

Case Follow-up

The doctors were unsure how to proceed and worried that shared decision making without actionable evidence would burden the family, forcing them to choose among unacceptable outcomes. As the doctors explained the complexity of the care involved, Mr. K.'s son asked how his father would be treated in a city hospital. Informed that the next step would be a CT scan, the family decided to transport Mr. K. to the nearby city. For the Jan Swasthya Sahyog doctors, it was a bitter resolution. The family knew that well-researched stroke care was available in parts of India but that

 An audio interview with Dr. Jain is available at NEJM.org

they couldn't access it. Mr. K. was subsequently lost to follow-up.

The patient's initial and identifying characteristics have been changed to protect his privacy.

The editors of the Case Studies in Social Medicine are Scott D. Stonington, M.D., Ph.D., Seth M. Holmes, Ph.D., M.D., Michelle Morse, M.D., M.P.H., Angela Jenks, Ph.D., Helena Hansen, M.D., Ph.D., Jeremy A. Greene, M.D., Ph.D., Keith A. Wailoo, Ph.D., Debra Malina, Ph.D., Stephen Morrissey, Ph.D., Paul E. Farmer, M.D., Ph.D., and Michael G. Marmot, M.B., B.S., Ph.D.

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From Jan Swasthya Sahyog (the People's Health Support Group), Ganiyari, Chhattisgarh, India (S.C., T.L., Y.J.); the HEAL Initiative, University of California, San Francisco, San Francisco, and Columbia University Medical Center, New York (T.L.); Brigham and Women's Hospital, Boston, and Equal-Health, Brookline (M.M.) — both in Massa-

chusetts; the University of California, Irvine (A.J.); and the University of Michigan, Ann Arbor (S.S.).

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The Cost of Applying to Medical School — A Barrier to Diversifying the Profession

Lorena Millo, B.S., Noelani Ho, B.S., and Peter A. Ubel, M.D.

The median cost of attending medical school in the United States has risen substantially over the past decade. Rising in tandem with the cost of attendance has been the median amount of educational debt held by medical school graduates, which grew to \$200,000 in 2018, a 4% increase over the previous year.¹ This financial burden represents an important barrier to becoming a physician, especially for prospective students from marginalized or disadvantaged backgrounds. Some medical schools have at-

tempted to ease this burden by offering full need-based scholarships. Although such aid packages are a sign of progress, similar attention hasn't been given to the costs that applicants incur before enrolling; applying to medical school may be prohibitively expensive for low-income people.

Although it is difficult to accurately calculate the expenses involved in the application process, the numerous requirements and their accompanying costs paint a grim picture (see table). One of the first costs involved in

applying to medical school is the \$315 fee for the Medical College Admission Test (MCAT). The competitiveness of the admissions process has spawned an industry devoted to exam preparation. Online platforms such as Khan Academy provide free exam-preparation resources, but 62.7% of people taking the MCAT still purchase practice exams from Kaplan and other companies and 21.2% enroll in preparation courses that typically cost between \$2,000 and \$10,000.² Some schools have recently added another required

Medical School Application Costs.*		
Application Requirement	Required Costs (\$)	Additional Costs (\$)
MCAT exam	≥315	Repeated exam, ≥315; preparation course, 2,000–10,000; preparation books, 30–200
CASPer exam	10 flat fee + 10 per school	Preparation course, 150–1,600
AMCAS primary application	170 flat fee + 40 per additional school	Texas medical and dental schools application service (for students applying to most Texas schools), 165
Transcript processing	Median, 10 (range, 0–20)	None
Secondary applications	Median, 90 per school (range, 0–200)	None
Interviews	Attire, ≥150; airline ticket, ≥200 per school; hotel, ≥200 per school; taxi, ≥25 per school	Preparation books, 5–40
Acceptance deposits	Median, 100 per school (range, 0–1,000)	None

* AMCAS denotes American Medical College Application Service, CASPer Computer-Based Assessment for Sampling Personal Characteristics, and MCAT Medical College Admission Test. Cost data are from the Association of American Medical Colleges and the Student Doctor Network.

exam, the Computer-Based Assessment for Sampling Personal Characteristics (CASPer), which costs \$10 to take plus an additional \$10 for each school to which applicants want to send their scores. Preparation packages for this exam have emerged, too, with costs between \$150 and \$1,600.

Next, most schools require applicants to submit a primary application using the American Medical College Application Service system, which has a first-time cost of \$170 and a \$40 fee for each additional school. Applicants then incur expenses associated with secondary applications, which have fees as high as \$200 for a single school. In 2018, medical school applicants completed a median of 15 secondary applications.³

Some of the most substantial expenses arise from interview-related travel. Purchasing interview attire and airline tickets and paying for hotel rooms can impose substantial financial strain on applicants. Prospective students sometimes receive interview invi-

tations only a couple of weeks in advance, leaving them little opportunity to find affordable flights or hotels.

In 2018, median spending on secondary applications and interviews among people matriculating to medical school was \$1,200 and \$650, respectively; 33% of students spent \$2,000 or more on secondary applications and nearly 30% incurred interview-related expenses of \$1,500 or more.³ Even more jarring to consider is that more than 10,000 of the roughly 52,000 people applying to medical school each year are re-applying, which means that they shoulder these expenses more than once.

People may wonder why application costs matter, given the much higher cost of medical school tuition. What they fail to consider is the risk involved in applying to medical school. Students who incur debt paying for medical school can generally be confident that they will someday earn a physician's salary that will help them pay off that debt. Applicants have no such guarantee.

And unlike the comprehensive need-based aid that some schools offer medical students, there is no aid package that covers the full spectrum of application costs.

High application costs send a message that medical education isn't designed to be obtainable for low-income people, which could potentially deter some people from applying at all. In addition, although some applicants have the means to volunteer or take time off from work while applying, many low-income applicants must continue working to afford application fees and other expenses. Cost-related barriers may partly explain why people applying to medical school are disproportionately white and of higher socioeconomic status. In 2018, only 9% of applicants identified as black or African American, 10% as Hispanic, and less than 1% as American Indian or Alaska Native.⁴ Nearly a quarter of first-year medical students come from families earning \$250,000 or more per year,³ whereas only 5% come from families in the lowest household-income quintile

(with incomes of about \$24,000 per year or less).⁵

Two main forms of assistance are currently available to reduce application costs. The first is hosting programs, which arrange for current medical students to host applicants so that applicants can avoid hotel expenses. The second is the Fee Assistance Program (FAP) run by the Association of American Medical Colleges (AAMC), which helps low-income applicants by reducing the MCAT's cost, waiving primary-application fees for up to 20 schools, and providing free MCAT-preparation materials. Most schools also waive secondary fees for applicants who qualify for the program.

Although the FAP is an important step in supporting disadvantaged applicants, we believe it is not sufficient. The program doesn't cover interview-related expenses. There may also be people who don't qualify for assistance but still cannot afford to apply to medical school, such as prospective international applicants and undocumented people who aren't Deferred Action for Childhood Arrivals (DACA) recipients. What's more, the FAP application is complex, requiring numerous documents, including parents' tax returns, W-2s, college financial-aid letters, and housing- and food-assistance letters. Making low-income applicants jump through these additional hoops may be necessary, but some people may be deterred by the complexity of the FAP application process or a belief that FAP status may negatively affect their candidacy.

We believe that there are several ways the process of applying to medical school could be made more inclusive. First, the AAMC

could limit the number of medical schools to which each applicant can apply. This change would put low-income applicants on more equal footing with wealthier applicants and would encourage applicants to be more thoughtful about the schools they select. There is precedent for setting

one-on-one interviews or multiple mini-interviews with admissions-committee members. Either format could be adapted to video platforms. Some schools may be hesitant to alter their interview format, given that the affirmative-action philosophies of many admissions committees empha-

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such a cap: the Common Application system used for undergraduate admissions limits users to 20 applications. To ease applicants' concerns associated with such a change, the AAMC could consider allowing applicants who don't receive a specified number of secondary-application invitations by a given date to submit additional primary applications.

Second, medical schools could screen applications more thoroughly before sending secondary invitations. Most medical schools invite all applicants to submit a secondary application, without reviewing their personal statements, grades, MCAT scores, or letters of recommendation. As a result, applicants spend money on secondary applications without knowing whether schools consider them to be strong candidates for admission.

Third, medical schools could transition from in-person to virtual interviews. Most interviews are currently conducted as either

size the in-person evaluation of personal characteristics. However, this practice may not be having the desired effect; even in the context of in-person interviews, the reliability, validity, and fairness of interviewers have been questioned, raising doubts about whether the costs of in-person interviews are justified. Many top law schools conduct interviews virtually, and emergency-medicine programs are piloting a standardized video interview to evaluate residency applicants. Even if all interviews were virtual, prospective students could still choose to visit a smaller number of schools at a lower total cost after acceptance. Schools not ready to adopt virtual interviews could conduct regional interviews by using alumni networks or could consider covering travel costs for their FAP applicants, if they can afford to do so.

Need-based financial aid helps low-income students afford medical school tuition. Such aid

doesn't help people who can't afford to apply to medical school in the first place. To improve the racial, ethnic, and socioeconomic diversity of the medical profession, we believe it is necessary to reduce the cost of applying to medical school.

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From the Margolis Center for Health Policy (L.M., N.H.), and the Fuqua School of Business, Sanford School of Public Policy, and

Duke University School of Medicine (P.A.U.), Duke University, Durham, NC.

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Unplugging the Pipeline — A Call for Term Limits in Academic Medicine

Whitney H. Beeler, M.D., Christina Mangurian, M.D., M.A.S., and Reshma Jaggi, M.D., D.Phil.

The National Institutes of Health (NIH) recently announced a plan to enact 12-year term limits for its 272 tenured intramural laboratory and branch chiefs. The goal is to open up leadership positions for women and underrepresented minorities, who currently account for less than a quarter of senior investigators within the NIH's Intramural Research Program. Given that successful laboratory research often takes years or even decades to conduct, this decision reflects a major shift in priorities by the largest biomedical research agency in the world.

Academic medicine is now lagging behind the NIH in its recognition of the lack of diversity among its leadership and in systemwide efforts to address the problem. It's well known that the proportion of faculty who are women or members of racial or ethnic groups that are underrep-

resented in medicine decreases steadily as physicians progress through the academic pipeline. As a consequence of this attrition, women and underrepresented minorities account for only 18% and 12%, respectively, of U.S. medical school deans.¹ Some academic physicians might argue that leadership will naturally diversify as greater numbers of women and minorities matriculate into medical school and move through the pipeline. There are inherent problems, however, with this *laissez-faire* approach to equity.

Even though women have constituted more than 40% of the medical student body for more than a quarter-century, less than 20% of department chairs in academic medicine are women (see graph).¹ The proportion of deans who are female closely mirrors the proportion of department chairs who are female. Without a major policy shift to accelerate

the rate of diversification, academic medicine won't reach gender parity for another 50 years, when even the youngest members of our profession — today's medical students — will be well past retirement age.

Several explanations have been proposed for the "leaky pipeline" of women and underrepresented minorities, including work-life tension that disproportionately affects women, especially those with children; the greater amount of administrative, committee, or other "invisible" work asked of both women and minorities; a dearth of mentorship, sponsorship, and networking opportunities to accelerate professional development; disparities in research funding and salary support; and implicit biases that maintain the status quo.

Yet there is another distinct and clearly modifiable contributing factor that has yet to garner attention within academic medi-