

Virtual Mentor

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ETHICS CASE

Do Future Bench Researchers Need Humanities Courses in Medical School?

Commentary by Rimma Osipov

Mike is a second-year medical student on the MD/PhD track. He bristles at the idea of having to take a medical humanities course along with the rest of his classmates because he knows that his career will be entirely research-oriented, with little or no clinical time. The humanities course engages students in discussions of literature, film, and art designed to help them better understand the meanings illness has for patients and how caring for patients can affect physicians. Mike feels that, by those criteria, he is not a good candidate for the course. A few weeks later, the dean of students receives a petition from Mike asking to be exempted from the course requirement.

Commentary

Sinclair Lewis's sweeping 1925 novel, *Arrowsmith*, chronicles the life and times of Martin Arrowsmith, a brilliant physician-scientist struggling to balance his drive for medical discovery with the demands of clinical practice and the politics of the research world. In navigating this landscape, Arrowsmith makes some difficult decisions that shape his career and his perspectives on what it means to be a clinician and a scientist [1].

Once a staple of high school English classes, *Arrowsmith* seems to have fallen out of favor in recent decades [2]. Mike, who was no doubt a studious, science-focused premedical student, is unlikely to have encountered his literary predecessor, Martin Arrowsmith, even as an undergraduate. Thus, he is also, perhaps, less likely to appreciate that the questions he faces as a medical student drawn to the scientific rather than the clinical aspects of medicine are not new or unique. Unlike Arrowsmith, who at the end of the novel is able to realize his dream of pursuing his passion for pure research, Mike, after his long journey as an MD/PhD trainee, will face a medical research arena with very different needs, values, and opportunities.

As somebody who envisions himself as a future bench researcher, Mike has nothing against humanities courses as he understands them; he simply feels the skills they build are clinically focused, and thus not particularly useful to an aspiring basic scientist. To a medical school dean, Mike's petition to, in effect, adapt the curriculum to his individual needs may be perceived as representing a sense of entitlement. The fact that he wants to eliminate the medical humanities course presumably to focus on his lab responsibilities is of equal concern. Would Mike think it appropriate to request exemption from a genetics course because he intends to focus his lab career on, for example, action potentials in neuroscience? Most

medical and scientific educators would turn down such a request. Knowledge of genetics would be critical to his ability to communicate with other scientists and perhaps to the broader and deeper work he may undertake later in his neuroscience career.

Furthermore, although he may not ultimately become a clinician, Mike will need to complete clinical rotations in order to attain the MD portion of his degree, for which a basic knowledge of genetics is expected of him, just as it is of his clinician classmates. To many medical school deans, and certainly to course directors in the medical humanities, Mike's request to be excused from a curricular medical humanities requirement would seem equally shortsighted. As educators, however, these individuals may take the opportunity to treat Mike's petition as a "teachable moment," since his approach indicates that he may not fully appreciate the contributions of the medical humanities or the skills and knowledge he will need as a future physician-investigator, particularly one trained as an MD/PhD.

Mike's views of science as an entering student may reflect a popular-culture myth of science as an emotionally disengaged, purely rational activity undertaken by brilliant scientists largely working on their own. This myth may have had more truth in Sinclair Lewis's day. The bacteriological revolution that had done much to marry science and medicine was still under way, and the great breakthroughs of the late nineteenth and early twentieth centuries offered hope that complex diseases would be discovered to have specific causes and targeted solutions. By the middle of the twentieth century, with the turn to molecular biology, biomedical science became increasingly specialized. Concerned that the gulf between physicians and scientists was widening, the NIH established the Medical Science Training Program (MSTP) in 1964, with the aim of training MD/PhDs, a special group of clinicians that would bridge this gap, "bring[ing] the insights of clinical experience to their research and vice-versa" [3].

Since the 1960s MD/PhD programs have grown to comprise 3 percent of all graduating US medical students and to represent a \$42-million annual federal investment [4]. The roles this small but influential group of physician investigators has come to fill have evolved with the times. In a consensus statement on future directions in research training, Meyers et al. summarize the complexity of contemporary research questions: "In addressing current public health challenges such as obesity, cancer, and mental health disorders, it is inconceivable that a single researcher, working alone, will make significant headway, particularly when one considers the need to transcend the continuum of research from basic discovery to social policy" [5].

In a study of career choices by MD/PhDs, Brass and colleagues see this group as uniquely "prepared to lead and be effective members of dynamic matrices that solve these problems" [6], such a multidisciplinary translational teams (MTTs) and other clinical and scientific collaborations. Although mainly trained in the lab, "instead of becoming basic scientists with only a distant memory of their medical training, many

MD/PhD program graduates are conducting translational and patient-oriented research as well as basic research” [6]. In 2007 only 5 percent of the MD/PhDs in their study chose not to pursue a residency, and that number has been consistently dropping, as has the number of MD/PhDs with primary appointments in basic science departments [7]. With a recent slowdown in federal research support, the flexibility of MD/PhDs has made them more valuable than ever.

The initial hope that the “master molecules”—germs and genes—would unlock cures for most disease and illness has faded. Stevenson et al. identify a shift away from “the reductionist strategy” geared to “establish a single specific cause” that dominated biomedical science in Arrowsmith’s day [8]. Increasingly, researchers are recognizing that “many of the most important health problems...appear to be generated by complex etiological pathways, including highly interactive societal, psychological, and biological mechanisms” [9]. Biomedical science, they recognize, is in need of some new, more holistic approaches to complexity.

The humanities disciplines recognize complexity and contribute to holistic approaches to patients and their illnesses. Scholars such as Rita Charon, Ronald Carson, and Catherine Belling have offered important perspectives on the ability of humanities education to build specific skills physicians will need in their future careers. Although clinician-scientists may use these skills differently, they need them no less. Through the introduction of literature, fine arts, music, and creative opportunities, humanities courses lift many medical learners out of their comfort zone, validating alternative ways of reading, seeing, communicating, and experiencing. As Rita Charon puts it, humanities “pries open for renegotiation fundamental ways of knowing” [10]. Students more familiar with the quantifiable information taught in medical and premedical curricula become aware that this perspective is not the only or even the most comprehensive way to see health, illness, and healing. Taught well, Ronald Carson argues, the humanities help students become respectful of “other intelligences and sensibilities” [11], teaching a commitment to true communication and an empathic approach to others. Much has been written about how this awareness can contribute to medical education and clinical care, but, as Mike asks in this case, how could it possibly make him a better scientist?

Scientists are beginning to recognize the value of humanities education and the skills it builds for interdisciplinary communication as well as for critical thinking outside of the traditional, reductive science paradigm. With 25-35 percent of NIH and NSF requests for applications (RFAs) calling for multi/interdisciplinary approaches, Meyers et al. assert that the “multicultural, multilingual investigator” will do best in such an environment [5]. By this they mean a researcher who can read, speak, and understand the languages of basic science, clinical activity, and public policy, as well as translate fluidly among them—communicating with collaborators, community partners, and patients who may have radically different worldviews and conceptions of the problem being studied.

Catherine Belling argues that the medical humanities does not simply replace the “blunt reductionism” of scientific training with “fuzzy holism” but instead teaches an “incisive attention to specificity” through its methods of close reading and textual analysis [12]. For Belling, teaching literature to medical learners helps them see “all knowledge—scientific, clinical and cultural” as a text that needs critical interpretation “before it can be understood and deployed” [13]. She demonstrates this technique with a reading of the play *Wit*, but also with a scientific paper on mouse models of ovarian cancer. Much like works of drama, she demonstrates, scientific papers have a conventional form, an agenda, a context, and an innate ethics. Becoming familiar with this analytical method may help science students become better readers and translators of scientific knowledge [14]. A growing contingent of medical educators has published work that suggests that, much like close reading, “close looking” or “close listening” in engaging with art and music can help develop skills that enhance clinical and scientific work—training observational abilities that can be honed in the lab and clinical setting [15-18].

As Robert Coles framed it in a classic 1979 article, one of the major and unique contributions of humanities teaching is to stimulate moral reflection in medical learners. He argued that the most important ethical choices physicians make are not about “procedures (to do or not to do) or plugs (to pull or not to pull) but the fateful decisions of everyday life we are constantly making” [19]. Reading certain works of literature in the setting of medical humanities courses, Coles posits, can encourage this kind of broad perspective. Unlike traditional, rules-based ethics courses, literature, he argues, helps learners recognize the ethical dimensions of everyday choices. Coles uses *Arrowsmith* as an example of such a work of literature, explaining that Lewis “knew how professional lives become threatened, cheapened, betrayed. And he knew that such developments take place gradually, almost innocently” [20].

As Mike progresses through his training, he may well make some very different choices about his future career than he can imagine as a second-year medical student. Even if Mike joins the shrinking contingent of MD/PhDs who do not engage in any clinical duties after medical school, the decisions he makes in his professional life are no less likely to impact the lives of others. As a scientist, Mike will have to decide what kind of work he does: will he address a major public health problem such as cancer or preterm birth, or will he do basic research for its own sake? Will he stay in academia, or will he work for industry? Will he choose to mentor students? How will he balance his work and family responsibilities? He will need more than his lab experience to help him think through the implications of these choices.

Whether Mike follows the path of most of his fellow MD/PHDs and becomes more clinically involved or remains a basic scientist, he will have no less need for the skills of careful reading, nonreductive understanding, sensitive communication, and moral reflection that humanities exposure builds. For these reasons, Mike’s dean is justified in refusing his request for exemption from his medical humanities course. She may also understand, however, that Mike’s specific interests within the course

may be somewhat different. Just as medical students with an interest in research are given the opportunity to supplement medical school courses in genetics or immunology with a journal club, perhaps this should be the case with the humanities. Mike's dean may discuss this possibility with the medical humanities course director: how to bring the moral and epistemological insights of the humanities to the scientific as well as the clinical training of MD/PhDs and other future physician-investigators. Perhaps they could begin by reading *Arrowsmith*.

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