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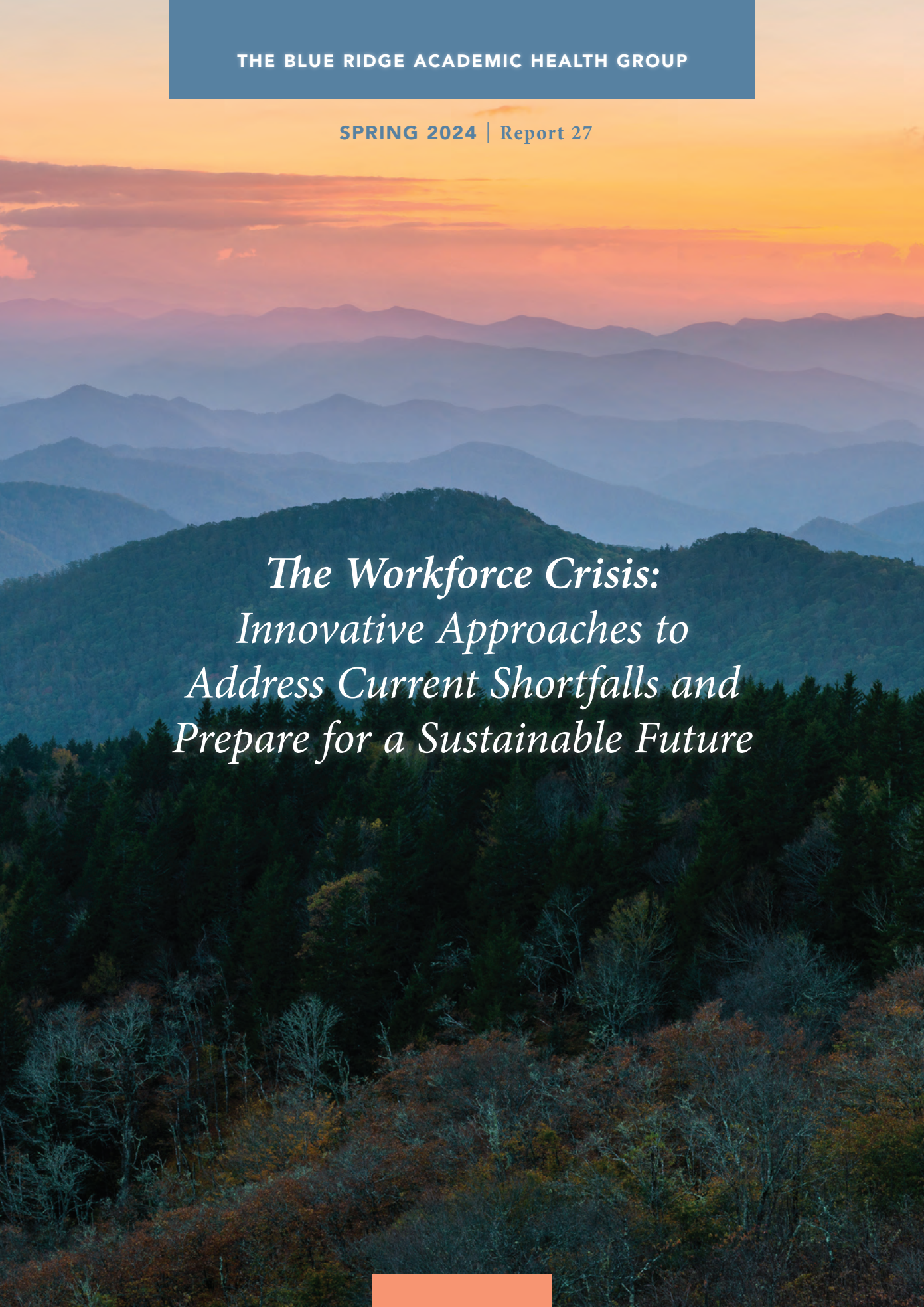

The Workforce Crisis: Innovative Approaches to Address Current Shortfalls and Prepare for a Sustainable Future

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(June 2023 meeting in White Sulphur Springs, WV)

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Mission: ***The Blue Ridge Academic Health Group*** *seeks to take a societal view of health and healthcare needs and to identify recommendations for academic health centers (AHCs) to help create greater value for society. The Blue Ridge Group also recommends public policies to enable AHCs to accomplish these ends.*

Introduction: The Workforce Crisis: Innovative Approaches to Address Current Shortfalls and Prepare for a Sustainable Future

Background and Context

Despite varying statistics on the magnitude of current and projected staffing deficits, a multitude of studies and analyses indicate that there will be continued significant shortfalls in healthcare professionals for years to come.

A study in 2019 found that 6.1% of hospitals were experiencing a nursing vacancy rate greater than 15%; by 2022, that number had jumped nearly 10-fold to 61.2%.[1] Another report found that 85% of healthcare facilities experienced at least a moderate shortage of allied healthcare professionals in October 2022.[2] In addition, in 2019 the Association of American Medical Colleges (AAMC) reported a national physician shortage of about 20,000 FTEs, and it projected that by 2030 that shortage would increase to between 50,000 and more than 100,000.[3]

While the shortage of healthcare professionals dates back decades prior to COVID-19, the pandemic grossly exacerbated the issue. Many healthcare professionals contracted the virus and had to miss work. Others were furloughed due to downsizing or temporary shuttering of services, and many of those furloughed sought alternative jobs because of personal financial needs. Some departed due to the trauma and burnout caused by the onslaught of patients, the complex care the virus required, and the deaths of so many patients. Tufts Medical Center provides an example of these extreme conditions. During the a surge of infections in Massachusetts, the number of Tufts Medical Center's healthcare and administrative staff dropped to only *one-tenth* of its usual number when more than 600 staff members called in sick with COVID. Consequently, the hospital was forced to call in the National Guard for help.[4]

To increase retention during the height of the pandemic, many hospitals and health systems raised compensation. Many also had to rely on contract labor, or "travelers," whose rates skyrocketed during the pandemic. An analysis by the American Hospital Association and Syntellis Performance Solutions

found that the average 57% increase in wage rates and 139% increase in number of contract labor FTEs resulted in a 258% increase in total typical contract labor expenses. Operating margins for hospitals and health systems fell dramatically, with the majority sinking into negative territory. In the spring of 2023, Fitch Ratings described 2022 as the worst year ever for the finances of U.S. nonprofit hospitals and, looking ahead, stated that the company "does not expect a rapid financial recovery for most providers."[5]

In addition to increasing compensation and turning to costly contract agencies to fill the gaps, other measures were employed or augmented in a desperate attempt to stem the tide of turnover. Pizza parties were thrown in units, and small items such as pens were given to staff. Generalized appreciation messages were delivered by leadership teams and executives. While this may have uplifted some, it did not move the needle markedly. In fact, a 2022 survey showed that a high proportion of nurses were turned off by these initiatives, citing them as tone deaf, which may have made turnover worse.[6]

As the COVID-19 pandemic has subsided (for now), the reliance on contract labor has waned for many health systems, and hourly rates have come down.[7,8] However, health systems are not out of the woods. The "finger in the dam" approach to fill gaps in staffing and prop up clinical operations was necessary during the height of the pandemic. But healthcare professional shortfalls are a result of many complex dynamics beyond the strains introduced by the pandemic, and until these issues are addressed and solved, shortages are likely to continue in the long term. Examples of shortage drivers include:[9]

- Lack of admissions slots at nursing and other healthcare professional education schools.
- Dearth of educators at these schools.
- Continued aging of the workforce and retirement rates that eclipse the influx of newly trained professionals.
- Burnout from stressful clinical conditions, often grueling schedules, as well as a continued increase in administrative tasks.
- Inequitable distribution of healthcare professionals across the U.S., with rural areas and primary care professionals of particular concern.
- A changing healthcare landscape, with new organizations—such as UnitedHealthcare's Optum, Amazon's OneMedical, Walgreens' Village MD, and Cigna's Evernorth Care—attracting healthcare professionals away from legacy organizations with more flexible schedules, cutting-edge digital platforms, efficient operations, and in some instances, financial upside.

In many cases, the shortage issue can be a vicious cycle. For example, treating complex patients in an inpatient environment with legacy operations that are inefficient and frustrating can lead to resignations. With fewer healthcare professionals left, those problems are only more exaggerated, and new problems can arise, such as a lack of seasoned mentors, increased violence against healthcare professionals from exasperated patients facing long wait times, and distracted staff. This can lead to additional resignations, and so the cycle continues.

The Long-term Impact of Workforce Shortages

The short-term impact of workforce shortfalls, as discussed above, are unfortunately well-understood by most healthcare organizations. However, there are also serious long-term impacts that will require new and innovative approaches to reduce their negative effects. These include:

- Repeated adverse events and other quality and safety issues and concerns, leading to challenges in obtaining accreditation, as well as brand and reputation damage and decline in patient volume.

- Because of the severe negative impact on margins due to skyrocketing labor costs, a reduced ability for health systems that have a challenging payer mix, such as many academic health centers, to continue to provide low-margin services that are not available elsewhere.

- As staffing issues continuously demand resources and administrative time, organizational inertia is hampering the ability to pursue and invest in other strategies and to position the organization for the future.

The Need for Innovation and the Role of Academic Health Centers

With the gap between healthcare professional supply and demand, one approach is to accept increases in unit labor costs and improve recruiting yield. However, looking at the current gap and projections, the math doesn't reconcile. There simply are not enough healthcare professionals to keep the nation's healthcare system operating.

Therefore, a related approach is to build the pipeline through a variety of measures, closing the future gap between supply and demand (though as people continue to age, demand may be rising in tandem with any increases in the supply of healthcare professionals).

Another approach—arguably more difficult but necessary—is to reinvent the wheel on healthcare delivery through truly innovative methods. This would require a real transformation, including meaningful care model redesign, a change in sites of care, and overhaul of business and administrative operations. In addition, it is critical that healthcare organizations invest in and integrate digital technologies and solutions to all parts of their operations.

Academic Health Centers (AHCs) are in a unique position to be at the forefront of developing innovative approaches to address the healthcare professional shortage. AHCs can expand education and training activities to bolster the pipeline and improve the supply/demand imbalance. They can apply their experience and expertise in research to explore and test new care delivery models and other innovative approaches that can address workforce challenges.

Now is the time to invest in meaningful changes that can build a sustainable healthcare workforce for the future. Even if AHCs and other health systems can climb out financially from the effects of the workforce shortage in the near-term, longer-term solutions are needed to protect and ensure the viability of the nation's healthcare system. And for AHCs, continued shortfalls will not only threaten clinical care, but given the significant degree to which clinical care cross subsidizes research and education, these missions will also suffer.

Discussion and Commentary

Emerging Innovations and Solutions

While no universal answer to healthcare workforce shortages has been established, several organizations have developed interesting new approaches to address the challenge, many of which have demonstrated encouraging results.

Building the Pipeline

One approach has been to build up the pipeline of workers. This can be done in several ways, including:

- Expanding education and training programs organically at the AHC and affiliated university. For example, after experiencing an ongoing shortage of perfusionists, Emory Healthcare partnered with the university's nursing school to launch a program to train perfusionists. See **SIDEBAR 1** for additional detail.

- Growing education programs with a partner external to the AHC such as a community college.

SIDEBAR 1 | Emory expands perfusionist pipeline

The nation has experienced a shortage of perfusionists for years, and with fewer than 20 institutions offering perfusionist training programs, the pipeline of new perfusionists has not been able to keep pace with demand. Emory Healthcare (EHC) sought to fill the shortage the system was experiencing by developing a perfusionist training program but did not have the resources to do so alone. As a solution, EHC partnered with Emory's Nell Hodgson Woodruff School of Nursing to launch the program, which admitted its first cohort of 10 in August of 2023, and recently received approval from the Southern Association of Colleges and Schools Commission on Colleges (SACS-COC). The School of Nursing was well positioned to build such a program, with a new simulation lab, experienced faculty, and the infrastructure to support strong education and training programs. The strongest candidates are nurses with experience in perioperative services and/or the intensive care unit–for example, certified registered nurse anesthetists (CRNAs). The program is a full-time five-semester curriculum, including didactic classroom training, lab and simulation work, and clinical rotations at Emory's hospitals and patient care facilities. Graduates receive a Master in Cardiovascular Perfusion Science, and the health system's hope is that they remain at the organization following graduation, alleviating the shortage Emory Healthcare has experienced for years.[10, 11]

- Vanderbilt University Medical Center (VUMC) has created training programs in partnership with Nashville State Community College, which expand the pipeline for surgical technologists. VUMC also has independent allied health training programs aimed at building a pipeline of workers in support of RNs, including care partners for inpatient services and medical assistants for ambulatory services.

- The University of Virginia (UVA) formed a partnership with Piedmont Virginia Community College (PVCC), through which students at the latter can receive a scholarship to attend UVA if selected. This "scholarship transfer program" is mutually beneficial to both entities—UVA has the opportunity to potentially attract more students to pursue careers in medicine, and PVCC students can reach their educational goal of receiving a bachelor's degree at a prestigious university.

- Moving upstream to generate interest in healthcare professions, such as reaching out to high schools. North Shore University Health System has built its ASPIRE program, a community collaborative program that introduces students and young adults to healthcare career opportunities. This approach is particularly relevant and important. The recent Supreme Court decision on affirmative action may discourage minority students from applying to college or other higher education programs like medical school and nursing school. This could tip the scales even further in the lack of balance between supply and demand. Furthermore, studies have shown that racial concordance between doctor and patient can positively improve communication, trust, and adherence to medical advice.[12] For example, Black people have been found to live longer when they have a Black doctor.[13] A drop in minority applicants to medical schools may therefore also worsen health disparities.

- Redesigning education and training content to better prepare the next generation to be skilled in what will be required in the future, such as more advanced technology supported by artificial intelligence. This approach doesn't necessarily expand the pipeline, but it will ensure that those going into health care are capable of excelling.

Improving Retention

An annual study that tracks hospital turnover found that in the past five years, hospitals have turned over more than 100% of their staff, and over 94% of the turnover was voluntary.[14] This creates shortages and taxes human resources departments and those responsible for training new staff. It also can impact the quality of care provided given the less experienced staff who may be unfamiliar with processes and even the general layout of the facility.

Several approaches to improve turnover rates are being utilized. Examples include:

- Adjusting compensation directly with higher salaries, providing loan forgiveness, or offering "stay" bonuses. UVA offers an "Earn While You Learn" program, training unskilled workers for free provided they commit to stay within the health system for at least one year after completing the program.

- Creating prestige and better recognition for high-performing full-time clinicians. It is important that at AHCs this applies to both those on the tenure track and those who are not. Interestingly, recognition from front-line managers is regarded more highly than recognition from senior administrators or health-system executives. VUMC found this in a study of its staff and responded by creating an online recognition system called Cause for Applause. Managers or peers can use the system to celebrate other employees.[15]

- Creating a positive and supportive work culture to support "joy in work," creating a safe and inclusive work environment, and improving workforce wellbeing. A multi-pronged approach is most effective, including:[16]

  - Promoting an environment of safety and high-quality care
  - Building a culture of belonging
  - Promoting inclusion and respect
  - Leveraging innovative models, technologies, and processes
  - Championing personal and professional growth
  - Ensuring competitive and equitable compensation

- University of Southern California's (USC) Keck School of Medicine has taken a comprehensive approach—see **SIDEBAR 2** for additional detail.

SIDEBAR 2 | Keck School of Medicine used the following tactics to foster a culture of professionalism, reduce burnout, improve workforce wellbeing, and reduce turnover

- Appointed a Chief Mental Health and Wellness Officer.
- Developed Care for the Caregiver: the program offers tutoring for staff and their children, legal assistance, a music therapy program, grief and loss counseling, "care bags" to support workers' needs, support groups and workshops including peer support, free "Smile Cart" snacks for staff, short chair massages, a "Move Together" contest to support physical wellbeing, and "Keck Kindness," which provides financial support to staff and faculty experiencing hardship.
- Created Schwartz Rounds, a structured forum for interprofessional conversation about the social and emotional experiences of caregiving. A recent topic was "Delivering Bad News" to patients and families.
- The impact of these initiatives, along with dedicated efforts around diversity, equity, and inclusion, has resulted in a reduction in employee burnout risk by one-third, a work-life balance score improvement (Keck is now in the 90th percentile), and an 11% reduction in intention to leave (now 84th percentile).

In addition to hospital staffing gaps, an undersupply of healthcare providers, such as primary care professionals and behavioral health specialists, is often more exaggerated in rural areas. Some have introduced financial incentives to attract and retain healthcare workers in these areas, balancing supply with demand. For example, a narrative review was published in the *Journal of General Internal Medicine* in June 2023, identifying nearly 250 programs and incentives including 89 educational opportunities and fellowships, 70 loan repayment programs, 48 J-1 visa waivers, 26 scholarships, and 14 other financial incentives.[17]

Changing Workforce Economics

The financial health of the organization is critical for providing high-quality care. As discussed, the extreme rise in pay rates for traveling nurses and their agencies caused many health systems' margins to plummet.

Several organizations have created their own in-house "traveling agency" or "float pool" to reduce the costs of finding staff to fill gaps. Such in-house trained staff typically are not assigned to particular inpatient units or outpatient sites, thus creating a more flexible staffing model that can address gaps more quickly and easily. Emory Healthcare, VUMC, University of Pittsburg Medical Center (UPMC), NYU, and Mass General Brigham (MGB) are among the AHCs that have used this tactic.[18]

Implementing New Clinical Care Delivery Models

This approach is arguably the most challenging, as it requires designing new models, piloting them, and then rolling them out to applicable parts of the health system. It requires time, substantial change, training and education, and a willingness of existing healthcare physicians, staff, and programs to endorse and engage with making the changes. However, if successful, new clinical care delivery models can not only reduce the number of staff needed in a particular area, they can also improve processes that have not worked well for years and enable higher-quality care. Levers that can be used include:

- Changing the skill mix needed. For example at Vanderbilt University Hospital, based on analyses that showed inpatient nurses were spending considerable time performing routine tasks such as retrieving and delivering supplies, the hospital is piloting a model that increases the number of care partners in each inpatient unit, which has the potential to reduce the number of nurses required. The program includes training on how and when nurses should delegate certain tasks to care partners. On the ambulatory side, a substantial number of nursing roles are now being filled with medical assistants (MA). To do that, state legislation was needed to expand the allowed scope of MA practice in Tennessee.

- Changing the work being done and how it is done. Certain tasks can be eliminated via careful examination of the processes being used. Others can be automated, leveraging technology to make processes more efficient and/or free up time for staff to do more complex tasks. Several medical centers have implemented radio frequency tagging (RFID) systems to track equipment, reducing the amount of time staff spend searching for it. Others are using robots such as Moxi to do simple tasks that take up valuable time in a nurse's day. See **SIDEBAR 3** for additional detail.

- Reducing the demand for high-acuity services. This could involve expanding the primary care program to avoid unnecessary emergency room visits and hospital admissions, which would reduce the pressure on hospital staffing.

- Shifting patients out of bricks-and-mortar acute care hospitals to less costly alternative sites. Urgent care sites, extended primary care hours, and retail clinics—with which AHCs and other health systems can partner—can prevent or reduce lower acuity cases from landing in the emergency room, clogging operations, and putting a strain on staff for cases that really don't need acute hospital care. For higher acuity cases, hospital-at-home can keep or shift qualifying patients to the comfort of their own homes, while also providing the same

SIDEBAR 3 | Leveraging Moxi at the University of Texas Southwestern Medical Center (UTSW)

In December 2022, UTSW Medical Center brought in Moxi, a robot that can perform simple tasks such as medication delivery, lab sample delivery, and supplies transport. At first, nursing staff were skeptical, fearing they might lose their jobs or not be given raises in order to cover the cost of Moxi. Physicians worried it would get in the way. However, Moxi has provided enormous leverage for staff, who now love it. The robot gives them precious time back in the day to attend to patients at the bedside and perform other complex tasks that make their jobs meaningful and rewarding. Perhaps the most powerful feature with Moxi is that it can be customized–staff can identify pain points and determine workflows to add to the robot, in essence partnering with the robot to tailor the workflows most impactful for a particular unit or department. For example, nurses and patient care technicians were wasting time finding telemetry boxes and moving them back and forth, which can create a safety risk for patients. Based on that feedback, Moxi was initially deployed to fetch and deliver the telemetry boxes, saving time and improving safety. In the near future, Moxi will be utilized to assist in the delivery of patient discharge medications. A patient being discharged with a prescription can be educated on their discharge medications while Moxi picks up and delivers the medication directly to the patient's hospital unit. From December 2022 to September 2023, Moxi has returned more than 9,500 hours to nurses and other clinical staff and saved over 11 million steps.[19]

level of acute care that they would receive in an inpatient hospital setting. Though the program has been slow to take off, it has accelerated rapidly in recent years. The first exploration of hospital-at-home in the United States began in 1994 at Johns Hopkins University's Schools of Medicine and Public Health. It was tested in a National Demonstration and Evaluation Study at several Medicare managed care sites and at a VA Medical Center with positive results.[20] Setting up the program proved to be challenging, with regulation barriers and reimbursement hurdles limiting broad growth. However, as the COVID-19 pandemic ramped up, there was a realization within the industry that it could enable patients in need of acute care for non-COVID reasons to still receive that care without being exposed to patients with the virus. In late 2020, CMS issued the Acute Hospital Care at Home Waiver program, which waives the requirement for 24/7 onsite nursing care for hospitals participating in the Medicare program. Though the program was scheduled to be discontinued at the end of the pandemic public health emergency, it was extended through the end of 2024 as part of the omnibus bill passed at the end of 2022. As of November 8, 2023, more than 300 hospitals in 37 states have been approved for the waiver.[21]

Implementing Artificial Intelligence-driven Tools

Artificial intelligence (AI) is being touted as one of the most promising applications to improve efficiencies in care delivery and coordination, improve outcomes, enable new care models, and drive higher value across health care. Due to the complexity of healthcare data, and the ballooning amount of data being collected and stored, AI has the potential to learn from that data and process it in a variety of ways. These can include:

- Improving the efficiency of diagnostics. The most common application thus far has been in radiology, often for cancer diagnoses. As was described in a recent study in *Cancers,* "AI is considered an optimizing tool to assist the radiologist in detecting suspicious findings in imaging exams, making the diagnosis, choosing

a personalized patient protocol, tracking the patient's dose parameters, providing an estimate of the radiation risks."[22] The AI solutions are not yet perfect. Some studies have shown that detecting abnormalities in imaging with AI alone does well but on average is not as accurate as a radiologist. However, the combination of AI and the radiologist showed superior results over either alone.[23] Pertaining to the workforce discussion, the AI tool can save time for the physician, potentially with better results.

- Helping evolve traditional clinical decision support systems (CDSS) to an AI-supported CDSS system. Traditional CDSS systems were intended to improve patient safety and outcomes, improve efficiency, and advise treatment recommendations that may save on costs, among other benefits.[24] The initial phases of AI-supported CDSS usage has been highly variable due to false alerts, "alert fatigue" on the part of the physician, and a delay on system data updates, creating distrust of the alerts and recommendations.[25] However, AI-supported CDSS systems, while still evolving, could have several advantages over the traditional systems. Advantages include accessing and processing massive amounts of data using complex algorithms; keeping abreast of the latest peer-reviewed studies; suggesting relevant papers to the physician; and minimizing false alerts and incorrect output.[26] If their ongoing advancements lead to trusted, highly accurate tools, they could increase efficiency and free up a physician's time to see more patients—potentially improving diagnoses, treatment recommendations, and outcomes.

- Incorporating AI solutions into more generalizable hospital operations. As mentioned above, the Moxi robot was developed to perform simple, non-patient facing tasks, collaborating with and adapting to humans. By delivering medications or lab samples, retrieving items from central supply, and running patient supplies, Moxi allows nurses and other staff to spend more time with patients and perform higher-skilled tasks. AI tools such as Moxi could also potentially reduce the number of nurses and other staff required to provide highest quality and efficient care.[27]

Unique Opportunities and Challenges for AHCs

Because of their academic missions as well as the breadth and depth of clinical programs offered, AHCs are uniquely positioned to employ some of the strategies reviewed. AHCs can also research and test new and cutting-edge approaches to alleviating the impact of staffing shortages. However, they also face some challenges specific to academic clinical environments.

Opportunities

- AHCs play a crucial role in the healthcare ecosystem as centers of innovation. There is no shortage of new ideas, and AHCs have deep experience in researching and testing those ideas. Testing and implementing these ideas could thus result in new care models to improve efficiency, modify staffing needs and mix, and reduce operating costs. AHCs are also highly experienced at applying for funding and grants to support such research.

- The pandemic demonstrated that decades of basic science research at AHCs, funded by agencies such as the National Institutes of Health (NIH) and Defense Advanced Research Projects Agency (DARPA), could be leveraged to help address a serious national health crisis. By applying the breadth and depth of past research, and with additional funding support from NIH, DARPA, and other federal agencies, vaccines and other therapeutic approaches (e.g., monoclonal antibodies and antivirals) were developed in a remarkably short period of time. While some were concerned about the safety of vaccines due to how rapidly they were developed, these and other therapeutics were not "brand new" discoveries developed from the ground up. Rather, they were built on the foundation of extensive basic research

across many geographies, populations, scientific approaches, and institutions, over a long period of time. In other words, they were an extension of highly tested, scientifically accepted research. This underscores the importance of continued investment in basic science research not only to test specific study hypotheses, but to continue to strengthen the foundation of research that may be essential for reacting to a future, unknown public health crisis.

- Expanding the focus on developing and testing more cost-effective models of care, during the current time when many AHCs' and health systems' financial bottom lines are suffering, could have widespread impact. Some organizations are working to become "learning health systems," defined as those that systematically integrate data and experience with external evidence to identify new ways to improve quality, safety, and efficiency, thereby providing patients with better care and employees with a better place to work.[28] For example, researchers and clinicians at Washington University School of Medicine, Vanderbilt University Medical Center, and University of California at San Diego Health worked to form the "Better Together" program, which integrated biomedical informatics and healthcare IT operations to create a learning health system during COVID-19.[29] Beyond gaining insights on treating COVID-19 patients more effectively and efficiently through this learning organization trial, taking the same approach will be important to advance quality health care and care delivery, and could be focused on some of the innovations discussed in this report, as well as others, to alleviate workforce challenges.

- Market consolidation continues in many states and regions, including mergers and partnerships between AHCs and rural hospitals. AHCs should consider offering incentives directly or working with their state(s) to lobby for state-sponsored incentives. This would help strengthen the entire AHC delivery system to all communities it serves, reduce gaps in availability of care in rural areas, and improve population health.

Challenges

- Health care as a field has been slow to change historically compared to many other industries—and AHCs are no exception.

- Furthermore, AHCs serve the sickest, most complex, and critically ill patients and are often over capacity. This distinctive commitment can stand in the way of finding adequate time to develop, test, and roll out meaningful changes in how care is delivered. This is particularly true if there is a high staff turnover rate and/or a high percentage of contract labor, where training new people on the basics is challenging enough—incorporating new and innovative processes that may be very unfamiliar to staff can be incredibly difficult.

- However, some AHCs have found ways to accelerate the scaling of innovations. For example, Mass General Brigham (MGB) began experimenting with a hospital-at-home model in 2016, and officially launched its "Home Hospital" program in 2022. By July 2022, it had delivered inpatient-level care in a home setting to nearly 2,000 patients and announced its intention to scale the program to accommodate 200 patients per day by the end of 2024 and to move 10% of inpatient care from five hospitals in the MGB system to the program in five years.[30, 31] To achieve those growth targets, advanced technology and logistics capabilities are needed. Rather than developing those organically within the organization, MGB chose to partner with Best Buy Health, harnessing that company's expertise as a growth catalyst.[32]

Conclusions

There is an urgent need for actions to be taken to address the healthcare workforce shortage from two directions: growing the supply pipeline to better meet demand going forward, and introducing innovative solutions that can reduce the total workforce needed. Given their research and education missions and as centers of innovation, AHCs can and will play a leading role in exploring and developing these solutions. In addition, there is ample room for other public and private institutions to contribute to the solution set as well.

From a policy perspective, as new care delivery models are developed there will be a need for a clearer and more consistent set of recommended rules and standards around staffing models, license permissions, and limitations for certain activities. Professional associations and advocacy organizations such as the AHA can work with healthcare delivery organizations to take this step together.

There are legislative opportunities as well, such as an expansion of workforce and graduate medical education (GME), investment in workforce diversity programs (especially after the Supreme Court decision on affirmative action), change in practice limitations to allow foreign physicians to support underserved communities, and license expansion to enable advanced practice providers to support a broader set of clinical activities. Most of the laws impacting scope of practice are state-level regulations, and though enacting change is very possible, it requires substantial dedicated time and effort at state legislative affairs.

In terms of research funding, efforts should be made by public and private sources of funding, such as the Centers for Medicare and Medicaid Services Innovation Center (CMMI), to encourage growth in healthcare delivery research.

Finally, because the workforce crisis is so widespread, and with no apparent magic bullet to solve the situation, AHCs and other leading healthcare organizations should explore the potential for learning groups where ideas and solutions are shared. However, large-scale consortiums can turn into unwieldy and unproductive groups, and it may be that forming smaller groups to focus on specific areas related to workforce solutions would be better positioned to accelerate progress.

A commitment and meaningful steps forward need to be made by a host of related parties, including AHCs and other healthcare delivery organizations, educational institutions, professional and advocacy organizations, and policy makers. Together, innovations can be pushed forward that will ensure an adequate healthcare workforce to support the nation's future needs, while also putting into place systems to ensure that the healthcare workforce is well supported.

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The Blue Ridge Academic Health Group studies and reports on issues of fundamental importance to improving the health of the nation and its health care system and enhancing the ability of the academic health center (AHC) to sustain progress in health and health care through research—both basic and applied—and healthcare professional education. In 26 previous reports, the Blue Ridge Group has sought to provide guidance to AHCs on a range of critical issues (See titles, above).

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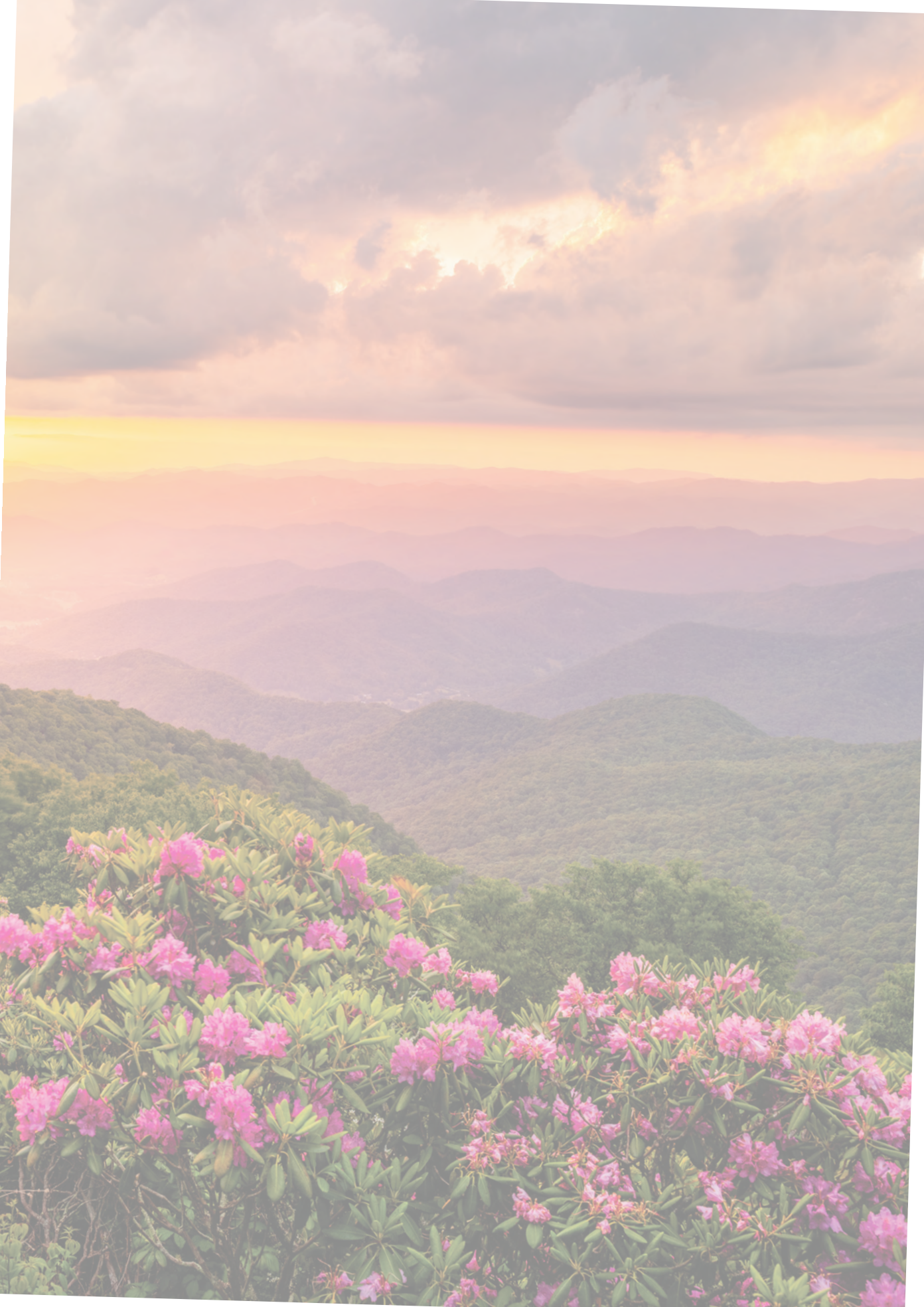

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