almost 30 years at Peter Bent Brigham Hospital, a Harvard Medical School teaching hospital, is depicted as ruthless in his pursuit of progress in medicine and surgery, aggressively treating gravely ill patients with little evidence that his efforts might bring positive outcomes. Ultimately, he was vastly successful, and this success had a permanent impact on the field of medicine. Although too numerous to name in its entirety, the litany of his contributions includes pioneering the fields of transplant surgery and intensive care. In achieving these ends, however, he took risks with patients that would never be tolerated today. Of the first 100 heart transplants patients, 98 died within the first 6 months following surgery, and similarly grim statistics attend the other daring acts performed in Moore’s operating rooms [19]. Nevertheless, Moore famously stated that “by protecting the individual patient, [the physician] is subjecting society to the hazard of a static rather than dynamic medicine” [20].

To be fair, Moore took on a far more nuanced view of patient dignity in his later years. Still, the question remains whether or not we are willing to bear the costs of a “dynamic medicine.” One surgeon who worked under Moore questioned whether

“at the end of the day, or the end of the decade or the end of the third of the century… what you were striving for was actually going to be anything resembling what you’d hoped it would be…whether what was being pawned off as treatment might, in a very real sense, be a disease in and of itself” [19].

Due in part to this “disease” — the infectious and insatiable appetite for knowledge and progress — a rift has developed between the doctor and patient. The “research imperative” contributed to a “poverty of ideals” in the medical profession, according to Duffy [3].

In a lecture series delivered to Harvard medical students, recorded in the *Journal of
The American Medical Association in 1927, Frances Weld Peabody warned that “the treatment of a disease may be entirely impersonal; the care of the patient must be completely personal” [21]. With the increasing complexity of health care, from the rise of subspecialties to the advent of information technology and electronic health records, medicine has become decidedly impersonal, and the doctor-patient relationship has evolved significantly from the past. A Medicare patient will see on average seven different doctors in a given year, and five different specialists [22]. In the hospital, medical interns spend approximately 12 percent of their time with patients and 40 percent of their time in front of a computer screen [23].

In addition, third-party payers became an important voice in medical decision-making. Treatment decisions might be subject to pre-approval or might not be covered at all by insurance companies. In recent decades, the availability of health information on the Internet, as well as the ubiquity of advertising campaigns for pharmaceutical products, has led to a new form of empowered consumerism in medicine.

The results of the Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments (SUPPORT), published in 1995, starkly laid out the consequences of poor communication between doctors and patients. The multimillion dollar study was commissioned to study death and dying in American hospitals. The results revealed that at the end of life, some 40 percent of patients were dying in serious pain and hooked up to machines against their wishes [24-26].

Projects such as SUPPORT and the work of grassroots advocacy groups such as Act Up in the HIV advocacy movement had given strength and credibility to the patient voice in mainstream medicine by the 1990s. Dr. Donald Berwick, administrator for the Centers for Medicare and Medicaid Services from 2010 to 2011, recognized patients as the primary stakeholders in the medical enterprise. Explicating the sweeping 2001 Institute of Medicine Report “The Quality Chasm” on improving the state of health care delivery in the United States, Berwick proclaimed patient satisfaction and the patient experience to be “True North” [27]. Still, much work remains to be done in order to realize the goal of shared-decision making between doctors and patients. One 1999 study looked at 3,552 medical decisions and found that less than 10 percent of the decisions met even minimal standards for informed decision-making [28]. Perhaps more systemic change is necessary.

TRANSFORMING MEDICAL EDUCATION

“The first day of school” is a tradition at Yale School of Medicine dedicated to discussions about cultural sensitivity. These conversations are had in the context of Anne Fadiman’s The Spirit Catches and You Fall Down, a story of missteps in the care of a Hmong child with severe epilepsy. For many years, Fadiman has addressed the incoming class with an intentionally shocking warning. While her exact words elude me, they were something to the effect of, “today, the first day of medical school, is the peak of your capacity for empathy. It’s downhill from here.” My classmates and I were silent, waiting for the “but.” It never came.

Numerous studies have demonstrated that an erosion of empathy occurs over the course of a student’s years in medical school. Interestingly, the steepest decline is seen in the third year, when students become involved in patient care [29,30]. This peculiar hardening is attributed to a process of socialization termed the “hidden curriculum” [31]. The effect of long hours in the hospital, it appears, is an emotional capitulation to the dominant culture, where respect for the patient is a chore rather than a calling.

Medical schools have responded in many ways to redirect future physicians toward Berwick’s “true north” of the patient experience. Sociologist Samuel W. Bloom has despairingly called these efforts “reform without change … repeated modification of the … curriculum that alter only very
slightly or not at all the experience of the critical participants, the students and the teachers” [32]. Sociologist Renee Fox believes that the emphasis on science crowds out other more humanistic aspects of medical education:

Fundamental is the well-known epistemological split that runs like a fault line through modern Western Medical thinking — epitomized by the dichotomous distinction that is made between what is biomedical and what is not ... Despite the pious affirmation of medical educators and other medical spokespersons about the indispensability of these [non-medical] issues to the compassionately competent practice of medicine and to the profession’s social covenant, these components of medicine are implicitly viewed as more peripheral and less important to the training and work of physicians than those that are deemed scientific [32].

What is to be done? Sherwin Nuland, surgeon and novelist, worries that “Milton Winternitz’s scornful term “doctor-technician” seems to have become the ideal of medical training.” He believes “radical action is required,” and he calls for the creation of “a fully staffed and well-funded department of humanities in medicine ... Only when the Department of Medical Humanities ... is as powerful and highly regarded as [the] Department of Pathology” will we have succeeded [1]. Katz believes that yet deeper systemic change is necessary:

Medical schools must neither base faculty salaries on abilities to generate research grants, nor base promotion on the quantity of scientific papers [10].

To Katz, the triple threat of academic medicine — research, teaching, clinical work — presents an irreconcilable conflict of interest. Perhaps pre-eminence of scientific endeavors implicitly diminishes the other charges of academic medicine.

Many inroads have been made toward emphasizing ethics, professionalism, and the humanities. Nearly every U.S. medical school now requires a class covering these themes in the first 2 years. Patient-centered communication has also been introduced into the medical school curriculum. There is a growing recognition that “learning how to converse with patients is as difficult a task as learning about diseases, their pathophysiology, diagnosis, and treatment” [10], as Katz maintains. Moreover, successful communication has been shown to improve outcomes in diabetes care [33] and decrease the occurrence of malpractice lawsuits [34]. As contrived as it may sound, teaching empathy actually works. Studies of empathy and communication workshop training among medical students [35] and residents [36] have shown favorable responses among both trainees and patients.

Medical schools are also recognizing the importance of continuity of care. Medical students often get a fragmented view of disease and patient care and may have a difficult time connecting to a patient before either the patient or they themselves are forced to pick up and leave. Harvard Medical School pioneered a new approach to the third year of medical school designed in part to promote “the connection between science and clinical medicine (‘continuity of curriculum’)” [37]. During the third year, students are responsible for a panel of patients for the course of a full year, and they follow these patients regularly. Students in this novel system performed as well or better than peers in the traditional program on medical examinations and showed a higher level of satisfaction and patient-centeredness, “characterizing it as more humanizing (even transformational) and less marginalizing than do their peers in more traditional clerkships” [38].

Finally, attention has been directed to the medical school admission process. In 2015, the medical school entrance exam, the MCAT, will take a new form. Dr. Darrell G.
Kirch, president of the American Association of Medical Colleges (AAMC), states that “we’re recognizing in this test that being a good doctor is not just about understanding science.” He believes that there is a need for a different kind of physician:

...culturally competent ... it is about understanding people — how they think, interact, and make decisions. Together with a solid foundation in the natural sciences, an understanding of behavior, perception, culture, poverty, and other concepts from psychology and sociology all contribute to the well-rounded physician [39].

The new MCAT will reflect these values by adding new sections covering “social and behavioral sciences” as well as “critical analysis and reasoning skills” to the old staple, “natural sciences.” Even if it may not be possible to design an entrance exam to select for empathy, the new MCAT sends the strong message that “natural sciences” is going to have to share the limelight.

CONCLUSION

In a short time, I will be reciting the Hippocratic Oath, the traditional ritual of embarking on a career in medicine. At medical school graduations across the world, it usually takes an adapted form that emphasizes contemporary values. However, the words that have survived centuries — most famously, “first, do no harm” — point to the fact that the dangers in the practice of medicine are intrinsic to human nature.

I recently opened a letter from the IRB informing me that a research study that I am involved with was re-approved. The letter read, “[t]he benefits continue to outweigh the harms.” Such is the essential calculus of simultaneously learning from and caring for patients. Built into the historic fabric of medical education is a tension between the values of scientific advancement and humanism in medicine. In the modern history of medicine, the latter struggles to find its place within a system built upon the German model of medical education and the research imperative.

In a Time Magazine cover story, famed scientist James Watson is quoted as saying, “You should never put off doing something useful for fear of evil that may never arrive” [40]. In the history of medicine, evil has already arrived many times and in many forms. This is a truth that is crystallized for me when I walked through the leveled crematoria in Auschwick-Birkenau.

Having lost his mother at Auschwick, Hans Jonas, a German-born Jewish philosopher, offers a framework for moving forward in safely in science:

...Let us not forget that progress is an optional goal, not an unconditional commitment, and that its tempo in particular, compulsive as it may become, has nothing sacred about it. Let us also remember that a slower progress in the conquest of disease would not threaten society ... but that society would indeed be threatened by the erosion of those moral values whose loss, possibly caused by too ruthless a pursuit of scientific progress, would make its most dazzling triumphs not worth having [41].

With health care costs — driven by new medical technologies — consuming 18 percent of GDP and projected to double over the next 30 years, it is easy to recognize the “compulsive” tempo of bio-medicine that Jonas saw. It is also clear that the enterprise of medical science has failed patients. For me, this failure is manifest in the admonition of the young woman with sickle cell disease: “I’m not a guinea pig!” Modern medicine threatens not only to bankrupt you [42], but also to rob you of your dignity. This is the tragedy at the crux of Katz’s argument: “The ideology of science, if given primacy, inexorably leads to disregard of respect for personhood” [10].

To be sure, the restructuring of medical education is under way in a meaningful way.
Maybe, as Winternitz dreamed a century ago and Renee Fox suggests today, it is possible to connect medical education to its larger cultural context: “birth, growth and development, sexuality, aging, mortality and death; and to the comedy and tragedy, joys and sorrows, suffering and solace, and the irreducible enigmas and mysteries of the human story” [26]. In the thrilling quest to conquer illness, it may seem contradictory to embrace uncertainty as a virtue, as Fox suggests. Medicine is a field that traditionally stakes itself on providing answers — to disease, prognosis, etiology. However, as we have seen, medicine’s capacity to do good is as fragile as the individual psyche in the face of illness. Perhaps Henry James should be included in our adaptation to the Hippocratic Oath: “We work in the dark — we do what we can — we give what we have. Our doubt is our passion and passion is our task” [43].

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