





Doctors Wanted

A looming physician shortfall – of up to 120,000 doctors by 2030 – has hospitals compensating in creative ways

**FAMILY MEDICINE RESIDENT
SARAH GÓMEZ, NEAR THE HOSPITAL
WHERE SHE CARES FOR PATIENTS**

KEVIN GERMAN/LUCEO FOR USN&WR

by Linda Marsa

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ARAH GÓMEZ went into the family business. Inspired by her father, a doctor who devoted his life to caring for the underserved, the third-year family medicine resident works at the Desert Regional Medical Center hospital and the UCR Health Family Medicine Center in a part of Palm Springs, California,

that seems light years from the plush playgrounds of Hollywood golden-era icons like Bob Hope and Frank Sinatra. Many of her hospital patients are homeless, living in their cars or crammed into tiny apartments with relatives, with little protection from the blazing 120-degree heat in summer. They suffer from uncontrolled diabetes, heart disease, high blood pressure, and some from the ravages of addiction. "This is my community and I wanted to take care of the people in it," says Gómez, 30, who emigrated with her family from Mexico at age 6 and grew up in nearby Corona.

That's why she chose to pursue her medical education at the University of California–Riverside, about 60 miles east of Los Angeles. UCR School of Medicine, which opened its doors six years ago with a mission of serving the underserved, was deliberately located in "the other California" – the hardscrabble towns far removed from the affluent coastal enclaves – and recruits aggressively in economically disadvantaged areas; a large proportion of current students come from populations woefully underrepresented in medicine.

The strategy seems to be working: Roughly one-third of

Half of the country's counties lack an ob-gyn.

recent graduates now practice locally. "That's a remarkable outcome," says Paul Lyons, former chair of its department of family medicine. "I can hear in their voices and see in the eyes of these students a sense of commitment to these communities that you can't manufacture."

This is a bit of good news in an otherwise worrisome landscape. A growing physician shortage nationwide, which is hitting impoverished urban and rural regions hardest, is projected to create a deficit of up to 120,000 doctors by 2030 and seriously undermine patient care, according to a 2018 report by the Association of American Medical Colleges. Not surprisingly, mortality rates are lower in counties with more family doctors, and life expectancy is longer: almost two months for each 10 additional primary care physicians per 100,000 people, according to a 2019 study in *JAMA Internal Medicine*.

At the same time, the shuttering of struggling hospitals in rural America has exacerbated shortages in many communities. Since 2010, nearly 90 rural hospitals have closed and as many as 430 other hospitals across 43 states are at high risk of shutting their doors. When hospitals close, family doctors may be forced to leave, too. "Do doctors have the ability to do an X-ray or a mammogram in their offices when the closest hospital or ER is 100 miles away? These are all questions that can play into whether you can keep a physician in the community," says Suzanne Allen, vice dean for academic, rural and regional affairs at the University of Washington School of Medicine.

Specialist shortfall. The dearth of specialists is even more pronounced. To cite just one example, half of the country's 3,143 counties lack a single obstetrician-gynecologist, according to a 2017 report by the American College of Obstetricians and Gynecologists. More than 10 million women live in these predominantly rural communities, and at least half of them must drive 30 minutes or longer to receive perinatal services.

When obstetric specialists are widely available, maternal deaths can be significantly reduced, according to Medical University of South Carolina research.

Without adequate prenatal care, on the other hand, more babies are premature, and women in labor may end up in emergency rooms or find themselves driving 100 miles or more in the middle of the night through rough terrain to get to a hospital.

The strains on the system are spurring hospitals to change traditional ways of doing business. In addition to launching training and residency programs in rural towns and impoverished inner cities, they're developing innovative approaches to serving patients and finding ways to take better care of doctors already in practice so physicians stay on the job rather than retire early. Here are some snapshots of the more pioneering programs around the country:

Expanding the team. In October of 2018, when victims of the Tree of Life Congregation shooting were rushed to UPMC hospitals in Pittsburgh, it was "all hands on deck" to deal with the crisis.

ON MEDICINE'S FRONT LINES

Working side by side with the ER docs and the trauma surgeons were teams of nurse practitioners and physician assistants. “When someone comes in with a gunshot wound or even a car accident or a fall with an elderly patient, they are the first responders in the trauma bay,” says Ben Reynolds, a physician assistant and chief advanced practice officer who oversees the UPMC Office of Advanced Practice Providers and was part of the trauma team that day.

UPMC operates over 40 hospitals and 600 medical offices across western Pennsylvania. The system’s workforce of more than 2,600 physician assistants, nurse practitioners, nurse anesthetists and nurse midwives – numbers making these APP groups among the largest in the country – is a core part of the team in every facet of medicine, from anesthesiology, surgery and the ICU to cancer care.

Since the implementation of the Affordable Care Act, the ranks of advanced practice providers, who earn at least a master’s and often a doctoral degree and can diagnose and treat patients and write prescriptions in all 50 states, have swelled, fueled by the influx of patients into an already overcrowded system. Their numbers are expected to grow by more than 30 percent between 2016 and 2026,

according to the Bureau of Labor Statistics. Health systems across the country, from Atrium Health in North and South Carolina to Utah’s Intermountain Healthcare and Northwell Health in New York, employ large forces of advanced practice professionals. Nurse anesthetists, who beginning in 2022 will be required to earn a doctoral degree when they choose to enter the field, are the primary providers of anesthesia for surgical, therapeutic and diagnostic procedures in rural hospitals. “This is definitely a trend, and it’s growing rapidly,” says Stanley Marks, chairman of the UPMC Hillman Cancer Center. “We have difficulty filling our positions because we’re competing with institutions all over the country.”

Multiple studies indicate that the use of PAs reduces hospital readmission rates, lengths of stay and infection rates, and lowers overall costs and increases access to care. In the future, expanding the use of advanced practice professionals could greatly ease the country’s shortages of primary care doctors: A 2018 analysis by UnitedHealth Group found that the number of people living in a county with a primary care shortage would decline from 44 million to fewer than 13 million by using nurse practitioners.

ERIN MCCARTY GETS CARE FOR CANCER NEAR HOME FROM UPMC NURSE PRACTITIONER SHARON BURGERT, RIGHT.

“It’s a comfort knowing if I have a problem, I’ll get an immediate answer,” says Erin McCarty, 38, a UPMC patient who has ovarian cancer. McCarty had her surgery in



Pittsburgh but gets her regular cancer care from a nurse practitioner 120 miles closer to her home, at one of the cancer center's 60 community clinics, many of which are in rural areas where it's tough to recruit oncologists. Even in smaller cities like Erie, where McCarty lives, oncologists often have 1,000 patients or more in their caseload.

When McCarty recently noticed blood in her urine, she gave her nurse practitioner, Sharon Burgert, a quick call. Within 24 hours, she had blood and urine tests, and was ushered in the next day for a transfusion. "She's really good at keeping in contact, which gives me an extra sense of personal connection," McCarty says.

Remote control. In the case of a stroke, where the mantra is "time is brain," administering the proper treatment swiftly can prevent long-term disability or even death (story, Page 22). Yet in South Carolina, known as the "buckle" of the stroke belt, a third of counties don't have a neurologist.

To minimize the time lost between symptom onset and treatment, Prisma Health, with 18 hospitals and 300 medical offices serving 1.2 million patients throughout the state, ensures that patients are "seen" by specialists immediately. In their local ER, stroke victims are examined in real time and monitored remotely by neurologists at telestroke hubs in Columbia and Greenville. Patients who need it can then be given the clot-busting drug tPA, which can reduce the severity of the stroke but must be administered within a few hours of the onset of symptoms to be effective. For surgery to deal with more severe blockages, which can be performed within a wider 24-hour time frame, patients may be transported to a stroke center.

"This allows me to log in to the bedside, see this patient live and interview them myself to make a diagnosis," says Anil Yallapragada, a vascular neurologist and medical director of Prisma Health-Midlands Stroke Center in Columbia. Prisma Health treated more than 3,500 stroke patients and did some 700 of these types of remote consults in 2018.

In addition, the system offers a school-based telehealth program for children;

Doctors put twice as much time into paperwork as they spend on patient care.'

a program called Delivery Buddy that connects community hospitals with neonatologists; and SmartExam, an online service providing patients medical guidance for over 150 common conditions. When Hurricane Florence hit in 2018, causing massive flooding, more than 240 patients were able to receive essential care through SmartExam.

Prisma Health's comprehensive telehealth program is one of many across the country bringing care to underserved areas. One pioneering hub-and-spoke model developed at the University of New Mexico Health Sciences Center, Project ECHO (short for Extension for Community Healthcare Outcomes), provides frontline doctors – the spokes – with advice and mentoring from specialists in academic hubs, including regular virtual grand rounds, so they can manage complex cases locally. This model is now used in 46 states to manage a wide array of conditions from cancer to cardiology.

Arkansas, where 73 of 75 counties are medically underserved, is home to a widely lauded statewide maternal telemedicine program of the University of Arkansas for Medical Sciences,

known as UAMS ANGELS (for Antenatal and Neonatal Guidelines, Education and Learning). It offers real-time long-distance consultation by maternal-fetal medicine specialists to family doctors, obstetricians, neonatologists and pediatricians at more than 55 hospitals, community clinics and local health units in outlying areas.

"It's hard to get physicians to go to the rural areas, and even in cities, there are health care deserts," says Curtis Lowery, director of the UAMS Institute for Digital Health & Innovation, who helped found UAMS ANGELS. "Telemedicine is one way of bridging this gap."

Combating burnout. A 2017 National Academy of Medicine report found that more than half of the nation's doctors were emotionally exhausted and felt unsatisfied professionally. This is more than a personal problem: Doctors suffering from burnout retire early or leave the profession, and studies suggest their stress can compromise patient safety. "Burnout has a huge im-

Lifesaving Measures

ONE MINUTE completely altered Hannah Holbrooks' life. Early one evening in April of 2018, she was chatting with her 2-year-old daughter when she was suddenly gripped with searing pain. "I felt like my appendix had burst," says the 30-year-old resident of Walhalla, South Carolina, a town in the foothills of the Blue Ridge Mountains.

Because she was 27 weeks pregnant, Holbrooks' first thought was for her unborn child. She made a decision that may have saved both their lives: Instead of calling 911 and waiting for an ambulance, she made the 15-minute drive herself to Prisma Health's Oconee Memorial Hospital – which fortuitously has access via telemedicine to neonatal specialists considerably farther away. Doctors later told Holbrooks that her internal hemorrhaging was so severe – a ruptured vessel filled her abdomen with blood – that five more minutes

could have been fatal for her and her baby.

The ob-gyn at the hospital made another life-saving call: Holbrooks was immediately wheeled into the operating room for a cesarean section while Dad, Thomas "Casey" McGuffin, who had frantically raced to the hospital, anxiously waited. Shortly thereafter, Hannah delivered tiny 2-pound, 6-ounce Isaiah.

Guided from afar. Because physicians at the small community hospital didn't have the expertise to care for a newborn who was three months premature, the on-call neonatal telemedicine team at Prisma Health Children's Hospital–Upstate, 40 miles away in Greenville, swung into action. They were "there" in the operating room at Oconee Memorial, guiding doctors and nurses via a telerobot, whose advanced high-resolution camera allowed the team to zoom in on the infant and provide instructions as the on-site team worked. Under the supervision of neonatologist Michael Stewart and neonatal nurse practitioner



to take a more structured approach," he says. "It's not about simply making doctors tougher to withstand the stressors." Mount Sinai has also introduced programs promoting personal physical and mental well-being, such as workshops that teach stress-reduction techniques like yoga and mindfulness meditation.

Doctors there have been surveyed to identify the key factors that lead to burnout; results are still being analyzed. The major suspected culprits include a heavy clerical burden – having to seek prior authorization for prescriptions and spending hours entering data into patients' electronic health records (or EHRs) and filling out all the forms required by insurance companies – that prevents doctors from doing what they were trained to do: namely, take care of patients. Physicians now put twice as much time into paperwork as they spend on patient care.

The health system has instituted initiatives to relieve the burden – by rethinking workflows, optimizing the EHR system and providing advanced speech-to-text software, to name three examples. Doctors can now dictate their notes directly into electronic records or use "scribes," people who accompany them on their rounds and write up patient notes. The hope, Ripp says, is that the various initiatives will eventually save doctors at least an hour a day.

"The issue of burnout has been around for a long time, but we've reached an inflection point where we realize we need

to take a more structured approach," he says. "It's not about simply making doctors tougher to withstand the stressors." Mount Sinai has also introduced programs promoting personal physical and mental well-being, such as workshops that teach stress-reduction techniques like yoga and mindfulness meditation.

Hospitals and systems across the country, including Johns Hopkins Medicine, University of Alabama–Birmingham Medicine, Stanford Health Care, Massachusetts General Hospital, Boston Medical Center and Mayo Clinic, have launched programs to unburden and otherwise aid demoralized doctors. In addition, the Collaborative for Healing and Renewal in Medicine (known as CHARM), a national network of educators, researchers and leaders at academic medical centers with expertise in burnout and practices designed to promote wellness, has developed guidelines to help physicians find a renewed sense of meaning, social support and community at work, and to more easily access mental health resources.

Training doctors where they're needed. While most medical students and residents train at teaching hospitals affiliated with (and



Melissa Dunham, doctors were coached on how to position a critical breathing tube and insert a catheter into the baby's umbilical vein – he was so tiny they couldn't thread an IV into his arm – to be certain he would be getting enough nutrients. "We make sure all these pieces are in place and that the baby is wrapped in plastic wrap – they actually got plastic wrap from the cafeteria – to keep him warm," Dunham says.

At the same time, a transport team, which included a neonatal nurse and respiratory therapist traveling in an ambulance equipped with a transport isolette and ventilator, was dispatched from Greenville to pick up Isaiah and bring him to the neonatal intensive care unit. Within 24 hours, Holbrooks was transferred to Greenville, too. Once she was released two weeks later, the family bunked at the nearby Ronald McDonald House during Isaiah's 76-day hospital stay. Today, despite some motor delays and lung weakness, Isaiah is a relatively healthy 18-month-

HANNAH HOLBROOKS' SON, ISAIAH, WAS THREE MONTHS PREMATURE.

old. "He's the happiest baby, and he's accomplished so much," Holbrooks says. "In 10 years, you won't be able to tell anything is wrong with him." *-L.M.*

near) their medical schools, the University of California–Riverside program is an attempt at a different model. In a similar vein, the University of Wisconsin–Madison department of obstetrics and gynecology has developed a rural residency track to encourage doctors to practice in underserved areas. Over their four-year training, residents will spend about 20% of their time practicing at three rural sites in Wisconsin. The University of Alabama–Birmingham School of Medicine just launched a new family medicine residency that will place seven residents in an underserved urban community and five at its rural clinic in Centerville.

In Hettinger, North Dakota, a tiny hamlet in the southwestern part of the state with a population of about 1,200, the University of North Dakota School of Medicine & Health Sciences runs a well-regarded rural training program in family medicine. Medical residents spend two years getting hands-on experience working at West River Health Services' regional medical center. There are three dozen of these types of programs across the country, and they do genuinely increase the supply of doctors for the underserved: One study

demonstrated that more than 35% of program participants were practicing in rural areas.

"Training in the sticks sticks," says David Schmitz, chair of the department of family and community medicine at the University of North Dakota School of Medicine & Health Sciences and a past president of the National Rural Health Association.

The University of Washington School of Medicine's WWAMI program, which has been around since 1971, is a multi-state medical education program; WWAMI stands for Washington, Wyoming, Alaska, Montana and Idaho. The program educates medical students in a variety of settings ranging from busy trauma centers in Seattle to small clinics in Libby, Montana, and Nome, Alaska, where they work with native populations in remote villages up to 150 miles away from the nearest town.

Randy Richter, a 74-year-old retired machine shop owner, feels that he enjoys excellent medical care because of WWAMI. He lives in Newport, a town of about 2,000 some 40 miles from Spokane, which has a small community hospital staffed by WWAMI graduates, including his family doctor, Geoff Jones, who is now also an assistant dean at the medical school. Aside from a mild case of glaucoma, Richter is "disgustingly healthy," he says. Still, he finds comfort in knowing that garden-variety ills can be treated so close to home. "If we need something deeper," he says, it can be handled in Spokane. ●