Congress of the United States
U.S. House of Representatives
Committee on Small Business
2361 Rayburn House Office Building
Washington, DC 20515–6315

MEMORANDUM

TO:	Members, House Committee on Small Business
FROM:	Nydia Velazquez, Chairwoman
DATE:	November 13, 2019
RE:	Full Committee Hearing: "Upskilling the Medical Workforce: Opportunities in Health Innovation"

On Wednesday, November 13, 2019 at 11:30 a.m. in Room 2360 of the Rayburn House Office Building, the House Committee on Small Business will hold a hearing entitled, "Upskilling the Medical Workforce: Opportunities in Health Innovation."

Many of the medical practices that provide care to towns across the country are small businesses. Without them, many people living in rural and under-resourced areas would lack access to health care and be forced to drive many hours to large, concentrated hospital systems. But as those practices continue to disappear, and demand for health care grows, ways to cut cost and maximize efficiency will be vital for maintaining quality health care access for all Americans. This hearing will explore new and emerging technologies such as telehealth, artificial intelligence, and robotics that can help with that goal. Members will hear from medical professionals, educators, and innovators to examine how these technologies can expand access and decrease the cost of health care. It will further examine how we are training the next generation of medical professionals to adapt to the rapid changes in the medical field.

Witnesses include:
- Dr. Matthew Conti, MD, Orthopaedic Surgery Resident, Hospital for Special Surgery, New York City, NY, Testifying on behalf of the American Academy of Orthopaedic Surgeons (AAOS)
- Dr. Ingrid Zimmer-Galler, MD, Associate Professor of Ophthalmology, Founding clinical Director, Office of Telemedicine, Johns Hopkins University, Baltimore, MD, Testifying on behalf of the American Academy of Ophthalmology
- Dr. Nancy Fahrenwald, PhD, RN, PHNA-BC, FAAN, Dean and Professor, Texas A&M College of Nursing, Bryan, TX, Testifying on behalf of the American Association of Colleges of Nursing
- Mr. Michael Hopkins, Founder and CEO, True Concepts Medical Technologies, Cincinnati, OH

Background

There are several problems emerging in health care that will define how doctors deliver care and how patients receive care over the next decade and beyond. As we move into the 2020s, the U.S. has one of the highest costs of health care in the world. In 2017, the U.S. spent roughly $3.5 trillion on health care, which averages around $11,000 per person.[1] While the Affordable Care Act has slowed premium growth from pre-ACA levels and saved an estimated $2.3 trillion in health care spending,[2] an aging population and an increased rate of chronic diseases are driving increasing costs. Other factors contributing to increased costs are the retirements of older physicians and a concentration of health services, which could result in a physician gap upwards of approximately 100,000 physicians by 2030.[3] Its affect will be most acute in rural and under-resourced areas which will not only be in greatest need of primary care physicians, but entire physician networks including specialists and surgeons.

This shortage is also leading to an increasing struggle to hire and retain a medical workforce in rural and under-resourced areas.[4] In fact, one out of every four people living in rural areas said they cannot access health care if they need it.[5] This is likely because independent family medical clinics and rural hospitals are in a decades-long decline, becoming more concentrated in larger cities. Taking over a small-town practice is often too expensive and time consuming for doctors starting out in their fields. Administrative burden, such as regulatory compliance and interacting with insurance companies to get paid is an expensive and time-consuming process that requires physicians to work longer hours or spend more of their resources on hiring a larger staff. The amount of student loan debt many physicians incur while in medical school, often incentivize physicians to take jobs in larger, more urban areas. As a result, these doctors usually opt for starting their careers with large hospital systems and not starting their own practice in parts of the country that need health care providers the most.[6]

One way to mitigate the impact of this impending physician shortage, while also providing health care services to many underserved parts of the country is to take advantage of the emerging technologies that make health care more efficient and easier for doctors and patients. This includes, but is not limited to, telehealth services that open the door to virtual appointments to artificial intelligence that sorts electronic health record (EHR) information, to robotic surgery and virtual reality training. These can be used to cut costs and expand access. However, for these technologies to be fully realized, physicians, nurses, and other health care professionals must be trained to use, or otherwise proficient in these emerging technologies. Only then will the nation's doctors and

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[1] PETER G. PETERSON FDN. *Why are Americans Paying More for Health care?* Mar. 15, 2019, https://www.pgpf.org/blog/2019/03/why-are-americans-paying-more-for-health care (last visited Nov. 1, 2019).

[2] Ezekiel Emanuel, *Name the Much-Criticized Federal Program that has Saved the US $2.3 Trillion. Hint: It Starts with Affordable*, STAT NEWS, March 22, 2019 https://www.statnews.com/2019/03/22/affordable-care-act-controls-costs/ (last visited Nov. 5, 2019)

[3] Assoc. of Am. Med. C., *New Findings Confirm Predictions on Physician Shortage*, Apr. 23, 2019, https://www.aamc.org/news-insights/press-releases/new-findings-confirm-predictions-physician-shortage (last visited, Nov. 1, 2019).

[4] Kirk Siegler, *The Struggle to Hire and Keep Doctors In Rural Areas Means Patients Go Without Care*, NPR, May 21, 2019, https://www.npr.org/sections/health-shots/2019/05/21/725118232/the-struggle-to-hire-and-keep-doctors-in-rural-areas-means-patients-go-without-c (last visited Nov. 1, 2019).

[5] *Id.*

[6] *Id.*

nurses be able to deliver will quality care and service, while at the same time reducing costs by increasing efficiency.

Health Care at Home and at a Distance
Technology and medicine have been intertwined for decades and often the terms of telehealth and telemedicine are used interchangeably. While telemedicine is generally the practice of using technology to deliver care more efficiently at a distance, telehealth is more often associated with using technology to improve the health care delivery system, such as education and patient self-management. There is also health information technology, which broadly refers to the digital management of patient records and related information systems. They each play a role at caring for patients and addressing the physician shortage.

Telehealth
While telehealth has the potential to revolutionize health care in the U.S., there are still challenges to successful implementation. In fact, there are several skills in which experts claim doctors, nurses and other health care providers need training. This can include training in virtual data capture, where providers have specific tools at hand to assess patients, including physical exam data, point-of-care testing, or full access to existing medical records.[7] Digital communication skills are also essential to making telemedicine an effective avenue for medical care. Physicians and nurses must learn effective means of interviewing and examining patients using two-way auditory, video, and digital data. Technological literacy and usage skills are also important to optimizing the potential of telemedicine and using the proper tools when needed.[8]

When solving the issue of access to care for those in rural communities, telehealth can be especially effective. Dramatic changes in health care are needed to due to the increasing number of patients with multiple chronic diseases, workforce shortages, along with mandates to decrease costs [9] For instance, much of the health care access in rural areas are provided by nurse practitioners, who have developed programs and curriculum to train nurses to embrace telehealth services. These courses can offer practice in virtual appointments and training in devices used to conduct tests over long distances. This can increase access to people with chronic illnesses who live far away from a clinic and be used to prevent them from needing in-person care in the future.

Health Information Technology
A common complaint from physicians is the burnout that comes with filling out electronic health records. Rather than spending time talking with patients, providing face to face care, and making a diagnosis, many doctors believe that they spend too much time checking boxes and filling out

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[7] Erin Aas*, Prepare Providers for Telemedicine: 3 Critical Training Areas*, MANAGED HEALTH CARE EXEC., Mar. 18, 2017, https://www.managedhealth careexecutive.com/hospitals-providers/prepare-providers-telemedicine-3-critical-training-areas (last visited Nov. 1, 2019).

[8] Donna J. Slovensky, et al., *A model for mHealth skills training for clinicians: meeting the future now*, MHEALTH, Jun. 15, 2017, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5505927/ (last visited Nov. 1, 2019).

[9] Carolyn M. Rutledge, et al., *Telehealth and eHealth in Nurse Practitioner Training: Current Perspectives,* ADVANCES IN MEDICAL EDUCATION AND PRACTICE, Jun. 26, 2017, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5498674/ (last visited Nov. 1, 2019).

forms on their computer. Surveys confirm that time spent on Electronic Health Records (EHRs) is the leading cause of burnout.[10]

However, there is evidence that better training for EHRs could drastically improve outcomes and physician experiences which will ultimately lead to better care This can decrease the time spent filling out records and increase working efficiency and satisfaction.[11] Furthermore, EHR data is personal medical information and training medical professionals to handle it properly is important. According to a 2017 State of Privacy and Security Awareness Report, 78 percent of health care employees showed some lack of preparedness with common privacy and security threat scenarios.[12] Approximately a quarter of health care providers showed a lack of phishing email awareness.[13] Beyond training geared towards Health Insurance Portability and Accountably Act (HIPAA) compliance, it is important that health care professionals are trained to receive a comprehensive security awareness education.

Homecare Training
Although new technology is largely driving the new ways medical professionals are trained, homecare is becoming a bigger trend in health care. Over the next decade, an aging population will mean more people that cannot take care of themselves requiring nearly four million homecare workers by 2028. While this often does not require an advanced degree, building a skilled, stable caregiving workforce will be necessary. Homecare and personal assistance are the fastest growing job category in the U.S., but the nature of these jobs is problematic. In many cases, they are lower wage jobs, with inadequate training, and little supervisory support, undermining our efforts to recruit and retain workers.[14] Due to low capital investment needed to begin businesses in this field, home health care is attractive option for those looking to start a business in the health care sector. Studies demonstrate that training is a critical factor in creating a viable workforce that provides high-quality care.[15] Lack of training and poor supervisory support are associated with higher injury rates, lower job satisfaction, higher turnover, and lower quality care.[16]

There is a large movement to rapidly adopt telehealth technology in the U.S. Between 2015 and 2018, physician adoption of telehealth has increased 340 percent.[17] Over a similar stage in early

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[10] AM. ASS'N FAM. PHYSICIANS, *Study: EHRs Contribute to Family Physician Stress, Burnout*, Jan. 16, 2019, https://www.aafp.org/news/practice-professional-issues/20190116ehrstudy.html (last visited Nov. 1, 2019).

[11] Maria Castellucci, *One-on-one HER Training Improves Physician Satisfaction, Saves Lives*, MODERN HEALTH CARE, Sep. 15, 2018, https://www.modernhealth care.com/article/20180915/TRANSFORMATION02/180919952/one-on-one-ehr-training-improves-physician-satisfaction-saves-time (last visited Nov. 1, 2019).

[12] Elizabeth Snell, *78% of Health care Workers Lack Data Privacy, Security Preparedness*, HEALTH IT SECURITY, Feb. 6, 2018, https://healthitsecurity.com/news/78-of-health care-workers-lack-data-privacy-security-preparedness (last visited, Nov. 1, 2019).

[13] *Id.*

[14] Seavey and Marquand, *Preparing America to Care: Training our Nation's Homecare Workers*, AGING TODAY, 2013, https://www.asaging.org/blog/preparing-america-care-training-our-nations-homecare-workers (last visited Nov. 1, 2019).

[15] *Id.*

[16] *Id.*

[17] Mandy Roth, *Physician Telehealth Usage Wallops Early EHR Adoption Rates*, HEALTH LEADERS MEDIA, April 15, 2019. https://www.healthleadersmedia.com/innovation/physician-telehealth-usage-wallops-early-ehr-adoption-rates (last visited Nov. 5, 2019)

EHR development, this adoption rate was merely 69 percent.[18] While only 22 percent of physicians said they have already used telehealth, up from five percent in 2015, 69 percent said they were willing to try it.[19] Such a rapid transition underscores the need for robust training curriculum. Furthermore, the need for four million homecare workers by 2028 requires that we not only work to train these workers but ensure that their wages are enough to support themselves and we value their work as a society.

Robots, Devices, and Extended Reality
Working with robotics and extended reality – an umbrella term that encapsulates virtual reality, augmented reality, and mixed reality – will become a greater part of our everyday lives in the next decade. However, its already prevalent in health care. Surgeons are already patenting technology that will perform surgeries under their supervision. These systems allow doctors to perform many types of complex procedures with more precision, flexibility and control than is possible with conventional techniques. It often led to better patient outcomes as well. Virtual reality can also offer training platforms that allow doctors to practice a procedure many times, lowering the likelihood of mistakes when performed on a patient.

Extended Reality
Workforce development and training for doctors is especially effective with virtual reality. For many specialists, some of the most novel procedures are routine depending on where they work and how often those procedures are done. For others, they may never get a chance to practice that procedure before conducting it on a patient. Virtual and Augmented Reality (VR and AR, respectively) training give many surgeons the chance to practice a surgery with no consequences before conducting it on a patient. This can greatly improve the efficiency of the health system, decrease the cost, and increase the convenience for the patient, who may no longer have to travel across the country for the procedure.

Teaching physicians poorly, or not teaching them at all, to adapt to new developments in medical devices, can negate potential benefits and put patients at risk.[20] These technologies are often complicated to use and can require outside help during a procedure to learn how to properly use a device. Furthermore, surgeries are becoming more complicated and what used to take 10 to 20 repetitions to become proficient, now takes 50 to 100 repetitions.[21] Simulators through VR can help train physicians to conduct procedures with no liability, leading to better outcomes at a reduced cost. A study from the David Geffen School of Medicine at UCLA validated VR-based training helped students complete a procedure 20 percent faster and 38 percent more steps correctly than those in the traditionally trained group.[22]

Devices and Robotics
Along with technology that helps train doctors is technology that doctors need to be trained to use. Many devices, robotics, and digital medical technology are available to consumers and physicians

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[18] *Id.*
[19] *Id.*
[20] Barad, Justin, *Virtual and Augmented Reality Can Save Lives By Improving Surgeons' Training*, STAT NEWS, Aug. 16, 2019, https://www.statnews.com/2019/08/16/virtual-reality-improve-surgeon-training/ (last visited Nov. 1, 2019).
[21] *Id.*
[22] *Id.*

and can be anything from medical apps and fitness trackers to software that supports clinical decisions doctors make every day. While the consumer-oriented trackers aimed to help us make healthier decisions are easy to use, many of the devices and robotics marketed to doctors, such as remote monitoring and devices used in surgical settings (known as robotic-assisted surgery or RAS) require training to prevent malpractice and minimize risk to patients.

The widespread and rapid adoption of RAS has been exponential over the last decade.[23] The latest number available is from 2015, when 650,000 RAS procedures were performed all over the world.[24] However, the rapid adoption and dissemination of this technology has not been met with proportional training following a standardized, validated robotic curriculum.[25] If left unchecked, RAS without proper training could put patients at risk.

Remote patient monitoring devices have great potential in the medical space, allowing physicians to remind diabetes patients to take their insulin or monitor blood pressure. They can improve patient outcomes, limit costs, and cut down on using more expensive medical services. While many of these devices are somewhat simple or intuitive to use, they are heavily regulated because of the risks associated. Providers should be trained in best practices for these devices and minimize risk to patients. The hearing will allow Members to learn more about these new technologies, the training and skills involved, and how upskilling the health care workforce can be utilized to both treat patients and increase the efficiency of small medical practices.

Upskilling and Small Businesses
Independent, physician-owned practices are in a decades-long decline due to high costs of doing business, lower reimbursements, and financial incentives that keep providers in metropolitan areas at large hospitals. Embracing new technology that can drive down administrative costs, increase efficiency, and expand access can help these businesses thrive. However, many of these practices are owned by older physicians, who may need upskilling to adapt to new technology. They are also the primary source of care for rural Americans, many of which are aging and suffering from chronic conditions, and many of which live in health care shortage areas.

While much of this technology has the potential to further concentrate health services, if implemented properly it can also provide the tools to small rural practices to cover those in the sparsely populated areas in which they are located. From expanding telemedicine services to making EHRs more efficient to conducting surgical procedures with the practice provided by simulators and virtual reality, technology has great potential to empower smaller, independent practices to cover more people and cut their costs.

But to fully embrace this opportunity will require upskilling the medical workforce and adapt to the exponential technological advancement occurring in the health care sector. Furthermore, rural broadband access can help deploy this technology to places that need it the most. For medical professionals that need access to medical charts and images at all hours, broadband connection is essential. The same is true for patients who use remote monitoring devices. Alongside advances

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[23] A.N. Sridhar, T.P. Briggs, J.D. Kelly, and S. Nathan, *Training in Robotic Surgery-an Overview*, CURR UROL REP. 2017, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5486586/ (last visited Nov. 1, 2019).
[24] *Id.*
[25] *Id.*

in medical technology, broadband must be expanded to help these rural practices survive in the 21st century. Affordable, high speed broadband can also help those providers in rural areas be trained by virtual means, through online classes and virtual consultation with other providers. Finally, it can help attract more doctors to rural areas that need them the most.

Conclusion

There are many problems in health care that continue to emerge in the coming years. Consolidation of medical providers which restrict access for rural and under-resourced populations, an increasing demand for homecare that cannot be met because of the worker shortage, the increasing cost of medical care, and the rapid expansion of technology that isn't being met with proper training practices. However, that same technology can be used to expand access to people over long distances and train providers to become more efficient and more satisfied with the work they do. Curriculum for telehealth and emerging medical devices is being developed by educators and taught to all types of health care providers. This hearing will allow federal policymakers to discuss how workforce development practices are changing in the face of rapid medical technological innovation that disrupts the industry and opportunities for small medical providers.