

## The role of medical school admissions committees in the decline of physician-scientists

Eric G. Neilson

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### Perspective

Numerous articles written over the last few years have drawn attention to the disappearance of young physician-scientists (1–5). There are nearly 25% fewer physician-scientists on medical school faculties today than two decades ago (6) and now we know some of the reasons. The heavy accumulation of debt through many years of research training is one explanation (7). So is the difficulty of providing a useful research experience in the modern training curriculum (8–10), or reaching trainees who have no real understanding of what it means to be a physician-scientist before their career choices are made (3, 11). Some students attend medical schools that offer little investigative opportunity (3, 12, 13), and of course there are questions about earning a living from academic life. While these reasons partly explain the problem, I would add one more. Medical schools no longer matriculate sufficient numbers of students who are deeply interested in science. There is room nationally for only 2% of first-year medical students in the Medical Scientist Training Program (MSTP) leading to an M.D./Ph.D. degree (14, 15) and this percentage has been fixed for some time. The percentage of other students entering medical school who profess a very strong interest in research has been declining since 1987 (16). It now hovers around 10% (17) and many of these students will change their [...]

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Eric G. Neilson

Department of Medicine and Department of Cell and Developmental Biology, Vanderbilt University School of Medicine, Nashville, Tennessee, USA

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Numerous articles written over the last few years have drawn attention to the disappearance of young physician-scientists (1–5). There are nearly 25% fewer physician-scientists on medical school faculties today than two decades ago (6) and now we know some of the reasons. The heavy accumulation of debt through many years of research training is one explanation (7). So is the difficulty of providing a useful research experience in the modern training curriculum (8–10), or reaching trainees who have no real understanding of what it means to be a physician-scientist before their career choices are made (3, 11). Some students attend medical schools that offer little investigative opportunity (3, 12, 13), and of course there are questions about earning a living from academic life. While these reasons partly explain the problem, I would add one more. Medical schools no longer matriculate sufficient numbers of students who are deeply interested in science.

There is room nationally for only 2% of first-year medical students in the Medical Scientist Training Program (MSTP) leading to an M.D./Ph.D. degree (14, 15) and this percentage has been fixed for some time. The percentage of other students entering medical school who profess a very strong interest in research has been declining since 1987 (16). It now hovers around 10% (17) and many of these students will change their minds (18). Only 6% of first-year matriculants think curing disease is the most important purpose of medicine (17) — the average person on the street (19) seems more committed to medical research than our students. So how did all this happen?

I think it may have something to do with the vision of modern admissions committees and the seeming reluctance of physician-scientists to fully engage in the admissions process. Most medical school admissions committees accept students by majority vote or approval of a

dean (20), and some states have spoken legislatively on behalf of admissions committees to ensure room for those interested in family medicine or primary care. Committees of the past did little modeling of their selection behaviors (21, 22) and not much is known of the scholarly perch from which they operate today. We do know the composition of admissions committees (23): there are nearly twice as many men as women; 63% are physicians of which 8% are underrepresented minorities and 40% are from primary care disciplines. Medical students comprise 15%; Ph.D. faculty 20%; and most importantly, 91% are volunteers. Department chairs made up 20% of admissions committees in 1957 compared with only 4% in 1972 (24). Although no one has thought to ask about members who are active physician-scientists, I would venture the percentage is low.

Admissions committees live in a private world where little is known of the social context from which decisions arrive. An important exception has been the visible effort to increase the number of matriculants who are women or members of underrepresented minorities. Progress is encouraging on both fronts. However, women are less likely than men to choose a research career (16, 25) and unless some effort is made to identify women attracted to clinical investigation, the pipeline of physician-scientists will shrink even further. In any case, it should not be surprising that recent medical students have career interests similar to the committees that selected them (26). This may explain why the occasional person who contemplates a life as a physician-scientist does so at some distant point after he or she enters medical school or postgraduate training (6, 13). And while much can be said for the academic credentials of recent medical students, it is clear that admissions committees are not concerned with the declining numbers of physician-scientists — the career preferences of new students reflect that neglect.

Beyond neglect, one could also hypothesize that modern admissions committees actually resist applicants who have aptitude for scientific achievement. I began ruminating about such a “gatekeeper effect” several years ago when a female baccalaureate with a strong research bibliography found herself wait-listed for admission because she had not done much volunteer work. I admit to being skeptical about our preoccupation with measuring levels

**Address correspondence to:** Eric G. Neilson, Department of Medicine, D-3100 MCN, Vanderbilt University School of Medicine, Nashville, Tennessee 37232-2358, USA. Phone: (615) 322-3146; Fax: (615) 343-9391; E-mail: eric.neilson@vanderbilt.edu.

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**Nonstandard abbreviations used:** Medical Scientist Training Program (MSTP).

of volunteerism under these circumstances. Applicants should have some life experience with clinical medicine to be sure they understand what commitments are necessary to succeed in this profession, but too much is not of special value. Likewise, we should be concerned if committees no longer view an intense research experience by a college student as a genuine act of self-fulfillment. Holly Smith once made the perceptive remark that “the major health care problem of our time is not its crushing cost or inequitable distribution, serious as these problems are...but rather that we still face many diseases for which we have no answers” (27). The selection process for medical school today is largely silent on this issue. If the media that reported on medical school rankings factored in the number of students who went on to careers in science, the problem would undoubtedly receive immediate attention. Anyway, I had written strongly on behalf of this young woman (maybe that was her difficulty) and she eventually did gain an acceptance, but what was her admissions committee thinking?

My answer requires some background. The problem of choosing the right student for a medical education has befuddled the profession for a long time. Preparation for medical school in the 19th century was guided by the old saw that...a boy too dumb to study classics, too immoral for the pulpit, or too dishonest for the bar, should study medicine (28). The Flexner report (29) and the Council on Medical Education of the American Medical Association (30) changed all that but, by the late 20th century, preparatory qualifications for medical school had become so extraordinary that more and more applicants were showing signs of a “pre-med” syndrome (31). This much maligned syndrome describes a personality where fixation on grades and aggressive anxiety paints the dogged pursuit of a medical school acceptance. The origins of this self-absorption and social insensitivity are not clear, but one could attribute its breeding to the changing values of college students (32) and the competitiveness of professional education (27, 33). We should worry that we have not corrected this behavior (34–36) or even made it worse (37) by the time students leave medical school. In any case, educators twenty years ago felt we could remedy the situation by selecting a different kind of student (28, 38).

Consequently, in the early 1980s just before the time medical students began showing less interest in research (16), we entered a period where admitting matriculants with an education broader in the humanities was thought to be a good way of developing more compassionate physicians (38–40). Admissions committees began taking this notion seriously (41), and medical schools added training in humanistic values to their curricula (42). The implications of this approach for students who wanted to study medicine for the love of the science was not all that favorable (40, 43, 44). I suspect admissions committees fell into a trap of confusing this love of science with the risk of educating someone who would become too enamored with the impersonal aspects of technology (33, 44, 45). If true, committees have misjudged the character of physician-scientists and failed to recognize that scientific progress

is what leads to more humane treatment (33, 46). There is a Good Samaritan tradition in the work ethic of physician-scientists that reflects an authentic compassion for human health (47). A life in science offers the hope of helping many more patients beyond the few we assist individually in the clinic (48, 49). Such values need more praise by those responsible for student selection. In any event, we have trained several generations of technocrats (44, 50) and most of them are not physician-scientists. If finding college students who majored in the humanities was the answer to more professionalism from physicians, why then did we need social curriculum reform? The modern message about training in the humanities did not consider Mencken’s prescient observation that...there is always an easy solution to every human problem — neat, plausible, and wrong (51).

Several years ago when California legislators expressed concern about the flagging personalities of their medical students, Faith Fitzgerald reported an informal study comparing the aruna of her third and fourth year clerks with their pre-medical majors (52). She found that students who exhibited the highest concern for the welfare of their patients were those who had taken the most credits in their college major. It did not matter whether their major was in the humanities or a science. What seemed to matter was how curious students were, how deeply they inquired, and how much interest they showed in the lives of those who were ill. Studying humanities was never about being more empathetic or sensitive (41, 52, 53). In fact, some of society’s most accomplished artists have been investigative physicians (54).

Somewhere in our present search for the compassionate matriculant we need to acknowledge other values. In particular, that the first principle of medical ethics is competency and “you cannot be competent unless you are fluent in the language of science” (55). Considerate care is merely the proper vehicle through which we convey such competence. We should not confuse the two nor trade one in for the other. What we really require from our admissions process is a student who loves science and has “a heart that never hardens, a temper that never tires, and a touch that never hurts” (56); in other words, someone highly trained in modern biology who is committed to the welfare of patients.

What does all this have to do with admissions committees and the decline of physician-scientists? I suggest that committees today are overly preoccupied with finding humanists and volunteers among humanities majors at the expense of students of science (16, 41) or even the students Alan Gregg once described as having “a good education that leaves much to be desired” (57). It is only after students get to medical school that we fail to enrich their spirit of kindness (37) and this is something admissions committees cannot fix. This is a problem for the academy and is addressable by teaching and better demonstrating compassionate care (35, 36).

Of course, we cannot easily identify our next generation of physician-scientists with committees who lack members of the same phenotype. Physician-scientists need to get back into the game and medical schools need to reassess their admission priorities regarding the

research potential of future students. Students of science who miss the cut for MSTP should not be tainted by their failure to be chosen for these extraordinarily competitive positions. They still can make a research contribution as physicians through another training pathway later. Making pre-medical college advisors aware of our pressing needs could also help, as would more attentive mentoring of women. Finally, some re-evaluation of our expectations for all students is in order. Every admissions committee should tell their applicants on interview day, we want to teach you to be great doctors but this is a minimal expectation; we want you to also think about what else you might do for the profession and for human health beyond the individual patient; some of you should consider medical science as a career. Surely we can accept more students interested in research than 10% and still have a medical school class that is socially and intellectually diverse. We cannot afford to leave the next Arrowsmith on a wait-list somewhere (58).

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