



AMERICAN ACADEMY OF  
ORTHOPAEDIC SURGEONS

AMERICAN ASSOCIATION OF  
ORTHOPAEDIC SURGEONS

U.S. House of Representatives  
Committee on Small Business

“Upskilling the Medical Workforce: Opportunities in Health Innovation”  
November 13, 2019

Testimony of Matthew Conti, M.D.

Chairwoman Velazquez, Ranking Member Chabot, and members of the Committee, thank you for the opportunity to testify before the House Committee on Small Business. I offer this testimony on behalf of the American Association of Orthopaedic Surgeons (AAOS), which represents 18,000 orthopaedic surgeons and 5,000 orthopaedic residents nationwide, as well as musculoskeletal patients. I am honored to share my perspective on the role innovation plays in the field of medical education, as well as my current experience as an orthopaedic resident at one of the top surgical hospitals in the country.

I would also like to thank the Chairwoman, Ranking Member, and members of the Committee for your continued focus on issues of importance to physicians this Congress. Past hearings on prior authorization, student loan debt, and challenges to private practices have drawn great attention to some of the issues negatively impacting patient care, especially in areas where patient choice and access is decreased. These truly are small business issues, and we are grateful that this Committee is continuing to examine them with your specialized expertise.

I am currently serving as a PGY-4 orthopaedic surgery resident at the Hospital for Special Surgery (HSS) in New York, NY. As a resident at HSS, I have been able to further my surgical training as well as to continue research on clinical outcomes. I received the Orthopaedic Research and Education Foundation (OREF) and the HSS Surgeon-in-Chief grants for a project focusing on adolescent idiopathic flatfoot deformity. I am an active member of the American Orthopaedic Foot and Ankle Society (AOFAS) Young Physicians Committee. I am also the founder of Our Hearts to Your Soles, a non-profit organization that has provided free shoes and footcare to more than 40,000 homeless men and women across the United States for the past 15 years.

Growing up with a father who is an orthopaedic surgeon, I developed an interest in his practice at a young age. I wanted to pursue a career in a field in which I could help others, and I thought the best way to do that would be through a career in medicine. In medical school at Weill Cornell Medical College in New York City, I spent time performing clinical research with my mentors at HSS, Dr. Jonathan Deland and Dr. Scott Ellis, who encouraged me to pursue orthopaedics. The opportunity to significantly improve and preserve a patient's quality of life motivated me to apply for a residency position in the field of orthopaedic surgery.

### **The Role of Surgical Simulation in Resident Education**

HSS is a unique and special place for residency training. As the top nationally ranked hospital for orthopaedic surgery (for the 10<sup>th</sup> consecutive year)<sup>1</sup>, residents at HSS have access to a range of new technology, innovative techniques, and experiences that those at smaller or more rural institutions may not have as a part of their graduate medical education (GME) curriculum. I am very fortunate to be able to train in such a unique environment.

As we discuss technology and innovation, surgical simulation quickly rises to the top of the list in terms of its importance and ability to effectively teach residents the skills needed to become successful surgeons. Whether it be through high-tech simulation tools or through cadaveric specimens, the surgical simulation work I've done inside the HSS lab has been one of the most valuable learning experiences I have had during my residency.

Surgical simulation has become so increasingly important to GME, that in 2013 the American Board of Orthopaedic Surgery (ABOS) and the Accreditation Council for Graduate Medical Education (ACGME) Residency Review Committee (RRC) for Orthopaedic Surgery implemented simulation and motor skills requirements for resident education.

Bioskills labs provide residents with the ability to simulate surgical procedures, familiarize themselves with surgical equipment and instrumentation, and learn new or innovative techniques that will enhance their ability to treat patients. At HSS, residents like myself have access to the Bioskills Education Laboratory (BSEL) which allows for exposure to and additional training on some of the top technologies in orthopaedics. Studies show that the skills learned during lab simulations transfer successfully to the OR, citing that residents trained with the simulator to perform an arthroscopic knee performed significantly better in key measurement categories than those trained with traditional surgical instruction.<sup>2</sup> However, labs of this nature come at a huge expense to the hosting institution, often containing millions of dollars' worth of surgical equipment, instrumentation and technology. Less well-funded labs also have decreased access to cadaveric specimens, making it more challenging for residents to utilize them as a surgical simulation tool.

Virtual reality (VR) technology is another tool being used with increasing frequency and with increasing success for surgical simulation in GME. In one study of general surgery residents, trainees who were randomized to participate in VR training were 58 percent faster and had

---

<sup>1</sup> Hospital for Special Surgery. HSS Nationally Ranked No. 1 in Orthopedics by U.S. News & World Report for Tenth Consecutive Year, Hospital for Special Surgery, 30 July 2019, <https://news.hss.edu/hss-nationally-ranked-no-1-in-orthopedics-by--usnews--world-report-for-tenth-consecutive-year/>.

<sup>2</sup> Cannon, W. Dilworth, MD, et al. "Improving Residency Training in Arthroscopic Knee Surgery: JBJS." The Journal of Bone and Joint Surgery, Bone and Joint Journal, Nov. 2015.

three times fewer errors in their first attempt at performing laparoscopic cystectomies.<sup>3</sup> New advances in this technology allow for both visual and haptic (touch) feedback recreating the feel of an actual surgery. However, significant improvements in haptic feedback are necessary in order to make VR technology more closely mirror true OR experiences.

In the field of orthopaedics, simulation has been particularly successful when used to recreate arthroscopy and minimally invasive surgery, two of the most modern surgical techniques residents are learning. Simulation can be done repeatedly, on-demand, and without patient risk – potentially lowering complication rates and costs to the health care system in the long run. Additionally, technology in VR has advanced significantly, now providing tactile feedback to the operator which enables the resident to develop a touch for the surgery that previously couldn't be learned without a live patient or a cadaver. The aim of all simulation tools is that residents are able to train and reach an acceptable level of proficiency before they perform surgery on real patients.

Personally, the Bioskills Education Laboratory has provided me with numerous opportunities to advance my surgical skills in a safe setting. Time spent working with cadaveric specimens has allowed me to try new surgical techniques that can then be applied in the operating room to improve patient care. I have also found the arthroscopic surgical simulator useful to learn how to adjust my hands in space. In arthroscopic surgery, the arthroscope, or camera, is placed inside the joint. In order to effectively use an instrument such as a shaver in the other hand, a surgeon must learn to triangulate his or her hands so that the camera and instrument can be adjusted while inside a joint. This had led to greater efficiency as a resident in the OR. I find that my time in the OR with attending surgeons is more useful because I have already learned basic skills and am ready to learn more advanced techniques.

### **The Role of Medical Specialty Societies**

Facilities and programs like that at HSS, are able to provide students with increased opportunity to utilize these technologies. But as mentioned above, students in GME at smaller or more rural institutions may not have access to the same simulation and VR techniques. That being said, simulation does not need to be overly expensive or complex to be effective. The utilization of sawbone exercise or even modeling suturing techniques on pigs' feet can be a simple opportunity to engage through surgical simulation. Companies have now begun offering

---

<sup>3</sup> Grantcharov TP, et al. "Randomized Clinical Trial of Virtual Reality Simulation for Laparoscopic Skills Training." NCBI, British Journal of Surgery Society Ltd. Published by John Wiley & Sons, Ltd., Feb. 2004, <https://www.ncbi.nlm.nih.gov/pubmed/14760660>.

simulation technologies for an annual fee plus hourly usage and annual maintenance fees. This approach allows for institutions to receive the latest technology upgrades each year while greatly reducing their share of the hardware costs. Surgical simulation courses or labs presented through a resident's medical specialty society are often offered at a reduced cost to those in GME and can provide a similar experience to the courses offered in bioskills labs at larger academic institutions.

AAOS has worked in collaboration with the American Board of Orthopaedic Surgery (ABOS) and orthopaedic subspecialty organizations like the Arthroscopy Association of North America (AANA) to develop programs like the Fundamentals of Arthroscopic Surgery Training (FAST) program to teach residents arthroscopic surgical techniques in a cost-effective, clinically based, and hands-on way. The goal of the program is to eventually develop an accessible system of teaching tools that enables residents to practice arthroscopic surgery skills at home, with more expensive simulation devices available at the residency program and hospital levels, and ultimately, state-of-the-art and highly sophisticated VR equipment at regional centers where skills testing is performed.<sup>4</sup> My hospital even requires residents to attend an arthroscopic surgical skills course prior to graduation. Additionally, partnerships like that of AAOS and the Orthopaedic Trauma Association (OTA) continue to task simulation teams with the development of new, cost-effective simulation tools to be used at institutions that may not have access to the newest technologies. Hopeful outcomes of these simulation development teams include the identification of subsets of procedures that can be effectively simulated in the academic setting as well as simulation "toolkits" which can be implemented by teaching institutions at a number of levels.

Medical specialty societies like AAOS also offer residents and fellows a variety of virtual resources that further their advancement of specific procedures and techniques. AAOS frequently hosts webinars, specifically targeting residents and also offers its members a full library of virtual training materials through the AAOS Orthopaedic Video Theater (OVT). This library of videos allows resident members to view high-quality, peer-reviewed educational video content which demonstrates the latest surgical techniques and procedures in an on-demand fashion that can be accessed anywhere. Virtual resources like this can be used to augment simulation, although they are not a standalone substitute or alternative.

### **Rural Access and Telehealth**

Rural access to specialty care is becoming an increasing challenge for patients across the country. While telehealth has opened doors in many specialties, allowing patients in rural areas

---

<sup>4</sup> Leahy, Maureen. "Using Simulation, Metrics to Improve Orthopaedic Surgical Skills." Submit Form, AAOSNow, Dec. 2012, <https://www5.aaos.org/aaosnow/2012/feb/clinical/clinical9/>.

with limited medical professionals to access needed medical care, there is still much to be done in the field of orthopaedics.

Traveling to orthopaedic appointments can present significant challenges for patients that telehealth can help alleviate. Telehealth in orthopaedics can range from routine postoperative care for patients to remote viewing of a patient's injuries and radiographs. By allocating resources to regions with specialist shortages, Congress can help alleviate the costs for both providers and patients.

AAOS supports efforts to ensure rural providers have the resources and tools necessary to provide quality care via groundbreaking technologies and methods. Continued innovation through new technologies represents the best approach to expanding the health care workforce into underserved areas. Unfortunately, the Rural Healthcare Program's funding is capped at \$400 million annually. The convergence of limited rural access to specialists, the overall challenges of rural healthcare (especially for seniors), and the aging population presents an even greater need to fund and utilize innovative new telehealth tools. As more and more federal programs create avenues for virtual participation (such as the Merit-based Incentive Payment Systems' new "virtual groups"), greater investment in the technological infrastructure to participate in these programs can help increase quality patient care and reduce costs.

When it comes to residents, statistics show that students typically go on to practice full-time in the location of their residency. For example, one study found that more than half of physicians who complete their residency in family medicine practice within 100 miles of where they trained.<sup>5</sup> Therefore, it is essential that residency programs in rural areas have adequate resources and funding to continue to maintain their GME slots and can continue to attract and retain residents to their programs.

As I apply for fellowship, I have found that many orthopaedic residents already have signed their first job contract before finishing residency. These residents typically sign contracts either in their hometown or at the institution where they did their residency. Providing residency programs in rural areas with funding and access to innovative technology will allow them to recruit high-level medical students to be residents who may ultimately stay to practice in that location.

## **The Physician Workforce Shortage**

---

<sup>5</sup> E. Blake Fagan et al., "Migration After Family Medicine Residency: 56% of Graduates Practices Within 100 Miles of Training," *American Family Physician*, vol. 88, no. 10 (November 15, 2013), p. 704.

The U.S. federal government invests significant funding into GME providing hospitals who choose to sponsor residency programs with funding to cover some of the costs of resident's salaries, as well as the costs of extra medical tests that residents may order as a part of their training. These costs account for almost two-thirds of spending by the Department of Health and Human Services (HHS) on health workforce<sup>6</sup>.

The Medicare program provides financial support to medical training slots (residencies) in two ways: direct graduate medical education (DGME) payments to hospitals to cover costs directly related to educating residents, and indirect medical education (IME) payments to cover the higher costs of teaching hospitals. The number of residency slots that count towards DGME and IME payments were capped in 1997, even though medical schools have increased the number of doctors they are training to meet the demand of caring for a growing elderly population. In fact, over the past decade, undergraduate medical education has expanded nationwide by more than 30 percent, greatly outpacing the growth in residency slots. We are now facing a tipping point where some U.S.-trained medical school graduates may not have a first-year residency position available to them in the United States.

The health and welfare of patients is linked to the knowledge and skills physicians develop during their medical residencies. As we talk about innovation and technology in GME, there is a fundamental limit to the amount of advancement that can occur if medical school graduates are not able to find placement in a residency position. Funding for GME spots has been capped to control costs since 1997, forcing hospitals and states to find creative ways to fund their residency programs, and the technological investment that advances their students' opportunities. As a result of these trends, it is becoming more difficult for teaching hospitals to cover their costs and invest in new technology for program participants.

AAOS supports at a minimum maintaining current funding levels for GME, which are necessary to ensure future stability and access to a strong, diverse health care workforce. AAOS also supports the following GME principles:

- GME training should be expanded in ambulatory and community sites to reflect the current and evolving practice of medicine;
- A portion of the financial support for GME training in community and ambulatory settings should be distributed to the educational sites or programs where the training occurs;

---

<sup>6</sup> U.S. Government Accountability Office (GAO), Health Care Workforce: Comprehensive Planning by HHS Needed to Meet National Needs, 16-17, December 11, 2015, <http://www.gao.gov/products/GAO-16-17>; hereinafter, GAO Health Workforce Planning Report.

- There should be greater accountability and transparency for Indirect Medical Expenditures in order to achieve national health care aims and objectives. Reevaluation of the funding process of GME is necessary to ensure equity, proper distribution of specialties, location, and geographical distribution of residents;
- GME funding for the Teaching Health Centers (THC) and Children's Hospitals should be stabilized with dedicated ongoing funding;
- New curriculum is needed to address health care delivery system change and patient and population-centered GME;
- There should be a further national effort to coordinate and engage underrepresented minority students in health care professions and medical careers. Public support for GME should be leveraged to encourage physician specialists to locate in otherwise underserved regions and communities.

As a current resident, I recognize the extreme importance of funding these slots to ensure a viable health care workforce in the years to come. While we can continue to discuss the importance of innovation and technology in GME, funding these slots is an essential component that allows the practice of medicine to evolve and new, young physicians to learn in a supervised environment where they can learn from leaders in the field of medicine.

### **Student Loan Debt**

I would be remiss in my testimony if I did not mention the incredible burden that student medical loan debt places on medical students and their families today. The average medical student graduates with approximately \$200,000 in debt, with those graduating from private institutions averaging more than \$300,000<sup>7</sup>. As the number of specialists in rural areas declines and the physician workforce shortage continues to pose challenges to patient access, the crushing pressure that this debt puts on medical students very much influences their choices on where they obtain their residency and ultimately practice afterwards.

AAOS supports common sense reforms like H.R. 5734, the Resident Deferred Student Interest (REDI) Act which would allow interest-free deferment on student loans for borrowers serving in a medical or dental internship or residency program. The 75 percent of residents who carry education debt upon graduating medical school watch their loan burden multiply during residency due to the continued accrual of interest. The REDI Act would help ease that burden so that young doctors can focus on building their skills and caring for patients. I would like to thank Chairwoman Velazquez and others on the Committee who have already expressed their support for this important legislation through their cosponsorship.

---

<sup>7</sup> Budd, Ken. "7 Ways to Reduce Medical School Debt." *AAMC*, 9 Oct. 2018, <https://www.aamc.org/news-insights/7-ways-reduce-medical-school-debt>.



## **Conclusion**

I would like to again thank the Chairwoman, Ranking Member, and members of the Committee for the opportunity to testify today regarding innovation in GME. AAOS strongly supports policies that will allow for the additional funding and support of GME programs and the residents who participate in them. I would also reiterate our support for resources that will allow smaller and more rural institutions to invest in technology, equipment and programming that can further the skillsets of their residents. Finally, the expansion of GME slots as well as the passage of legislation like the REDI Act will only further the field of medicine as it advances and changes. We greatly appreciate the Committee's interest in this and other health care topics and hope to continue to serve as a resource going forward.