Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
COVID19 Limits on Physician Shadowing Harm Undergraduate Students’ Futures

Arenal G. Haut* and, Elliott R. Haut, MD, PhD, FACS†,‡,§.

*Brown University, Providence, Rhode Island; †Division of Acute Care Surgery, Department of Surgery, Department of Anesthesiology and Critical Care Medicine, Department of Emergency Medicine, The Johns Hopkins University School of Medicine, Baltimore, Maryland; ‡The Armstrong Institute for Patient Safety and Quality, Johns Hopkins Medicine, Baltimore, Maryland; and §Department of Health Policy and Management, The Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland

Shadowing is constantly praised as an essential component of an undergraduate student’s pre-medical journey, at times even described as “ubiquitous.” Whether a student decides to pursue a career as a physician or a different pathway, students report shadowing as a key deciding factor. For students considering a career in medicine, shadowing is a unique opportunity to understand physician-patient interactions. Shadowing is crucial for students to make professional connections and find physician mentors. In particular, shadowing unlocks opportunities for underrepresented groups, underprivileged students, and women, as shadowing may be their only opportunity to see what a physician does on a day-to-day basis.

The coronavirus (COVID-19) has caused rapidly changing rules. Formal shadowing programs have been suspended and informal shadowing has been prohibited for over two years, and there’s no end in sight. We cannot continue on this way. To mitigate this dire situation, we propose the following four specific recommendations.

First, allow in-person, undergraduate student shadowing while ensuring safety. Undergraduate students need shadowing experiences, and it is essential that shadowing programs are conducted with proper risk mitigation protocols.

Second, enhance and maximize virtual shadowing. True virtual shadowing is technically feasible and could be made available with physicians who are seeing patients via telemedicine. By enabling three-way video calling, students could observe the patient-provider interaction in the virtual setting.

Third, fill clinical, front-line hospital roles with student volunteers and/or workers. Students could gain practical frontline, clinical exposure and real-world experiences supporting the medical system during a pandemic.

Fourth, recognize the student experiences. College advisors, medical school admissions officers, and medical school faculty need to understand the drastically decreased in-hospital time that current students have had, and all the obstacles that will impede shadowing opportunities for years to come.

We owe it to students, current and future physicians, the entire medical community, and society at large to reinvigorate opportunities for shadowing. The pipeline and the next generation of physicians depends on it. (J Surg Ed 79:1317–1319. © 2022 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: Shadowing, Mentoring, Education

COMPETENCIES: Patient Care, Medical Knowledge, Professionalism

Shadowing is constantly praised as an essential component of an undergraduate student’s premedical journey, at times even described as “ubiquitous.” From coast to coast, university prehealth advising offices recommend shadowing to eager college students as an opportunity to learn about medical practice and build a personal connection with a physician. Shadowing is key for students of many levels as they decide on their ultimate career path.

For students considering a career in medicine, shadowing is a unique opportunity to experience ‘a day in the life’ of a physician. The Association of American
Medical Colleges (AAMC) states that, “Shadowing a doctor is a great way to find out if a career in medicine might be right for you.” For some students, particularly “women and underrepresented minority and underprivileged students,” shadowing may be their only opportunity to see what a physician really does on a day to day basis. Shadowing has been demonstrated to increase students’ familiarity with the physician’s role, as well as increasing students’ understanding of physician-patient interactions.

Whether a student’s decision is a career pathway toward becoming a physician or a different direction, students report shadowing as a key deciding factor. Medical school is a huge commitment both personally and financially, and it’s important that students are fully informed before making such a major decision. Physicians that students shadow often become an important professional connection for undergraduate students. Whether as a mentor, career advisor, coach, sponsor, or recommendation letter writer, getting personalized attention from the physician is another aspect of shadowing that assists in professional development.

As an academic trauma surgeon (ERH), I have personally seen the power of the shadowing experience. Over the past 2 decades, I have had dozens of undergraduate students spend time shadowing me in the trauma bay, operating room, intensive care unit, wards, and clinic. Some students come for a single experience, while others keep up the relationship via volunteer research projects or other educational mentoring programs. Watching these students’ eventual career paths as they matriculate to medical school, finish residency/fellowship, and grow into academic physicians is an incredible feeling. The benefits of shadowing are not only for the student; it is also personally rewarding and valuable to physicians.

Currently, I (AGH) am an undergraduate sophomore trying to figure out what I want to do with my life. I’m most likely premed, but with limited clinical experiences and no shadowing opportunities, I’m feeling uncertain about my career path. When I ask for guidance regarding my uncertainty about medical school, I’m advised to ‘shadow a physician,’ yet this is never paired with an acknowledgement of the obstacles I’m facing (along with every other student in my shoes) in the COVID-19 era.

Coronavirus (COVID-19) has completely turned everybody’s lives upside down. I graduated high school in a parking lot, socially distanced from my peers. My freshman year didn’t begin until January 2021 due to de-densification efforts at Brown University (like many other college campuses), and continued until August, bleeding right into the fall of my sophomore year. Summer break, a popular time for physician shadowing, was not an option. Returning home for winter break, I had plans to shadow at a local hospital, but the Omicron variant kept me stuck at home as all local shadowing opportunities were cancelled. I say all this not to complain, but to demonstrate the ways in which COVID-19 has upended the typical premed student’s pathway and hindered our decision-making.

Formal and informal shadowing programs have been suspended, some for over 2 years, and there’s no end in sight. We cannot continue on this way. Students at many levels (high-school, college, etc.) need these shadowing experiences. Otherwise, we will lose out on a generation of physicians, and we can’t afford that loss. To mitigate this dire situation, we propose the following four specific recommendations.

**FIRST, ALLOW IN-PERSON, UNDERGRADUATE STUDENT SHADOWING WHILE ENSURING SAFETY**

Undergraduate students need shadowing experiences, and it is essential that shadowing programs are conducted with proper risk mitigation protocols. All experiences should include appropriate training, fit testing, and consistent usage of personal protective equipment (PPE). In addition, all students should be required to have COVID vaccinations to match the requirements of the health care workers they will be shadowing.

**SECOND, ENHANCE AND MAXIMIZE VIRTUAL SHADOWING**

Many websites have popped up promoting what they call “virtual shadowing.” However, most of the currently available virtual opportunities consist of a lecture by a physician describing their career path, along with a short question and answer session. Though this online experience may be valuable, it is not the same as shadowing and should be described differently. True virtual shadowing is technically feasible and could be made available with physicians who are seeing patients via telemedicine. By enabling 3-way video calling, students could observe the patient-provider interaction in the virtual setting. While this cannot replace in-person shadowing, it would be remarkably useful for many prospective medical students.

**THIRD, FILL CLINICAL, FRONT-LINE HOSPITAL ROLES WITH STUDENT VOLUNTEERS AND/OR WORKERS**

In the height of the COVID-19 surges, many hospitals were redeploying nonclinical employees to clinical roles.
due to the multifactorial shortage of frontline workers. In addition to this approach, we suggest that hospitals could hire students (or reopen their volunteer programs) for these positions. With the proper precautions and PPE, these roles can be safely filled by student workers or volunteers. The students could gain practical frontline, clinical exposure and real-world experiences supporting the medical system during a pandemic, while also potentially receiving monetary compensation for their efforts.

FOURTH, RECOGNIZE THE STUDENT EXPERIENCES

College advisors, medical school admissions officers, and medical school faculty need to understand the drastically decreased in-hospital time that current students have had, and all the obstacles that will impede shadowing opportunities for years to come. We must do everything in our power to get undergraduate students into clinical settings. It’s even more important now, as we begin the third year of the pandemic, to recognize that many students have only ever known a COVID-era college experience, and have had no options for shadowing opportunities. Work to support these students and be aware of the situation they are in.

Physician shadowing needs to be revived, even if it may look a little different right now. Our current undergraduate premeds are feeling uncertain and unsupported in their career pathways, and we can’t afford to lose these future physicians. The COVID-19 pandemic has impacted countless facets of medicine, but this is one negative consequence we can minimize with the mitigation strategies proposed above. We owe it to students, current and future physicians, the entire medical community, and society at large to reinvigorate opportunities for shadowing. The pipeline and the next generation of physicians depends on it.

DISCLOSURES

Dr. Haut reports research funding from The Patient-Centered Outcomes Research Institute (PCORI), the Agency for Healthcare Research and Quality (AHRQ), the National Institutes of Health National Heart Lung, and Blood Institute (NIH/NHLBI), and the Department of Defense (DOD)/Army Medical Research Acquisition Activity.

REFERENCES

1. Thang C, Barnette NM, Patel KS, et al. Association of Shadowing Program for undergraduate premedical students with improvements in understanding medical education and training. Cureus. 2019;11:e6396. https://doi.org/10.7759/cureus.6396. PMID:31942265; PMCID: PMC6961790.
2. Stroh DA, Ray-Mazumder N, Norman JA, et al. Influencing medical student education via a voluntary shadowing program for trauma and acute care surgery. JAMA Surg. 2013;148:968–970. https://doi.org/10.1001/jamasurg.2013.363. PMID:23925491.
3. https://students-residents.aamc.org/aspiring-docs-factsheets-get-experience/shadowing-doctor
4. Freischlag JA. Shadowing physicians. JAMA. 2011;305:2415–2416. https://doi.org/10.1001/jama.2011.789. 2415; author replyPMID: 21673292.
5. Wang JY, Lin H, Lewis PY, Fetterman DM, Gesundheit N. Is a career in medicine the right choice? The impact of a physician shadowing program on undergraduate premedical students. Acad Med. 2015;90:629–633. https://doi.org/10.1097/ACM.0000000000000615. PMID:25565263.
6. Haut ER, Lau BD, Kraenzlin FS, et al. Improved prophylaxis and decreased rates of preventable harm with the use of a mandatory computerized clinical decision support tool for prophylaxis for venous thromboembolism in trauma. Arch Surg. 2012; 147:901–907.
7. Smart BJ, Haring RS, Zogg CK, et al. A faculty-student mentoring program to enhance collaboration in public health research in surgery. JAMA Surg. 2017;152:306–308. https://doi.org/10.1001/jamasurg.2016.4629. PMID:27973649.