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Technology Trends that are TRANSFORMING HEALTHCARE

Technology and Partnerships

Keys to Improving Population Health and Creating a System That Works for Providers and Patients

Over the past decades, clinical science and medicine have brought an explosion of knowledge, unprecedented ability to diagnose and predict certain diseases, improved management of previously fatal conditions, and groundbreaking innovation in precision therapies and surgeries. Despite these advances, healthcare is challenged in such basic dimensions as quality and outcomes, cost, scalability, and equity. COVID-19 has transformed healthcare by forcing the rapid adoption of telemedicine and boosting the need for technology—for both providers and patients. The pandemic and its associated mortality have cast light on socioeconomic and racial inequities in healthcare. The current system is unsustainable, and we must innovate to improve it.

A fundamental bottleneck in our system is the assumption that healthcare is performed by clinicians face-to-face in a facility, in short bursts centered around specific problems. Telemedicine has given many physicians their first glimpse into patients' lives, bringing back virtually the lost art of the home visit; in giving doctors a sense of patients' level of family support and home safety, video visits transform the medical history into a richer picture of the whole person. The pandemic has also highlighted ways in which the lack of exam data hinders telemedicine. Empowering patients to self-care, and encouraging self-monitoring and remote monitoring as a lifelong process, shifts healthcare toward a partnership between clinician and patient, while creating new potential for population-health management.

The implications of continuous, real-time data for patients are profound. Understanding a patient's baseline metrics could allow us to diagnose diseases better, track trends, monitor costs unobtrusively over time, and even personalize therapeutics. Today's procedural treatments—in which patients are instructed to follow a generic set of rules—will be replaced by declarative treatments, in which intended outcomes are specified and the system dynamically adjusts to achieve them. Medications and monitoring devices will be inextricably linked; treatments will be more holistic and fluid. Wearable technology and mobile phones have introduced the idea already; however, the additional data will be daunting to many physicians unless AI and machine-learning algorithms can support its adoption.

As research and development continues, it will be critical to foster collaboration between stakeholders so physicians and health systems alike will be supportive of our solutions. Our guiding principle should be investing in technology solutions and building partnerships that will strengthen our ability to improve population health and change the social determinants of health, so we can build a healthcare system that works for everyone.

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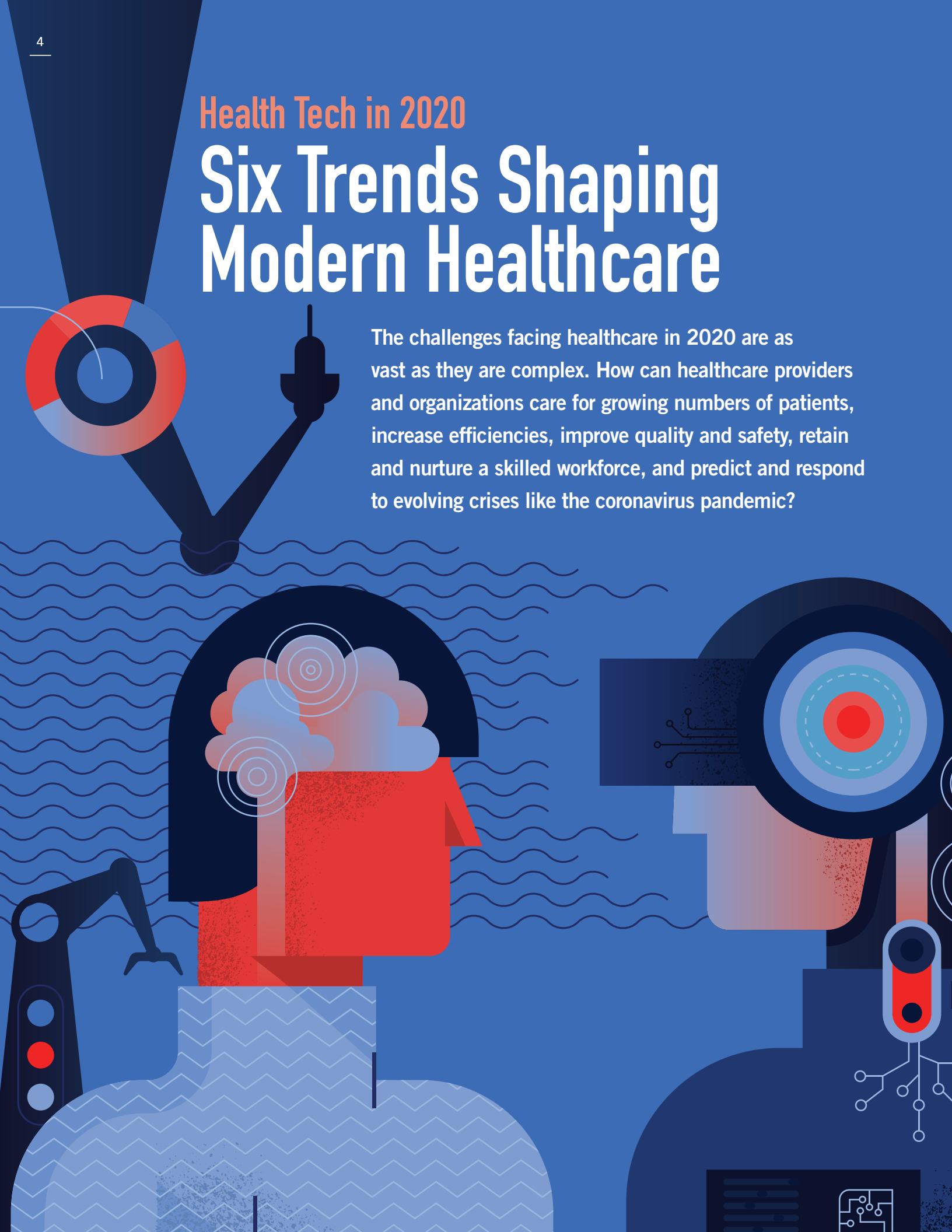
Health Tech in 2020

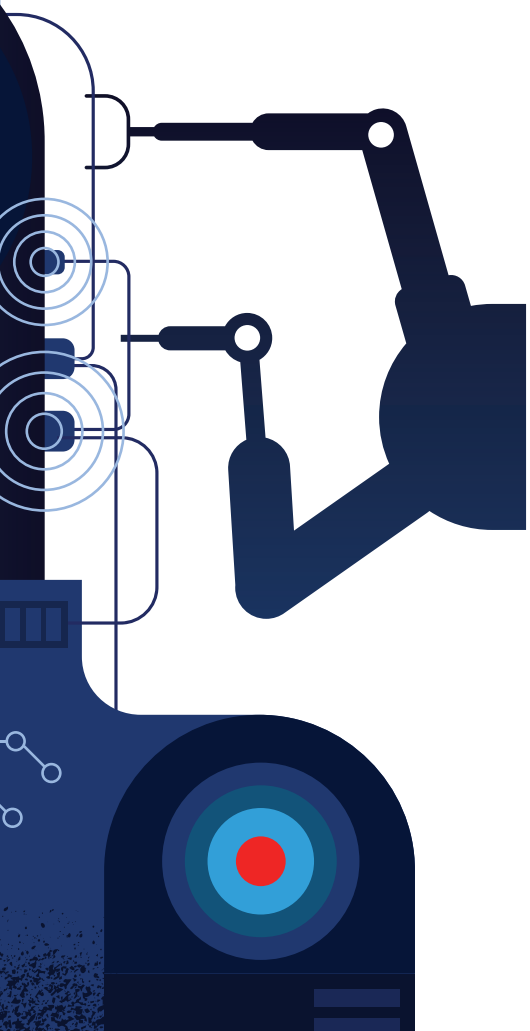
Six Trends Shaping Modern Healthcare

The challenges facing healthcare in 2020 are as vast as they are complex. How can healthcare providers and organizations care for growing numbers of patients, increase efficiencies, improve quality and safety, retain and nurture a skilled workforce, and predict and respond to evolving crises like the coronavirus pandemic?



As healthcare transforms to meet these challenges, technology will play a critical role. Technology helps eliminate barriers to effective collaboration—factors like distance, knowledge, and access—resulting in improved operations, enhanced communication across silos, and a broad framework for data-driven decision-making. By enabling providers to capture, analyze, and integrate data across different geographic regions, practice specialties, and modalities of care, technology promises to improve outcomes for both organizations and patients.

Tools like artificial intelligence and machine learning are helping organizations manage and use growing piles of patient data, while drone delivery, machine vision, 5G, and 3D printing are making healthcare faster, more accessible, and more effective. Here's how these six tech trends in particular are shaping the ongoing revolution.



5G NETWORKS

More people than ever are visiting healthcare providers in 2020. General medical-care visits are expected to reach 200 million this year, up from original forecasts of just 36 million visits. But here's the catch: all these people aren't visiting in person.

As providers and patients adapt to COVID-19 and social-distancing recommendations, more and more of those visits will take place remotely. Prior to COVID-19, telemedicine was already projected to grow 16.5 percent by 2023, according to a report by Market Research Future consultants. The global pandemic has accelerated this growth: in March 2020, telehealth visits surged by 50 percent, according to research from consultants with Frost and Sullivan.

All this remote care and monitoring can put a strain on the networks of healthcare organizations, increasing congestion and slowing speeds. When jammed networks are hampered by lags and delays, communication suffers, care is less efficient, and capacity is limited.

Large files generated by PET scans, MRIs, and other types of imaging technology may not send successfully; videos used during telesurgeries are bound to be less precise; and fewer patients will be able to use cost-saving technology like remote monitoring. Without adequate bandwidth, providers will have limited access to data on mobile devices, and AI and predictive-analytics capabilities will be stunted.

High-speed connectivity has become so central to effective patient care, advocates now argue that connectivity is a public-health concern. Lack of access to high-speed internet has hampered access to care in rural areas, prompting the American Medical Association to adopt a policy advocating for expanded broadband and wireless internet access across underserved parts of the U.S.

Without adequate bandwidth, providers will have limited access to data on mobile devices, and AI and predictive-analytics capabilities will be stunted.

Ultra-reliable, high-bandwidth networks are required to enable healthcare to use technology to improve patient outcomes, and 5G networks are providing the answer. By providing near-instantaneous access to data and lightning-fast transmission of large files, 5G networks improve quality, efficiency, and outcomes.

Earlier this year, the Veterans Administration launched one of the nation's first 5G hospitals in California, joining Chicago's Rush University Medical Center and Barcelona's San Raffaele hospital in ushering in an era of blazing-fast connectivity that will improve patient experience and reduce the cost of care.

AI AND MACHINE LEARNING

Medical data doubles in volume every 73 days—and technology experts

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(Six Trends Shaping Modern Healthcare, continued from page 5)

say that's good news for healthcare organizations. According to business and economics-research engine the McKinsey Global Institute, pairing this big data with the AI and machine-learning tools needed to analyze it could result in $100 billion in annual savings for healthcare organizations.

By facilitating decision support, information exchange, and improved workflow for surgeons and surgical teams, AI holds enormous promise for healthcare, particularly in the operating room. Using motion tracking to gather data on how surgeons carry out complex procedures can inform robust algorithms that allow surgeons to share best practices across specialty teams, ultimately creating cost savings in operating rooms, says Carla Pugh, MD, Ph.D., professor of surgery at Stanford University School of Medicine and the director of its Technology Enabled Clinical Improvement (T.E.C.I.) Center.

Motion-tracking data is gathered by evaluating the location, speed, and movements of surgical instruments during a procedure, and has been shown to be an effective means of evaluating surgical skill. Compared to video data alone, motion-tracking data combined with video data provides a more comprehensive data set for training and evaluation. Using this data to create more effective algorithms for training and decision support represents an exciting application for AI, Pugh says.

"Motion-tracking technology adds a three-dimensional layer of data that enhances our ability to understand the video data," she says. "It has the potential to streamline the AI analysis process, because video and motion data combined are easier to work with than the video data alone. We get real data on how surgeons adapt to the variety of ways disease presents itself."

"The irony is that, with respect to video and its discoverability from a legal and malpractice standpoint, many studies show that when this type of information is used in a courtroom it ends up helping the physician."

CARLA PUGH, MD, PH.D., DIRECTOR, TECHNOLOGY ENABLED CLINICAL IMPROVEMENT (T.E.C.I.) CENTER, STANFORD UNIVERSITY SCHOOL OF MEDICINE

Using AI, healthcare organizations can more easily share this data, putting data-driven decision support at surgeons' fingertips anywhere in the world. Even with AI-augmented decision support, Pugh notes, a trained surgeon is still the decision-maker. But if a surgeon can quickly and easily access data about how others have navigated complicated presentations in the operating room, it can improve outcomes and save time.

One barrier to implementation of AI, Pugh says, is a fear of data-driven performance metrics for providers. "When we talk about AI in medicine, the huge elephant in the room is that when you mention tracking workflow and motion, providers fear that this data will be used against them, either in performance evaluation or in the courtroom," she says. "The irony is that, with respect to video and its discoverability from a legal and malpractice standpoint, many studies show that when this type of information is used in a courtroom it ends up helping the physician." (See "Virtual Risk: How to Manage Risk and Professional Liability When Adopting New Technology," page 12.)

The potential for AI in healthcare is limited by the data informing its algorithms: widespread buy-in allows for more robust algorithms that yield more actionable decision support. Ultimately, Pugh says, this will be a symbiotic relationship. "The more we can integrate AI into our workflow, the better it will get at calculating, benchmarking, and providing the information we need," she says.

COMPUTER AND MACHINE VISION

The same technology that allows an iPhone to recognize the face of its owner and self-driving cars to navigate roadways can also augment the skills of surgeons and improve patient care. Machine vision, a global market expected to reach $14.7 billion by 2025, involves the use of specialized cameras and algorithms to gather and interpret visual information in real time. During surgery, machine vision allows surgeons to see through a patient's anatomy and orient their tools in space.

Machine vision represents the next stage of advancement for digital surgery, according to a news release from Anthony Fernando, CEO of TransEnterix,

a company that added a machine-vision feature to its robotic-surgery system earlier this year. The technology enhances the sensing capabilities of computer-assisted surgery, automatically moving the camera during a procedure and even responding to commands within the surgical field.

Like other recent advancements in surgery, including the growth of robotic and digital surgeries, machine vision has the potential to improve patient care. But its adoption may exacerbate existing disparities in the technological skillsets of surgeons and decrease the already dwindling number of providers who excel at open surgery. Already, many newly graduated surgeons may not be confident in performing the open version of some surgeries, while their more seasoned counterparts may have little to no experience with robotic surgeries, says Jordana Gaumond, MD, FACS, general surgeon at The Oregon Clinic.

Surgical groups should also consider what share of their procedures require digital augmentation before investing in any new technology, including this one. "For some procedures—like prostate surgery, deep pelvic surgery, or complex hernia repair—robotics allows surgeons to do things that are unimaginably awesome," says Dr. Gaumond. "For others, we don't need to add that level of technical difficulty. Whatever procedure is being performed, ultimately it's the surgeon who needs to have the skill and judgment to choose the best approach."

DRONE DELIVERY OF TRANSPLANT TISSUE

Modern drones—unmanned robotic aircraft that fly autonomously using onboard sensors and GPS-informed flight plans embedded in their systems—have been buzzing through the air since 2001, when they were first used for military missions. Soon drones may be deployed for a new mission: helping lifesaving organs reach their recipients quickly and safely.

Each of the more than 30,000 organs transplanted each year must reach its recipient swiftly to remain viable. Per the United Network for Organ Sharing, hundreds of donated organs don't make it to their intended destinations each year, and thousands are delayed by two or more hours. Compared to commercial flights, drones could deliver organs in a fraction of the time, at a much lower cost, and without unpredictable delays that could result in the loss of a viable organ.

In 2018, the Federal Aviation Administration began changing its strict regulations on commercial drone usage, paving the way for more widespread medical use of drone technology. The following year, the first drone-delivered kidney was successfully transplanted into a patient at the University of Maryland Medical Center, the culmination of years of UMMC research on drone organ delivery. The drone flight between hospitals delivered the organ in under 10 minutes.

Drone delivery of viable organs has been proven successful, but challenges remain. Federal, state, and local governments need to change regulations to allow medical-delivery drones to fly more than a few miles. To broaden the lifesaving impact of drone organ delivery, more medical drones will need to be produced, and trained technicians capable of "piloting" them will need to be integrated into the organ-delivery process at more hospitals and medical centers.

3D PRINTING

The expansion of 3D printing is rapidly impacting industries like aerospace, manufacturing, and education. Although 3D printing is already widely used in healthcare, experts say the impact of this emerging technology on medical and surgical care is just beginning. The journal *Radiographics* reports that the field of radiology in particular will see

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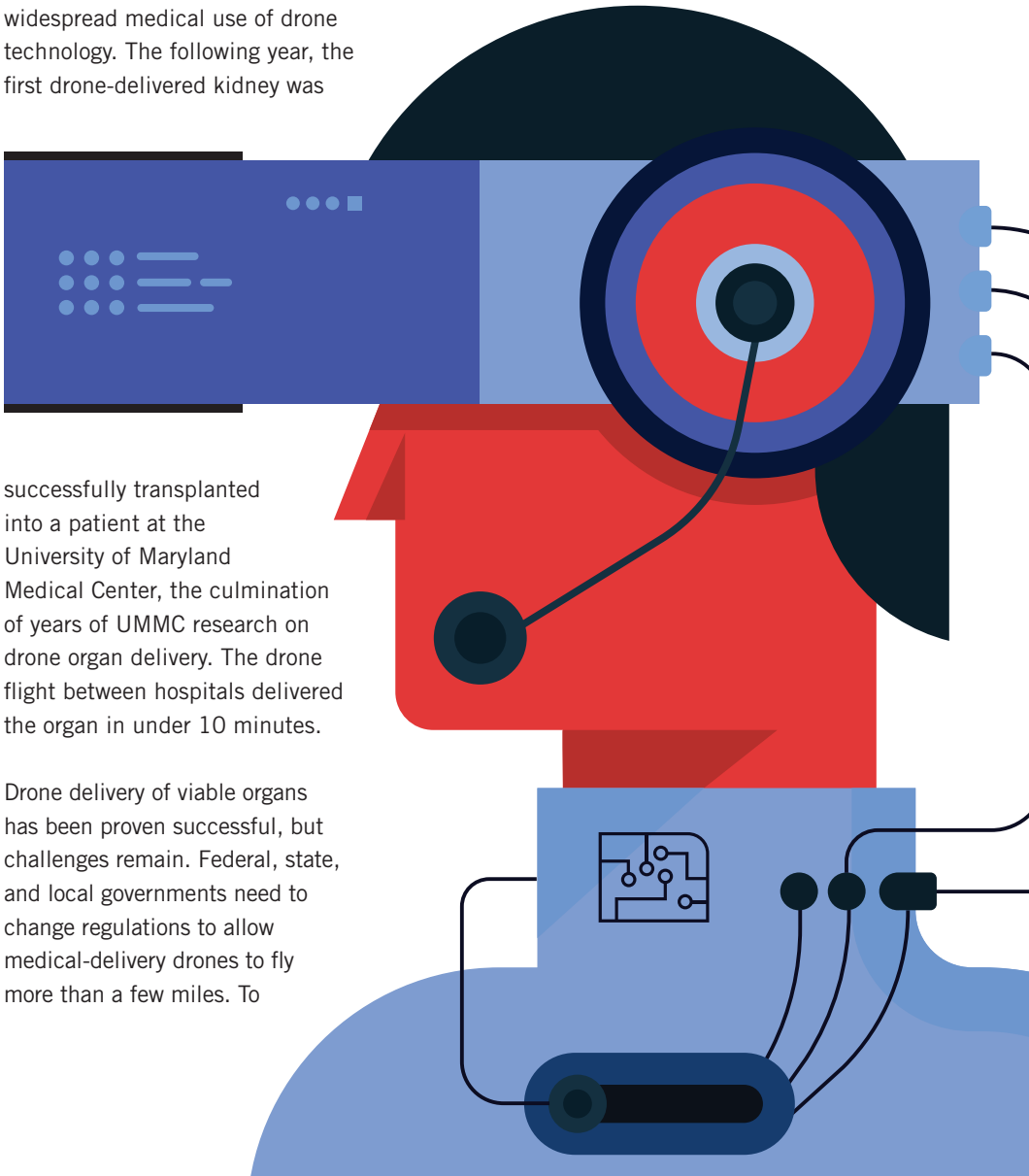

How Healthcare Innovation Ecosystems Accelerate Transformation

By Maura Little

A few months ago, the world we lived in looked different—and it continues to change, literally by the minute. The COVID-19 virus has disrupted our lives in more ways than we can count.

You, our country's physicians, and other healthcare providers know this better than most, as you have been working on the frontlines of this global pandemic. If you are unable to read any more than this first paragraph, please know that we thank you for your work. Your service and sacrifice have saved countless lives, and we thank you for everything you do and have done to protect our communities and loved ones.

Hunkered down in our homes during quarantine, the team at Cambia Grove, a healthcare innovation hub, has been focused on the most promising, impactful solutions, how they're being used, the pros and cons of their use, and what to anticipate in the near and longer term. The 21st Century Cures Act and COVID-19 have drastically shifted trendlines in just the first few months of 2020. For example, who could have predicted the skyrocketing pace of telemedicine adoption? Or the impact of the Defense Production Act on medical suppliers, as hospitals compete with one another to fill an increased need for PPE and other supplies? As we think through these changes, what has not changed are the key components and failures in our landscape to drive impactful innovation. Startups are pivoting to solve problems that are not quite understood. The lack of information sharing and technical capabilities has inhibited efforts to act in a more data-driven, scientific manner. Physicians and staff are being laid off due to payment structures that rely on the now "old" way of caring for patients. The global pandemic has exposed cracks we've known to exist in the healthcare system for decades—the only thing that's changed is our sense of urgency.

FOUNDATIONS FOR CHANGE

To some, innovation is looked down on as something to fear. To us, innovation simply means positive change. We bring changemakers together to advance innovations that support a more person-focused and economically sustainable healthcare system. The healthcare sector's collective knowledge and experience is astronomical and, when combined across silos, leaves us able to advance innovative solutions to our toughest challenges. We've met changemakers throughout the healthcare ecosystem, across the startup community

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and at what we call the 5 Points of Healthcare™: Patients, Providers, Purchasers, Payers, and Policymakers. Cambia Grove's ethos is that an innovative solution—whether a new technology, policy, procedure, device, or something else not yet imagined—can be championed by anyone passionate about transforming healthcare. Through constant discussion with our innovator community, we're able to listen to their roadblocks and help break down the barriers to their solutions.

Barriers like misaligned incentives and missing technical capabilities impact multiple stakeholders in the healthcare ecosystem. Cambia Grove sees these barriers within three ecosystem elements: infrastructure, incentives, and culture.

The key to transforming our healthcare system to better serve individuals and communities is found when we evaluate and optimize these ecosystem elements to support innovation.

- **Infrastructure**: These include formal or informal arrangements and key resources needed to enable innovators to implement their work and execute their strategies, as well as the right technical and physical systems to connect solutions with end users.

- **Incentives**: These include both carrots (e.g., financial and non-financial rewards, recognition, and positive impact), and sticks (e.g., fines and penalties) to drive behavior. The right incentives, as well as alignment of incentives across stakeholders, must be in place for sustained change.

- **Culture**: These include the predominant beliefs and norms that define and drive behavior in the ecosystem. There must be an open and inclusive culture to ensure that the solutions being created match the existing problems.

To put these ecosystem elements into perspective, let's explore their relevance to the COVID-19 response thus far, as the healthcare system looks to advance telemedicine services across the country.

Before the COVID-19 pandemic, telemedicine services were offered to some patients seeking care.

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(Healthcare Innovation Ecosystems, continued from page 9)

Discussions were in progress about the potential benefits of telemedicine, but telemedicine was still, for most healthcare professionals, an afterthought. For those seeking care in rural parts of the country, or for those who found it difficult to physically see a doctor, telemedicine was an interesting option. But overall, it was still looking for its place to enter the headlines and secure its value proposition as the healthcare community looked to transform the system.

In Cambia Grove's last virtual telehealth panel, providers reported that within a one-month timeframe, their telemedicine usage had spiked. Providers offering telemedicine before the pandemic saw an increase from 10 to 80 percent, and I expect those rates to hold strong. This demand to offer telehealth services has prompted many organizations, including the American Medical Association, to develop telehealth implementation guides for administrators, physicians, and patients. Startups working in this space have been inundated with calls and requests for services to help patients get the care they need. You could argue that this was what the telemedicine industry needed to show its value and viability.

INFRASTRUCTURE

While some organizations are having success implementing telemedicine, there are still huge barriers to expanding these services nationwide. One critical element is the technical infrastructure available to connect patients to internet-based telemedicine services. The American Recovery and Reinvestment Act of 2009 included funding to advance broadband access to individuals across the country. As a former congressional staffer, I worked to implement these efforts with our technology partners in Washington State. Unfortunately, 11 years after that bill passed, we still have coverage gaps in both rural and urban environments. While there is no exact count, it is estimated that 41 to 162 million Americans are without access to broadband services. Many of these people are also in rural communities, with limited physical options for accessing care. For us to fully realize the benefit of telemedicine services, advancing a technical infrastructure must be part of the equation.

INCENTIVES

Another part of the equation to advance telemedicine services is the incentives. Right now, the largest incentives in question are financial. Who pays, and how much do they pay, for telemedicine services? Before COVID-19, payment parity was an issue. Now, in response to COVID-19, the Centers for Medicare and Medicaid Services (CMS) have broadened the list of telemedicine services available for Medicare reimbursement. These 85 telehealth codes are currently temporary, but as they are battle-tested, Medicare may begin to see an increasing value in remote visits. Additionally, as we hear of more offices looking to close their doors because of a lack of in-person visits, it may be asked: are telemedicine services a way to keep doctors' practices afloat? There are too many questions without answers around incentives for us to give a clear answer at the moment, but as we look to advance telemedicine, incentives must be addressed to adequately implement these services for the safety of patients and physicians.

CULTURE

Finally, advancing telemedicine will require a cultural shift. Typically, cultural shifts are the most arduous. They take time and trust. As we have responded to the pandemic, the initial cultural shift has been

"The crisis has been an unforeseen pressure test that's unleashed a tremendous urgency to advance telemedicine services."

MAURA LITTLE, EXECUTIVE DIRECTOR, CAMBIA GROVE

made in record time, as the need has outweighed the risk. As we look to discover how telemedicine will continue to be used in the long run, we must be sure to establish trust in these services throughout the Five Points of Healthcare to continue building out services for those who need them. The more we use telemedicine services, the more we will trust this new type of interaction. It will also take honest feedback between all parties involved to identify the problems we need to solve. My second-grader son taught me that in order to "listen" you must be "silent" (the two words contain the same letters!), and it will be important for us to listen silently to make sure that innovations in the telemedicine space remain focused on what is needed most for the patients and physicians involved. While infrastructure and incentives are tactically focused, culture shifts are human-focused and typically lack linear progression.

NO CONSTANT BUT CHANGE

Impactful healthcare innovation doesn't happen in a vacuum; it happens in response to a need. We have seen the need to connect physicians and patients in a new way because of the COVID-19 crisis. The crisis has been an unforeseen pressure test that's unleashed a tremendous urgency to advance telemedicine services. It also proves that if there's a will, there's a way. Healthcare organizations have been making rapid decisions that show that they aren't as inflexible as they purport to be, and the system's problem-solving efficiency in pursuit of a common goal—to advance telemedicine—has been pursued at a rapid pace.

The solutions seeing success during the COVID-19 crisis have been driven by an outsized need to support physicians and patients in a physically distant world. Certain ecosystem elements must be addressed to help advance innovations like telemedicine to ensure that we have the technical infrastructure to reach those in need, the financial incentives to pay for healthcare, and the trust in the new technology to help ensure its viability and use. Regardless of whether you think telemedicine is a useful innovation, without these ecosystem elements in place, we risk falling behind on innovations that may be useful in supporting better health.

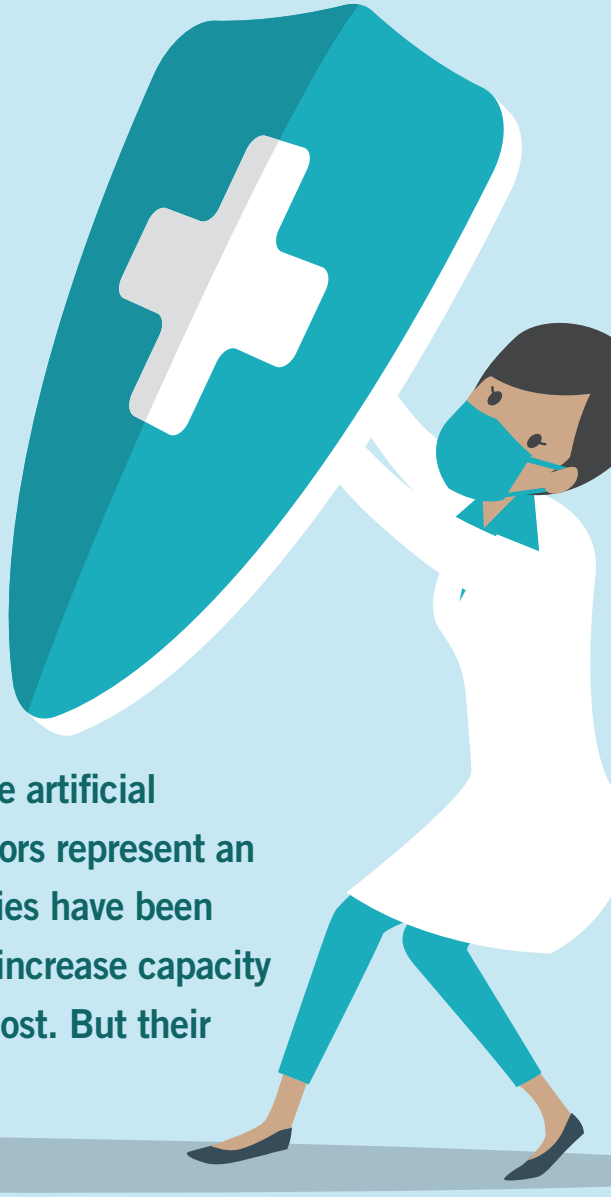
As we look back on our original question in seeking to describe the healthcare landscape, the best answer seems to be that the landscape is in a state of flux. The COVID-19 crisis has shone a light on some of the ways our healthcare system is broken, as well as the need to build up a better foundation in transforming that system. As we move forward, it is my hope that we can all work together to support you and your work to help individuals and communities through the global pandemic and beyond. Thank you again for your commitment to serve. We at Cambia Grove invite you to share your thoughts with us—as we listen silently—to help transform the healthcare system into one that is more person-focused and economically sustainable for all. PR

Join us in that conversation on Twitter @CambiaGrove, or learn more at cambiagrove.com.

Maura Little *is executive director of Cambia Grove, a healthcare hub focused on advancing innovation in healthcare. Through strategic initiatives and community programming, Cambia Grove breaks down systemic barriers to model sustainable innovation in healthcare. You can find Maura on Twitter @MauraLittle or email her at maura@cambiagrove.com.*

Virtual Risk

How to Manage Risk and Professional Liability When Adopting New Technology



Healthcare applications for emerging technologies like artificial intelligence, predictive analytics, and wearable monitors represent an exciting new era filled with promise. These technologies have been shown to improve quality and safety for patients and increase capacity for providers, yielding better outcomes at a reduced cost. But their impact on medical liability is less certain.

In a civil tort involving professional liability, a physician's duty and standard of care would be measured against what a reasonable and prudent physician would do under the same circumstances. When AI is involved, measuring against an established best practice may be more challenging. "We don't have a lot of history using these technologies for liability, which makes it difficult to establish a best practice," says risk-management expert Denise Shope, RN. Shope is a team leader with RCM&D Insurance, an independent insurance-advisory firm based in Baltimore, Maryland.

Since artificial intelligence is new and not yet well understood by the general public, Shope says, it's too early to know how technologies like AI will impact medical liability. "The intersection of AI with professional liability lawsuits really hasn't been tested in our courts," she says. "We just haven't seen enough litigation to understand how AI will impact the medical legal system."

That doesn't mean that organizations can't manage the risk associated with emerging technologies. As medicine advances

into virtually uncharted territory, Shope says that organizations and practitioners need to use a new framework for understanding and managing risk.

How should healthcare organizations manage the risk that comes with adopting new technologies? Carefully, thoughtfully, and proactively, according to Shope. "I think about professional liability and medical malpractice in terms of components or domains of risk," she notes. "I suggest taking an enterprise-wide risk-management approach. Consider all the possible risks by domains or components, then determine whether risk controls are in place for each identified risk."

Using an enterprise-wide risk-management framework, organizations should consider each of the following "domains of risk" when adopting AI or any emerging technology.

DOMAIN 1: CLINICAL AND PATIENT-SAFETY CONSIDERATIONS

Ultimately, advances in medical technology are designed to improve patient care. So it makes sense to begin a risk-management evaluation by considering patient safety. Considerations in this domain include patient consent and understanding, patient selection, scientific evidence and best practices, and the technical competency of providers and support staff.

Questions to answer may include:

- What systems or processes need to be in place to ensure that patients understand and consent to remote monitoring?
- How will we safely select the patients best suited to the use of this technology?
- What does science say about the best practices involving the use of this technology?

Using new technology in a clinical setting means spending extra time educating patients and obtaining consent, says Shope. "Anytime you're using any type of remote monitoring, the patient needs to understand what this means and what their role is, and the patient has to consent," she says.

"The intersection of AI with professional liability lawsuits really hasn't been tested in our courts. We just haven't seen enough litigation to understand how AI will impact the medical legal system."

DENISE SHOPE, RN, RISK-MANAGEMENT CONSULTANT, AND INSURANCE PROFESSIONAL, RCM&D, BALTIMORE, MD

Finally, organizations need to consider how providers will learn the new technology, and how technical competency will be assessed immediately and in the long term. "Another consideration is the technical competency of providers, nurses, and support staff," says Shope. "What do they need to be competent in, how do we teach them, and who is responsible for teaching them?"

DOMAIN 2: LEGAL AND REGULATORY CONSIDERATIONS

When evaluating the legal risks involved in adopting AI or other emerging technologies, considerations include whether the application in question is FDA-approved, who owns the data, how risks will be shared contractually, and whether those risks are insurable.

Although the medical-liability implications for AI are still emerging, physicians can rest assured that some things remain unchanged, Shope says. "The plaintiff's attorney may go after the large healthcare organization or mega-group practice for vicarious liability or other actions, knowing that additional buckets of insurance are available," she says. "But the burden of proof is still with the plaintiff."

Providers should also know that the use of AI doesn't change their obligation to view patients as individuals, she notes. Though AI offers valuable decision-making support to providers, they are the decision-makers in collaboration with patients. "AI uses big data to guide decisions, but providers still need to look at patients as individuals," says Shope. "Anytime a physician uses AI in making a differential diagnosis, it doesn't absolve the physician from liability."

DOMAIN 3: HAZARD CONSIDERATIONS

Before adopting any new technology, organizations need to assess how new systems will perform in extreme circumstances, from weather-related disasters to power outages to global pandemics. Planning for a system failure allows for a more comprehensive picture of the risks involved in adopting new technologies and enables organizations to begin developing contingency plans alongside the rollout of those technologies.

(Continued on page 29)

Medical Advances Then...

Healthcare is being transformed by the latest technology to meet the challenges of the 21st century. There's no doubt healthcare must adapt and evolve to meet the needs of our increasingly high-tech, digitally connected world, but it's valuable to acknowledge how things used to be done and how far they have come since. This visual chronology highlights some iconic advances in medicine.

Then

MERCURY THERMOMETERS

Evolved from principles first used in the thermoscope designed by Galileo Galilei in 1593, the mercury thermometer was developed by Daniel Gabriel Fahrenheit in 1714. Credit for the first practical medical thermometer goes to English physician Sir Thomas Clifford Allbutt (1836–1925), whose six-inch-long version, introduced in 1867, could record a reading in five minutes.

Now

INFRARED THERMOMETERS

Modern non-contact and low-contact infrared thermometers—including forehead and ear thermometers and handheld thermal scanners—allow medical professionals to assess a patient's temperature in mere seconds.

Then

INVASIVE SURGERY

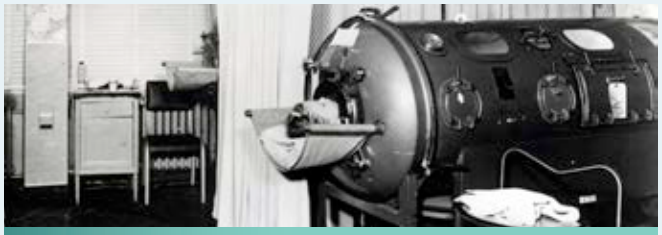
Traditional surgical methods can involve invasive procedures, large incisions, and long recovery times for patients.

Now

LAPAROSCOPIC SURGERY

The use of camera-aided technology via laparoscope has led to advances in surgical procedures—including lap cholecystectomy, lap splenectomy, lap inguinal hernia repair, and more—that have changed peri-operative recovery time and post-operative morbidity, according to Dr. Jordana Gaumond.

and Now



Then

IRON LUNG

Developed in 1927 by Harvard researchers to treat polio patients with chest paralysis, an iron lung used a negative pressure ventilator, which—while effective—made treating patients' other symptoms difficult, due to its bulky design.

Now

MODERN VENTILATORS AND ECMO

More compact, modern positive-pressure ventilators—first developed to supply oxygen to WWII fighter pilots at high altitudes—were introduced to medicine in the 1950s. The addition of microprocessors in the 1980s made ventilators even more responsive to individual patient symptoms. On the cutting edge today: extracorporeal membrane oxygenation (ECMO), which, according to ECMO specialist Joseph Deng, MD, can oxygenate the blood outside the body, keeping patients alive for days or weeks while their heart and lungs recover from traumatic injury.

Then

EARLY CRASH CARTS

First developed in the mid-1960s, early "crisis carts" were simple wooden carts on wheels stocked with a clipboard, items needed for intubation, and a few essential lifesaving medications.

[NOTE: There seem to be discrepancies about whether the cart was invented by Anita Dorr, RN, or John J. Nobel, MD. See: https://en.wikipedia.org/wiki/Crash_cart, but also https://www.workingnurse.com/articles/Anita-Dorr-Inventor-of-the-Crash-Cart.]

Now

MODERN CRASH CARTS

Modern crash carts are more high-tech, with everything nurses and physicians need to respond to a coding patient—including a defibrillator, IV fluids and tubing, manual resuscitators, an oxygen tank, a CPR board, and lifesaving medications like Narcan, Epinephrine, and nitroglycerin.

Medical Advances Then...

Then

THEN: STETHOSCOPE

Invented by Parisian physician René Laennec in 1816, the stethoscope has played a foundational role in the development of modern medicine over the past two centuries, and has even come to symbolize the profession itself.

Now

NOW: HANDHELD ULTRASOUND DEVICES

While stethoscopes still allow medical-care personnel to better hear patients' heartbeats and assess their lung function, new handheld ultrasound technology lets doctors "see" not only the heart, but also the lungs and other organs immediately, advancing their diagnostic capability. While the cost of this technology is still high, medical schools are already training new students in how to adopt it in their practices.

Then

THEN: EARLY PROSTHETICS

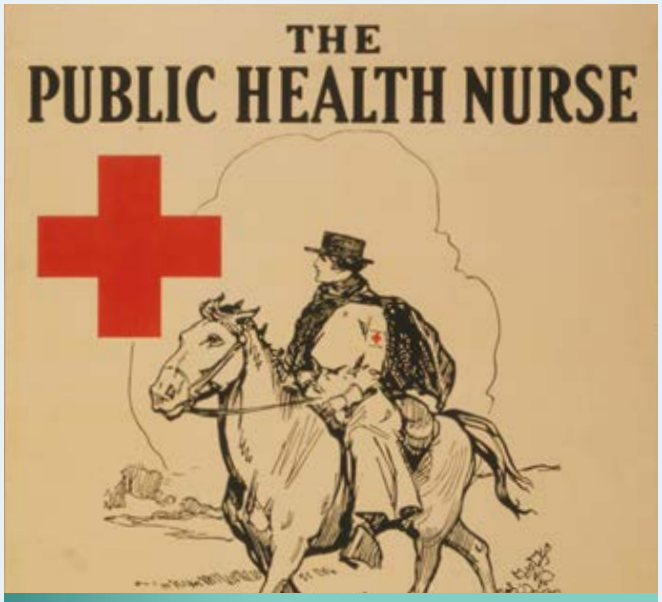
The first confirmed use of a prothesis dates to 3000 B.C., with an elegant prosthetic wooden toe found on a mummy buried near Luxor, Egypt. By the early 1500s, refined iron arms—like the one owned by Götz von Berlichingen—had been developed. The design of modern prosthetics was spurred by increased need following both the Civil War and World War II, though pre-1970s limbs were often made of heavy plastics and involved leather straps that were hard to fit and maintain.

Now

NOW: 3D-PRINTED PROSTHETICS

Thanks to 3D printing advances, modern prosthetics are becoming cheaper and easier to make. These lightweight, advanced prosthetics—which can be made in a range of colors and styles—have been a particular boon to pediatric patients, since they can be easily replaced as children's limbs grow.

and Now



Then

THEN: NURSES ON HORSEBACK

Championed by the likes of Mary Breckinridge—founder of the Appalachians-based Frontier Nursing Service in 1925—rural healthcare once required medical professionals to ride on horseback to remote areas of the country.

Now

NOW: TELEMEDICINE

Today, patients have immediate access to healthcare providers from across an array of disciplines—from primary care to specialists and mental-health counselors—in the comfort of their own homes, no matter where they live, thanks to advances in telemedicine and the increased availability of apps, texts, and face-to-face calling technology.

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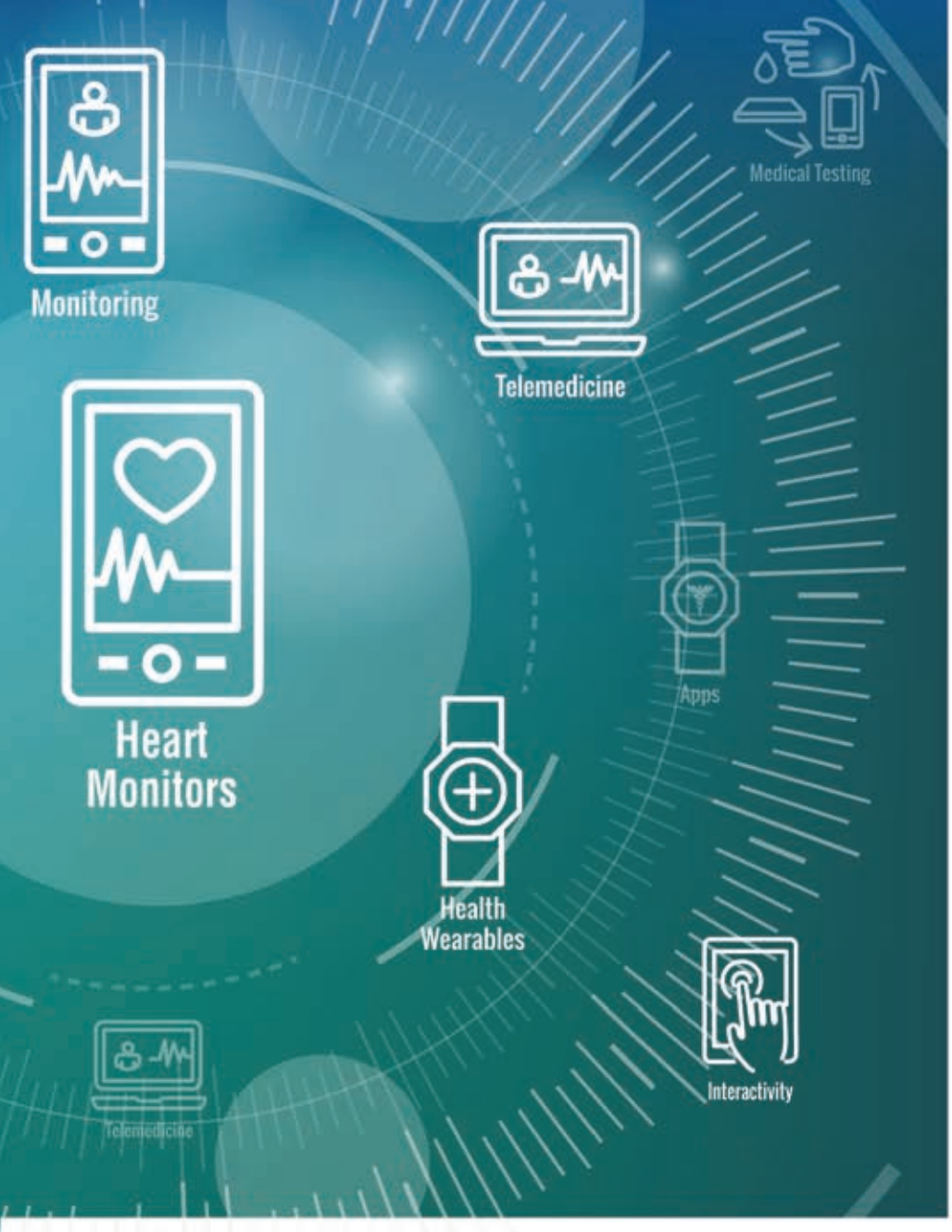
HEALTHCARE'S DIGITAL REVOLUTION

How Pop Culture's Tech Tools Are Impacting Patients and Providers

A decade ago, patients with a suspected sleep problem had to spend a night in a sleep lab, then wait to visit their physician to review a readout of their sleep stages, night awakenings, and snoring patterns. Today, patients can wake up, roll over, and open a sleep-tracking app on their phone to pore over sleep metrics.

Instead of presenting patients with their health data, providers are now fielding questions about health data that patients bring in with them. "Patients are increasingly bringing in their health data from apps and wearable devices," says sleep specialist and psychiatrist Alex Dimitriu, MD, founder of Menlo Park Psychiatry & Sleep Medicine in Menlo Park, California. "I discuss electronic health data with patients every day."

And poor sleepers aren't the only ones using personal health-tracking technology. These days, most pregnant women have at least one pregnancy app on their phone offering health tracking, education, and support. "I would say most of my patients use a pregnancy-tracking app, and often a couple of apps at once," says Kathleen Pizzolatto, CNM, ARNP, of CHI Franciscan Health in Tacoma, Washington.



> "In 2009, blogs were fairly new, and the prevailing view in healthcare was, 'No, don't look on the internet for health questions, come to see your physician.' That was a completely errant view that devalued patient experience and patient education, and presumed that the only way to get information was from your own physician."
>
> WENDY SUE SWANSON, MD, CHIEF MEDICAL OFFICER, BEFORE BRANDS

Many people have more access to health data than ever before, thanks to sophisticated sensors embedded in everything from smartwatches to socks. Per a 2019 Gallup poll, about one in three Americans reports tracking their health data using a phone or tablet app. What does this mean for providers as they manage their patients' questions and expectations, debunk myths, and help patients navigate the complexities of our digital world?

QUANTIFYING PERSONAL-HEALTH DATA

The explosion of interest in personal health-tracking represents the growth of the Quantified Self (QS) movement, says Wendy Sue Swanson, MD, chief medical officer for Before Brands (maker of Spoonful One), a company dedicated to the prevention of childhood food allergies. Founded in 2007 by Gary Wolf and Kevin Kelly, the QS movement supported individual access to health and personal data.

In 2009, Swanson began the nation's first hospital-based health blog as Seattle Mama Doc, a role she held through 2019. "In 2009, blogs were fairly new, and the prevailing view in healthcare was, 'No, don't look on the internet for health questions, come to see your physician,'" she says. "That was a completely errant view that devalued patient experience and patient education, and presumed that the only way to get information was from your own physician."

As patients sought and used more of their own health data, healthcare had to change. "We saw that people were getting information online anyway, from their friends and from companies marketing to them," says Swanson. "Widespread misinformation about vaccine safety is one example. Parents were learning about vaccines online from their friends, not from their doctors."

(Continued on page 36)

Cyber Attacks on the Rise

Practices and Hospitals Face Increasing Threat

As our world becomes increasingly high-tech and digitized, the threat of cybercrime within healthcare grows. Health records remain a top target for criminals.

Yet many practices, clinics, hospitals, and health systems still aren't adequately prepared or covered for medical-professional liability, or even for product liability such as that which is used with emerging technologies.

Throughout 2019, NAS (now known as Tokio Marine HCC—Cyber and Professional Lines Group) found that cyberattacks continued to be of primary concern to business leaders in all sectors. The increased sophistication of cyber criminals, a growing base of connected devices (a.k.a., "the attack surface"), and human vulnerability all contribute to a business environment rife with cyber-security risk that continues to be exploited by criminal actors.

In 2019, they saw that the activity (and expense!) of cyberattacks on their policyholders continued to shift from "data breach" to "cybercrime." While phishing attacks, fraud, and ransomware are all on the rise, there was a decline in data breaches, exposure of personal information, and related notification expenses.

CASE #1

Employees of a hospital discovered that their email accounts were not accessible. The hospital's IT department investigated and discovered that a ransomware attack had infected 70 servers and 600 workstations. The hospital had to close operations for two business days and suffered various losses due to the event.

The hospital's cyber-liability insurance covered:

- **IT forensic consultants**—Consultants were retained to immediately address the ransomware attack, secure data, investigate whether any patient-health information was compromised, and rebuild the hospital's network.
- **Business interruption and income loss**—Several surgeries had to be cancelled, resulting in loss of income.
- **Data recovery**—Several employees had to work overtime to re-create lost data from backup.
- **Ransom amount**—The hospital paid the ransom demand to restore system access.

Total expenses: $570,000

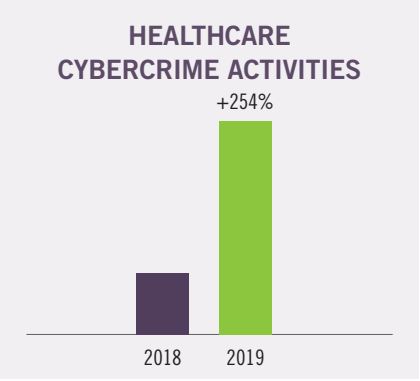
CASE #2

A medical group experienced a Ryuk ransomware event. Ryuk is a type of crypto-ransomware that uses encryption to block access to a system, device, or file until a ransom is paid. Ryuk is often dropped on a system by other malware, or gains access to a system by remote desktop services. The event resulted in the shutdown/compromise of the medical center's computer system, which included multiple desktops and servers as well as backup systems. The malicious actor made a ransom demand of more than $1.2 million. Attorneys for the insured attempted to negotiate the ransom down, but the hacker wasn't willing to negotiate.

Additionally, legal counsel confirmed that the medical group's system could not be restored from the encrypted backup servers. The medical group, therefore, paid the $1.2 million ransom, but was reimbursed under its Cyber Extortion coverage. After paying the ransom, the insured received the decryption key and was able to regain access to its systems and data.

If there were a theme for 2019 cyber claims, as told by Tokio Marine HCC—Cyber and Professional Lines Group, it would be the growth of phishing attacks on small-to-midsized businesses. Ransomware and financial-fraud claims were up from 2018 across the board, and largely initiated in response to phishing attacks. Though the larger cyber incidents at Facebook, Citrix, and Capital One grab the headlines, the rampant attacks on small and midsized businesses are devastating, as most SMBs don't have sufficient resources to prepare or defend themselves. A recent Fundera study reports that "three out of four small businesses don't have the personnel to address IT security."

Whether through wire transfers, fraudulent payments, or unauthorized access to financial accounts, cybercrime activities were up significantly on all sectors of business in 2019.



PROTECTING YOUR ORGANIZATION

1. Conduct a Risk Assessment
Risk assessments and analysis are the foundation to mitigating the above risks and preventing an unpleasant experience with the U.S. Department of Health and Human Services Office for Civil Rights ("OCR"). Failure to conduct a risk analysis is the most common HIPAA violation found during the OCR's investigations. Analyzing your organization's risks is the starting point to determining a proper information-security program and appropriate risk-mitigation measures.

2. Train Employees
Employee training is another key part of achieving HIPAA compliance and mitigating associated privacy and security risks. HIPAA rules require that an organization's workforce be properly trained on the HIPAA Privacy, Security, and Breach Notification Rules.

3. Implement Policies and Procedures
HIPAA's Privacy and Security Rules require healthcare organizations to have data-security policies and procedures addressing a multitude of risks. Inadequate policies and procedures are a frequent violation cited in HIPAA enforcement actions.

4. Manage Vendors Appropriately
Vendor risks have become one of the top data-security concerns for healthcare organizations. As OCR holds business associates and covered entities liable for HIPAA compliance when it comes to vendor relationships, it's important for healthcare organizations to have a vendor-management program in place to maintain control of their business associates processing PHI.

5. Prepare an Incident Response Plan
The best way to handle a cyberattack is to be prepared well in advance. When responding to a cyber incident, critical decisions must be made within a condensed timeframe. Notification deadlines—the most notable of which is the 60-day notification deadline to OCR and affected individuals—apply to all healthcare organizations.

Any mistakes can be costly and have a lasting impact.

If you suspect ransomware…

- Isolate the infected computer(s) from all networks (by unplugging network cable and/or turning off Wi-Fi).
- Take a picture of the ransomware message (if possible).
- Do not immediately rebuild your system (you might destroy important forensic evidence).
- Regularly back up all critical data, and store it offsite.

COVID-19 Relief Packages Trigger Uptick In Scams

Congress recently passed a number of relief packages, and criminals are trying to scam victims out of their relief funds. Criminals use email, SMS text, and robocalls to contact victims. Log onto our cyber center at https://bit.Ly/3dqwmbp to learn more about COVID-19 scams and prevention, COVID-19, and HIPAA: get tips on how to use Zoom securely; view webinars on protecting your cyber security in uncertain times; and more.

WHAT TO LOOK FOR WHEN CONSIDERING CYBER-LIABILITY INSURANCE

Not all insurance programs are created equal, so it's important to compare policies. You are at risk from simple negligence, rogue employees, unencrypted data, and outsourced information technology. And that means you need to protect all of your billing information, such as credit card numbers, addresses, bank information, insurance information, Social Security numbers, employee information, and basically everything in your medical records. Physicians Insurance includes a basic level of coverage as part of its standard physician and clinic policies. Higher limits for increased protection are also available.

If you have questions about cyber security or other risk-mitigation resources, log onto our website at phyins.com and go to the Cyber Center portal. To report a cyber breach or suspected breach, contact our Claims Department at 800-962-1399. (PR)

Are Electronic Health Records Causing Practitioner Information Overload?

When the Health Information Technology for Economic and Clinical Health (HITECH) Act was signed into law in 2009, the stimulus package's key goal was encouraging healthcare providers to trade in their pen-and-paper notes in favor of online Electronic Health Records (EHRs).

In the years since, the shift from manila folder–based patient records to cloud-based EHRs has been sweeping.

By 2017, nine out of 10 office-based physicians had adopted an EHR platform, as had 99 percent of large hospitals (defined as those hospitals with more than 300 beds)—plus 93 percent of small and rural hospitals—across the U.S., according to the Office of the National Coordinator for Health Information Technology. [statistic link: https://bit.ly/3d5vvlZ]

The many advantages of EHRs, according to proponents, include storage ease, streamlined sharing among a patient's various medical providers, the ability to send e-prescriptions, and increased access for patients to their own health records.

However, a growing number of national surveys suggest that not all physicians are pleased with the usability of their current EHR platform.

The Harris Poll conducted a 2018 survey of more than 500 primary-care physicians (PCPs) on behalf of Stanford Medicine and found that while the majority of respondents felt EHRs had generally improved their patient care, 40 percent of participating PCPs saw more challenges than benefits to EHRs.

Further, 59 percent of survey respondents—including many physicians who acknowledged the overall value of EHRs—voiced a concern that the platforms are in need of a "complete overhaul" to improve their ease of use.

This sentiment was echoed in a Yale-led study published in the March 2020 Mayo Clinic Proceedings, which found that a cross-sectional survey of U.S. physicians—representing all specialty disciplines—gave EHRs a system-usability scale (SUS) grade of "F." This was in contrast to higher SUS scores for other modern technology platforms, including Google (score of "A"); Amazon ("B"); and Microsoft Word, DVRs, and GPS ("C").

The study's authors found a statistically significant link between poor EHR usability and physician burnout, noting that previous studies have shown that physicians now spend an average of one to two hours on EHRs for every hour spent in direct contact with patients.

INFORMATION OVERLOAD

David McClellan, MD, FACEP, an emergency-medicine physician at Providence Sacred Heart Medical Center in Spokane, Washington, agreed that navigating a patient's full medical history via an EHR can be challenging—especially when treatment decisions must be made quickly, as is typically the case in the emergency department.

"Sorting through all that to find the notes that summarize the patient's history is very time-consuming and somewhat difficult, because you never know where the meat of the matter will occur."

DAVID MCCLELLAN, MD, FACEP, EMERGENCY-MEDICINE PHYSICIAN, PROVIDENCE SACRED HEART MEDICAL CENTER, SPOKANE, WASHINGTON

"One of the banes of our existence in emergency medicine is that electronic medical records have a huge capability for historic information," McClellan says. "But the information I need to take care of a patient well—balancing the need for expeditious decision-making and expeditious interventions—can be very difficult to pull out of the electronic medical record, because there is so much in it."

McClellan observes that a given patient's EHR may have pages upon pages of entries in the "Notes" tab for a single calendar year alone. Often, he says, these describe past status updates, such as "returned patient's call," which aren't essential information for treating their current health situation.

"Sorting through all that to find the notes that summarize the patient's history is very time-consuming and somewhat difficult, because you never know where the meat of the matter will occur," McClellan says.

Further, he says, at times the EHRs may present patient health status as a jumble of line-item entries, without "true prioritization of key information," meaning that pertinent patient information—such as the results of a stress test four months prior—may get lost in the shuffle.

Even distilling from among legitimate health details in EHRs in order to identify data that pertain to the patient's immediate medical situation can be tricky, especially in a fast-paced ED environment.

"If somebody comes in for abdominal pain, I don't really need to know about their neurologic history or their musculoskeletal history," McClellan says. In that situation, "I only predominantly need to know what their previous cardiac history and gastrointestinal history is, along with a general sense of whether they're somebody who comes in frequently or somebody who hardly ever goes to see the doctor."

A TIERED APPROACH TO INFORMATION GATHERING

Essentially, McClellan adopts a three-tier approach to health-information gathering. The primary data source, in his thinking, should usually be the patients themselves. By asking key face-to-face questions about patients' medical history and what's brought them in to the ED, McClellan gets quick and important insights into their presenting medical condition.

Rather than trying to navigate through a patient's potentially dense full EHR,

(Continued on page 32)

PAVING THE PATH FOR GREATER EHR INTEROPERABILITY

To some degree, you could liken aspects of the existing health IT landscape to a railway without connections.

While healthcare providers and hospitals have widely embraced electronic health records (EHRs) and other online information portals over the last decade, communication between providers—and at times, with patients—remains a challenge.

"We had practices going out and buying their own technology, and many of us thought that would solve a lot of the problems," says Robert M. Tennant, director of the health information technology policy at Medical Group Management Association, a leading industry organization for medical-practice administrators and executives. "Due to several factors, we didn't achieve the level of interoperability between systems that many had hoped for. It's almost like everybody bought a rail car, but the rail connections weren't in place."

NEW RULES BRING HISTORIC CHANGES

In March, the U.S. Department of Health and Human Services (HHS) issued two groundbreaking final rules that will reshape how healthcare data is organized and maintained. The goal: to address lingering, troublesome barriers to interoperability

in healthcare IT while at the same time giving patients easier access to their own healthcare information.

As a continued effort to implement the 21st Century Cures Act, the two rules "mark the most extensive healthcare data-sharing policies the federal government has implemented," according to an HHS statement. The rules will be enforced beginning sometime in 2021, though the COVID-19 pandemic could potentially push back the timeline.

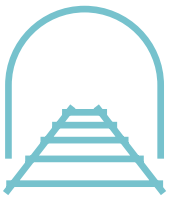
Taken together, the "ONC's Cures Act Final Rule," issued by the HHS Office of the National Coordinator for Health Information Technology (ONC), and the "Interoperability and Patient Access Final Rule," issued by the Centers for Medicare & Medicaid Services (CMS), provide patients with more control over their own health records and establish new rules to prevent so-called "information blocking" practices within healthcare systems.

"The information-blocking rule basically outlaws the blocking of data while outlining a number of permitted exceptions," explains Tennant. "Providers are no longer permitted to keep their healthcare data in a silo. If a patient requests it, or another provider requests it, then by law they must now share that data. That's a big change."

"Unfortunately, data silos continue to fragment care, burden patients and providers, and drive up costs through repeat tests," CMS administrator Seema Verma said in a release announcing the new rules. "The days of patients being kept in the dark are over."

STANDARDIZING INFORMATION-SHARING

One feature of the ONC Final Rule aims to standardize and streamline the ways that critical facets of patients' health information—including allergies, current medications, and other crucial clinical data—are presented. The goal: easing operability and legibility across various EHR vendors and healthcare information exchanges.



"Unfortunately, data silos continue to fragment care, burden patients and providers, and drive up costs through repeat tests. The days of patients being kept in the dark are over."

SEEMA VERMA,
CMS ADMINISTRATOR

The ruling requires that EHRs provide critical patient-care information using standardized data classes as outlined by the U.S. Core Data for Interoperability (USCDI). The goal is to ensure that critical patient information is understood and made accessible to providers across many care settings.

Essentially, the new rules help codify and standardize reporting protocols for the key elements in a patient's medical record—including demographic information, insurance information, allergies, chronic illnesses, medications, and other critical healthcare data.

By streamlining this essential information into what Tennant calls a standardized "USCDI snapshot," healthcare providers can easily assess the most significant aspects of a patient's record without being burdened with "an 800-page full-record PDF, which is of almost no use to a provider," he says. (See "Information Overload," page 22.)

"The USCDI represents the minimum that the provider has to share to avoid being charged with information blocking," Tennant adds. "It's the baseline for the first 24 months. I think it's an important step forward, because now everybody knows what to expect. The IT vendors know how to incorporate it as standardized data, and it should make care coordination much easier."

APPS GIVE PATIENTS CONTROL

The move to streamline data and improve EHR information-sharing across providers is key. But Tennant feels that the real "game-changer in healthcare" will be in the hands of patients themselves—via their smartphones.

Application programming interface (API) technology—the tech behind popular apps like Expedia or Uber—has revolutionized the consumer world, Tennant says, and the current thinking is that it can likely do the same for healthcare.

As a result, the new rules will require that ONC-certified EHR vendors make patient-health information available via API technology. This means that patients will eventually be able to have their information sent to their smartphones via the app of their choice.

(Continued on page 39)

Reflections from Frontline Heroes

At this unprecedented time of challenge and crisis in healthcare, we recognize all our members and other healthcare professionals serving on the frontlines of the pandemic, for their immense sacrifice and undaunted dedication. We thank you for your good clinical judgment, and your consistent prioritization of patient health and safety above other concerns.

The following are reflections from a few of our frontline heroes on their experience, and specifically—knowing that the next pandemic is a matter of "when" rather than "if"—what lessons they've learned during the pandemic that they will carry forward.

Tim Silbaugh, MD (Center), Emergency Medicine, AK Emergency Medicine Associates, Providence Alaska Medical Center, Anchorage, Alaska

As an emergency-medicine physician working through the COVID-19 pandemic, I more fully value the outstanding cooperative spirit of our frontline medical providers. Nurses, doctors, paramedics, and techs work extra shifts, providing direct care in stifling masks, gowns, and respirator hoods. The local and national hospital administrators apply lessons learned in the hot zones of infection to rapidly create new isolated treatment zones and care protocols. I am equally aware how much better our healthcare in the United States could be if our country embraced world-class excellence in medical care. Even with dedicated physicians, abundant financial resources, and the most advanced medical technology, the U.S. has underperformed most nations in our response to COVID-19, with more cases and deaths than any other nation. To be prepared for the next pandemic, the United States needs universal healthcare, accessible to all Americans, and national leadership that respects, understands, and supports the medical sciences.

Alexander R. Sellman, RN, Emergency Department, Providence Alaska Medical Center, Anchorage, Alaska

I never thought that I would be qualified for emergency nursing. Then I realized that it was not my clinical understanding or experience that prepared me for the emergency room, but my heart. I knew I would likely encounter great tragedy and uncertainty on the frontlines of healthcare, but I was all in. I am here for one thing—to help. I prepared with our Highly Infectious Treatment Team here at Providence Alaska Medical Center knowing that the next pandemic, breakout, or mass-casualty incident was right around the corner. When the COVID-19 pandemic hit, I knew that the key was constant readiness and confidence in my ability to serve. My training gave me the confidence to address the many changes that came our way. For future pandemics or surges, our greatest challenge may be addressing the fear and uncertainty that COVID-19 has created in patients, families, and healthcare workers.

Christa Arguinchona, RN, Special Pathogens Unit (SPU) manager, Providence Sacred Heart Medical Center, Spokane, Washington

As a regional treatment center for emerging special pathogens, we conduct quarterly training exercises. We saw the results of this training in our preparation for COVID-19. Understanding surge planning, PPE donning and doffing, and clinical workflows for a respiratory pathogen was extremely valuable in our response and allowed us to adjust our plan as needed, based on the specifics of the COVID-19 pandemic. Knowing the value of that training and translating it into a state of preparedness will shape our approach moving forward. It has been a privilege to take part in the interdisciplinary teamwork and commitment that has been so evident in our COVID unit. Watching some of our patients walk out of the hospital and be reunited with their families, knowing how ill they were, has been highly rewarding and a tribute to the sacrifice and commitment of our amazing team.

(Continued on page 28)

(Frontline Heroes, continued from page 27)

Luke Parr, MD, Critical Care, Legacy Medical Group—Emanuel, Portland, Oregon

I work for Oregon Anesthesiology Group (OAG) and serve on one of Legacy Health's Critical Care and ECMO (Extracorporeal Membrane Oxygenation) teams. ECMO is an external heart-lung bypass machine for people who are likely to die even on conventional life-support systems, such as mechanical ventilators, and provides a last-line form of therapy. During this pandemic, I've traveled to hospitals in a multistate area to care for COVID-19 patients as young as 19 and as old as 61, many of whom have come off ECMO and are on the path to recovery. From top to bottom, Legacy's clinical staff, nonclinical staff, and leadership, as well as my colleagues at OAG, have been incredibly brave. They choose to show up at work every day, knowing they're risking their own health and that of their families, to take care of patients with COVID-19. But this has been hardest for the patients' families, with visitation severely restricted. Still, in the hardest of times, the families I've worked with have responded with understanding and compassion.

Photo by Beth Nakamura/The Oregonian

Jason Wells, MD, Pulmonary Critical Care, The Oregon Clinic, Portland, Oregon

My biggest lesson has been the importance of preparedness and planning for pandemics ahead of time so that we're not creating protocols from scratch. If there is a bright spot to come out of this, it's that we are now better prepared to handle surges, and have plans in place for future pandemics or any new COVID-19 surges we may experience this fall and winter. Throughout this experience I've been impressed with the whole healthcare system, from the people who clean the rooms to the hospital administrators. Everyone has put in extraordinary effort; it's very heartening to see people put themselves on the line in order to care for patients. Until something like this happens, you don't really know how the system will react, and the response of our healthcare teams has been remarkable to see.

"There's a risk inherent to adopting a technology that doesn't have a strong business case, because you're using limited resources for something that doesn't have a strong ROI."

DENISE SHOPE, RN, RISK-MANAGEMENT CONSULTANT, AND INSURANCE PROFESSIONAL, RCM&D, BALTIMORE, MD

(Virtual Risk, continued from page 13)

Considerations in this domain include environment support, maintenance agreements, capacity management, and contingency plans for business interruptions. Organizations need to go through scenario-based risk assessment to anticipate or predict uncertainty, says Shope. "Basically, this means anticipating scenarios like pandemics," she says. "What happens if we have a surge in demand? Technology is great when it works, but organizations need to have a multidisciplinary team to help predict where the failures will be."

DOMAIN 4: TECHNICAL CONSIDERATIONS

Before integrating new technology into clinical settings, organizations need to think outside the exam room to include non-clinical staff and technological support. Who will support and maintain the technology, repair it when it fails, ensure interoperability between systems, and safeguard the privacy and security of patient data?

Another consideration is whether adopting new technology leaves the organization vulnerable to cyberattacks. Organizations need to have a plan in place for maintaining cyber hygiene to minimize interruptions to patient care in the event of a data breach or cybercrime, says Shope. (See "Cyber Attacks on the Rise," pg. 20).

DOMAIN 5: STRATEGIC CONSIDERATIONS

Emerging technology like AI is exciting, to be sure. But organizations should be wary of adopting it without first considering how it aligns with their business strategy, says Shope. Managing the risk associated with adopting new technology requires careful consideration of the organization's strategic priorities.

Before taking on new tech, Shope says, organizations should understand how the new technology aligns with their risk appetite. Smaller group practices may have a lower tolerance for risk than larger groups or hospitals with deeper pockets, for example. And in some cases, the potential ROI of a new technology may warrant greater risk.

Evaluating how a particular technology fits into an organization's approach to risk helps manage vulnerabilities, says Shope. "There's a risk inherent to adopting a technology that doesn't have a strong business case, because you're using limited resources for something that doesn't have a strong ROI," she notes.

DOMAIN 6: FINANCIAL CONSIDERATIONS

Finally, a risk assessment should include a close look at the organization's financial strengths, weaknesses, and goals. Does the organization have the financial resources to invest not only in the new technology, but in the training, technology support, and contingency planning it will require?

A proactive risk assessment helps healthcare organizations of any size determine whether adopting a new technology is a safe, smart financial investment. "Providers in small group practices should consider whether they have the resources to help with a proactive risk assessment," says Shope. "If they don't, providers can check with their insurance broker, who can do that sort of risk assessment for them."

Another consideration in this domain that Shope points out is insurance coverage: providers should work with insurance professionals who understand the risk involved in adopting new technology. "Physicians and their insurance brokers must work together in managing the new risks involving the use of AI," she says. "Insurance professionals need to understand the risk. No one wants to be left uninsured because of insurance-contract language or exclusions in the insurance policy, so coverage is critical." (PR)

***Denise Shope**, RN, MHSA, ARM, CPHRM, can be reached at DShope@rcmd.com. Shope is a risk-management consultant with RCM&D who began her 25-year career in healthcare as a registered staff nurse at Geisinger Medical Center in Pennsylvania. She is past president of the American Society for Health Care Risk Management (ASHRM), and she received ASHRM's Distinguished Fellow Award in 2018.*

Claims Severity and Pressures on Premiums

In 2014, a 16-year-old woman

who was 25 weeks pregnant was hospitalized with severe preeclampsia, a serious complication characterized by high blood pressure. Her physicians contended that they advised her to undergo an emergency C-section, which she refused. The patient claimed that doctors told her that the baby would die or suffer brain damage if she had a C-section. Whichever the case, when the baby was delivered vaginally days later, it suffered severe damage. The mother filed a lawsuit, and in June of 2019, the case went to trial. After the parties rested, the jury came back in just two and a half hours with a staggering verdict in the amount of more than $229 million in favor of the plaintiff—the largest medical-malpractice verdict ever recorded.

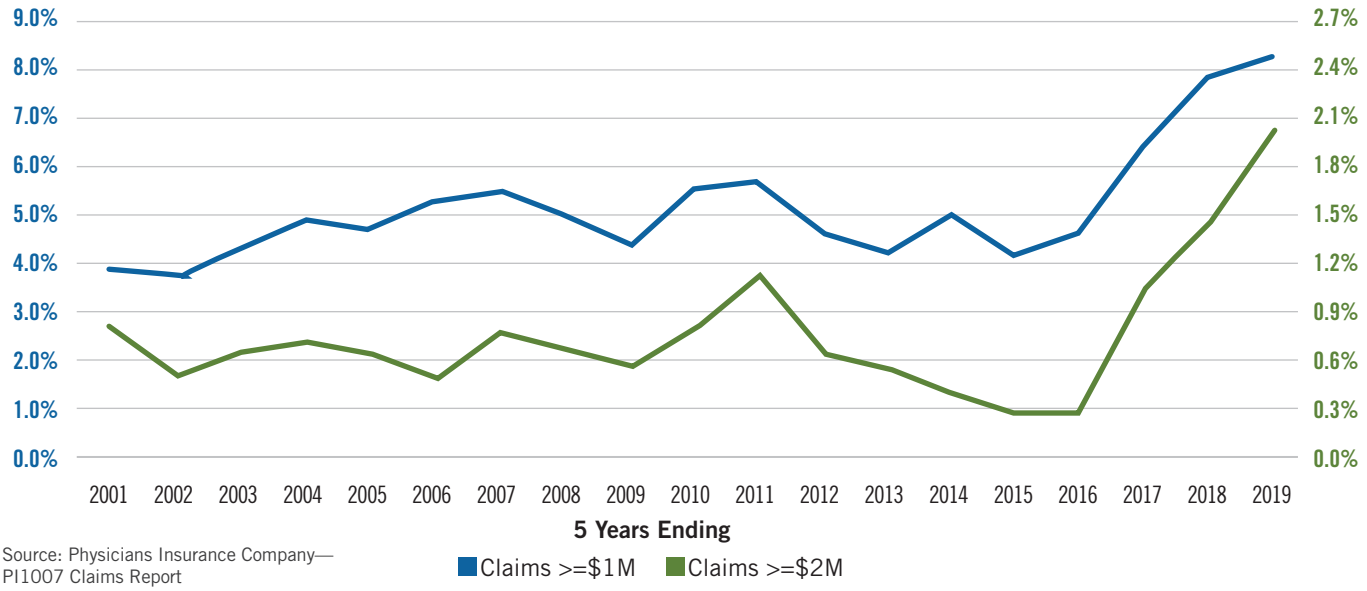
For the last several years, the medical professional liability (MPL) industry has been experiencing increased financial pressure in response to the changing healthcare system and social inflation. In fact, since 2013 there have been a total of eight medical malpractice cases exceeding $100 million, including the aforementioned case; six of these cases have been in the last two years alone. This increase in the frequency and severity of claims, along with an extended period of downward competitive pressure on premiums, is prompting needed adjustments across the entire industry.

Locally, in the Pacific Northwest, Physicians Insurance's experience during 2001 to 2019 also shows an increase in severity of claims beginning in 2016. In the four years between 2016 and 2020, the number of claims settling for more than $1 million and $2 million jumped 100% and 300% respectively. One key contributor to this marked increase is social inflation.

The term "social inflation" is a catchall phrase utilized in the insurance industry, but in general, it refers to the increase in loss costs due to shifts in distrust of corporations, juror compositions, and effective plaintiff-attorney strategies.

The recent wave of distrust of corporations makes it easier for a jury to believe that a faceless corporation with ample assets or insurance should be held responsible. Plaintiff attorneys

Claims Activity Impacting Rates and Premiums—Increasing Frequency of Severity—PI Data
Paid Indemnity in Closed Year



Source: Physicians Insurance Company—PI1007 Claims Report

use this distrust in corporations to alter how they file pleadings in malpractice cases, purposely naming only the healthcare entity as the defendant instead of individual providers responsible for the care.

Social inflation is also amplified by a new composition of juries. As the Millennial generation become jurors, their experience and mindset differs from those of prior generations. Plaintiff attorneys who want the jury to "send a message" will appeal to this generation's broad mistrust in authority and paint experts as "authority figures," hoping jurors will reject their testimony on prejudicial grounds.

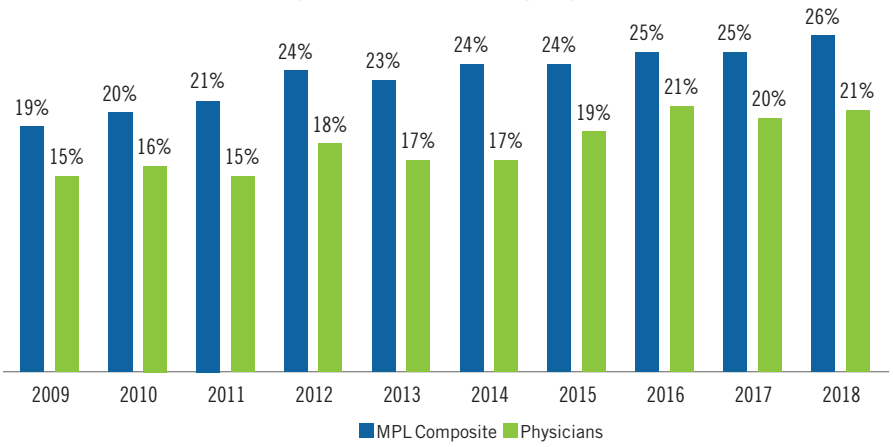
Another factor contributing to overall increases in claims is the cost to defend them. The cost to defend a claim in the Pacific Northwest increased by nearly 60% since 2007. This means that not only are claims resolving for more and more indemnity (the sum of money paid out in the claim), but it is also costing more to defend them.

And while there are many factors that cause the value of cases to go up, the legislative and judicial environments within the Pacific Northwest also have a significant impact. Meaningful liability reform has eroded over the years; last year saw the introduction of a new class of beneficiaries in wrongful-death cases in Washington, allowing the parents and siblings of deceased parties to bring suit even if they don't live in the U.S. and aren't financially dependent on the deceased.

In Oregon, as a result of a recent Supreme Court case, there is now a new cause of action in malpractice claims allowing plaintiffs to claim the theoretical "loss of chance of a better outcome" as an injury. These claims are unique in that they allow patients, instead of claiming actual physical harm, to claim damages if they had the chance of a better outcome and the provider's negligence eliminated that chance. Oregon also has a cap which has been heavily contested over the last few years. Since 1987 the cap for wrongful death and bodily injury has been heavily contested in the courts and in the legislature, with the plaintiff trial bar aggressively seeking to increase or eliminate the cap for both wrongful death and bodily injury.

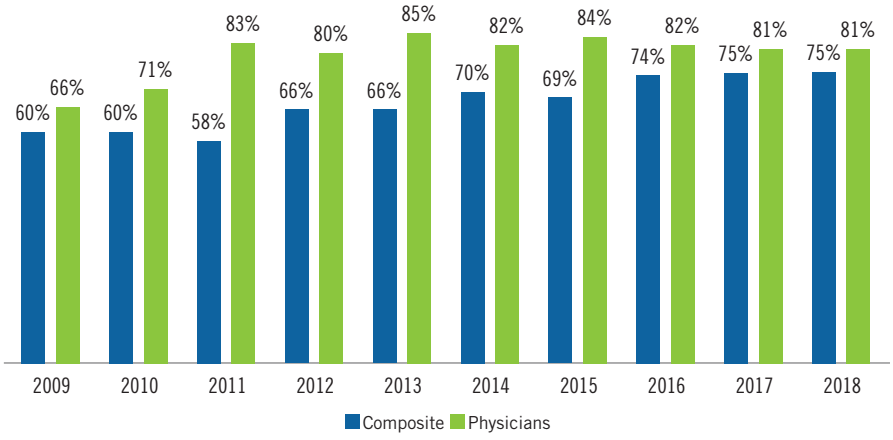
Ever since Physicians Insurance wrote its first policy in 1982, its focus has always been on protecting its members. As a result, Physicians Insurance regularly takes cases to court. Our defense verdicts at trial show that this strategy, though more expensive than just settling a case, is a consistently winning one for members. And, though PI may outspend its composite peer set in defending claims, the company consistently underspends its peers in administration and operating costs.

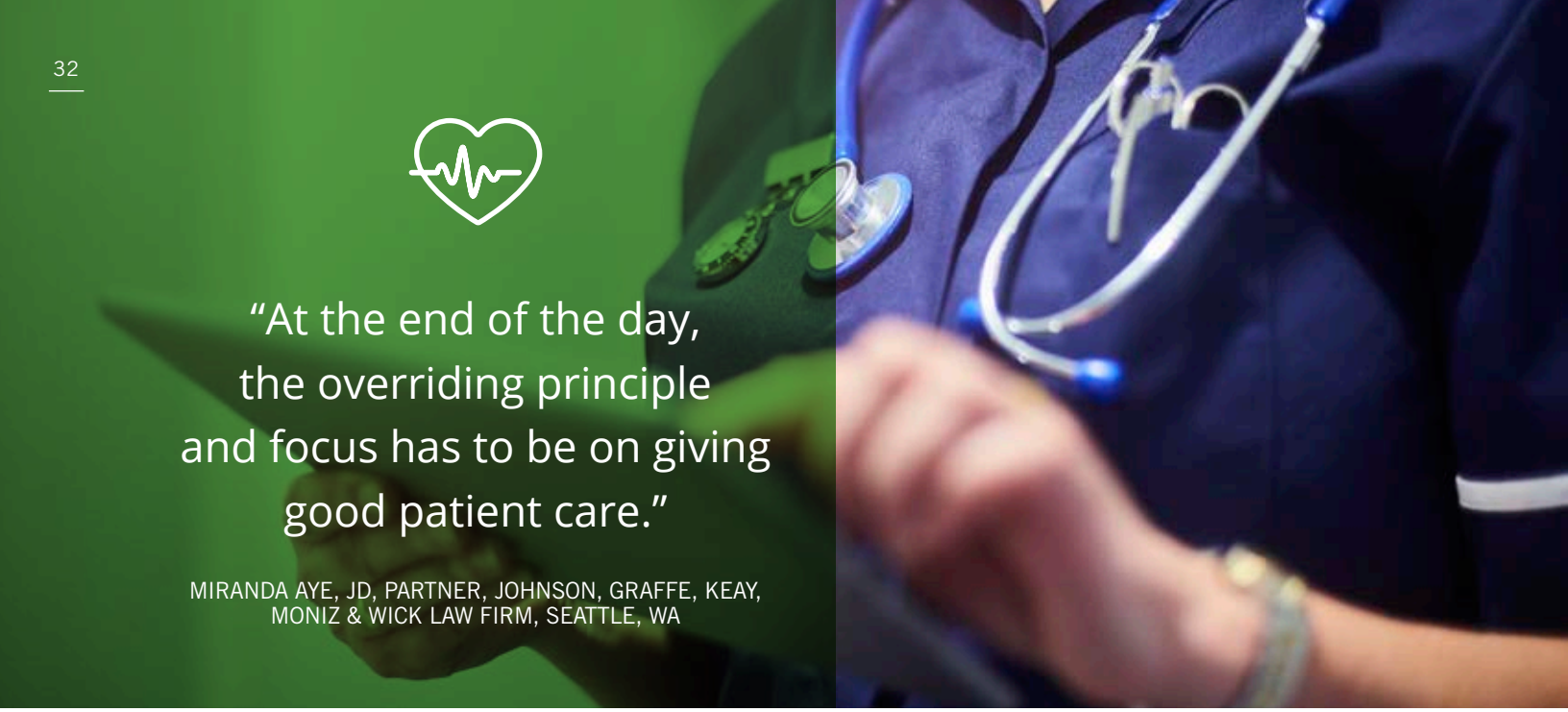
Peer Comparison Underwriting Expense Ratio



The healthcare and medical professional liability industries have gone through significant changes in the past five years. Well before the advent of the COVID-19 pandemic, the MPL industry was experiencing economic shifts and healthcare was reshaping itself through consolidation and employment models. While PI has kept base rates flat as long as possible by closely managing expenses and trying to offset increases through other means, claim costs continue to rise due to influences like social inflation and plaintiff-attorney tactics. As a mutual company owned by and operated for the benefit of our members, we plan to continue insuring, defending, and supporting our members well into the future. This will likely result in rate adjustments in the future, but they will always be made in keeping with our commitment to keep administrative and operating costs in line with our historic low levels. (PR)

Peer Comparison Loss and LAE Ratio





"At the end of the day, the overriding principle and focus has to be on giving good patient care."

MIRANDA AYE, JD, PARTNER, JOHNSON, GRAFFE, KEAY, MONIZ & WICK LAW FIRM, SEATTLE, WA

(Electronic Health Records, continued from page 23)

McClellan generally then scans his patients' summation document—typically a two-page printout that provides key details about the reason for their visit, their current medications and known allergies, a brief medical and surgical history, and current vital signs. This document serves as a second line of information, able to verify and expand on the patient's self-reporting. Finally—when necessary—McClellan refers to the full EHR to find pertinent lab results, specialist's-visit notes, or other information relevant to potential ED interventions he may order.

Complicating the entire process, McClellan says, is the fact that EHRs across various providers and platforms don't always interface well. Furthermore, different providers tend to categorize information differently within the record—sometimes key information may be found in the patient's "Notes" section, while other records might instead put similar information under "Imaging" or "Cardiology," as appropriate.

This lack of standardization can significantly impede efficient EHR navigation, placing Emergency Medicine (EM) doctors in particular—thanks to the fast-paced nature of their practice—in the unenviable position of experiencing information overload.

When asked whether he feels that the advantages of EHRs outweigh their challenges, McClellan says, "I'm probably in the minority on this, but I would come down on the slight negative side."

LIABILITY CONSIDERATIONS

But what are the legal ramifications—if any—of an EM physician admitting that, when seconds matter, it may be impossible to scan a patient's complete EHR before devising a treatment plan?

When it comes to liability, "It really is a matter of what the standard of care is in that physician's profession, in terms of what they should be looking at in the EHR," explains Miranda Aye, JD, a partner with Seattle law firm Johnson, Graffe, Keay, Moniz & Wick, who focuses on medical-malpractice defense cases.

"EM doctors typically wouldn't be going back into all the primary-care notes and looking at extensive records," Aye says. "That wouldn't typically be part of their practice." Therefore, failing to review the entire EHR would not, generally speaking, be reason enough to find an EM physician guilty of medical malpractice.

When doctors face a potential medical-negligence claim, their actions and inactions are weighed in legal proceedings against "what a reasonably prudent physician in that same field would do in the same or similar circumstances, with what was known at that time," according to Aye.

Thus, the standard of care for reviewing a patient's EHR in emergency medicine may be different from what's expected of a primary-care physician or specialist, both of whom work in less time-sensitive environments.

To illustrate, Aye shares an anecdote about an EM physician she defended, who was named as part of a wrongful-death case for prescribing Naproxen to an elderly patient who had come to the ED after a fall—failing to note from her full EHR that the patient had chronic kidney disease. Patients with decreased kidney function are typically advised to avoid high doses of NSAIDs like Naproxen; the patient, who had signed a do-not resuscitate order, experienced acute kidney failure after taking the pain reliever, and later died.

(Continued on page 38)

(Six Trends Shaping Modern Healthcare, continued from page 7)

exponential growth in the number of 3D models used for planning medical interventions and creating implants.

The field of surgery is also being shaped by 3D printing. By using well known, widely available bioprinting hardware, practitioners can create custom implants, surgical guides, and anatomical models on demand for surgeries in nearly every domain, from orthopedics to spinal, maxillofacial, and cranial surgery.

The benefits of 3D printing are well supported by research, per a study in *Biomedical Engineering Online*. Their systematic review of literature found that 3D-printed parts can improve surgical outcomes for patients by increasing efficiencies, reducing surgical time, and decreasing radiation exposure.

Adopting 3D printing presents challenges, particularly for small group practices that must balance the cost of a 3D-printing laboratory with its clinical benefits, according to *Radiographics*. Startup costs are significant, and the costs of printing and additional scans can increase the overall cost of the procedure, according to the journal *Biomedical Engineering Online*.

To effectively use bioprinting technology, organizations must invest in training, management, materials, and equipment. Another challenge is managing the security and privacy of Digital Imaging and Communications in Medicine (DICOM) files used in bioprinting. Exchanging and storing DICOM files requires establishing protocols for the safe, secure transmission of patient data.

GENOMICS

Over the last three decades, breakthroughs in genotyping and gene-expression profiling have transformed the field of genomics, allowing researchers to investigate more of the human genome while dramatically driving down costs. In 2003, the first human genome was sequenced at a cost of $3 billion. Today, next-generation sequencing (NGS) has brought the cost down to below $1,000 per human genome.

In 2020 and beyond, NGS will continue to shape genomics with further cost reductions, per health-sciences consulting firm L.E.K. Innovations in instruments, sample preparation, and bioinformatics—healthcare-computing applications and tools—will streamline workflow and make genomics more cost-effective for organizations large and small.

Most genomics research involves analysis of DNA across different populations in a sample. Now, advancements in technology that allow researchers to study individual cells are creating more individualized applications for genomics research. This "single-cell biology" enables researchers to compare genetic expression and study cellular heterogeneity between cell populations, providing new insights for oncology, reproductive health, and genetics. Advancements in the field of RNA biology, or the study and sequencing of ribonucleic acid, and the development of "molecular stethoscope" applications, providing less-invasive testing for cancer, pathogens, and chromosomal abnormalities, are also expanding the potential for genomics.

Emerging challenges in the field include increasingly narrow candidate pools for clinical trials of ever-more specialized gene therapies and the need for integration of siloed genomic data to inform large-scale projects like the 1000 Genomes Project and the Cancer Genome Atlas. More robust datasets will help further unlock genetic diversity and uncover more biomarkers for disease, paving the way for future breakthroughs. PR

Sources:

***Carla Pugh**, MD, PhD, is Professor of Surgery at Stanford University School of Medicine and director of the Technology Enabled Clinical Improvement (T.E.C.I.) Center. She is the first surgeon in the United States to obtain a PhD in education. Her research involves the use of simulation and advanced engineering technologies to develop new approaches for assessing and defining competency in clinical procedural skills.*

***Jordana Gaumond**, MD, FACS, is a general surgeon at The Oregon Clinic, where she specializes in acute-care surgery, the treatment of breast disease, and minimally invasive gastrointestinal procedures. She is a Fellow of the American College of Surgeons, board-certified by the American Board of Surgery, certified by the American Society of Transplant Surgeons, and a member of the Physicians Insurance Board of Directors.*

GOVERNMENT RELATIONS—UPDATE

REDUCING THE THREAT OF LIABILITY FOR OUR PROVIDERS AND FACILITIES AS THEY FIGHT COVID-19

Physicians Insurance has been engaged in a wide range of government-relations activity concerning healthcare providers and facilities during the coronavirus outbreak, at both the federal and state level. We are working with our national and strategic partners in states where we do business to reduce the threat of liability for healthcare providers and facilities who are leading the fight against COVID-19.

AREAS OF LIABILITY CONCERN

Liability concerns include, but are not limited to, these areas:

- **Physicians and other healthcare professionals,** to meet increasing demand, are being asked to provide treatments or care outside their general practice areas, and for which they may not be familiar.
- **Healthcare professionals and facilities** have inadequate safety equipment that could result in the transmission of the virus from patient to provider and then to additional patients, or directly from one patient to another.
- **Healthcare facilities facing shortages of equipment** such as ventilators are being forced to ration care, resulting in patients not receiving the care they need.
- **Elective surgeries and procedures** are being delayed for months to provide additional capacity to treat COVID-19 patients.
- **Inadequate or delayed COVID-19 testing** is leading to flawed and/or delayed diagnosis.
- **Non-COVID-19 patients with other healthcare issues** are having to wait for substantial periods of time to receive treatment, resulting in the delay of treatment and a reduced chance of positive healthcare outcomes.
- **Concerns have been raised relating to telemedicine and/or patients being released from hospitals early** to free up beds for COVID-19 patients, reducing patient safety and quality healthcare measures.

FEDERAL MPL AND HPL PROTECTIONS

To date, federal efforts have fallen short of what is truly needed to reduce the threat of liability for all healthcare providers and facilities engaged in fighting the national COVID-19 pandemic.

On March 20, 2020, President Trump signed into law H.R. 748: Coronavirus Aid, Relief, and Economics Security Act (CARES Act), which extends liability protections to volunteer healthcare professionals during national declared emergencies or disasters. The Good Samaritan provisions in Section 3215 provide immunity for healthcare given by a volunteer in good faith and within the scope of the volunteer's licensure—but they do not include protections for facilities. We are working with our national partners to promote necessary amendments

that would include Crisis Standard of Care language to provide additional protections for healthcare facilities.

Congress has shifted its focus from healthcare-provider and facility liability to employer liability. The conversations surrounding the fourth coronavirus-relief package promote employer liability protection—as the nation determines how to safely reopen for business—along with healthcare-provider and facility protections. Working with our partners, the MPL Association and the Health Coalition on Liability and Access, we have drafted federal language to extend the provider liability protections in the CARES Act beyond volunteers to all healthcare providers. The draft language is similar to the bipartisan-approved language in the first stimulus package. We are working to secure broad bipartisan support, including support from Congresswoman Dr. Schrier from Washington, who signed on early to the Good Samaritan language in the CARES Act. We hope to insert both healthcare-provider and facility liability language and employer liability language in the next coronavirus-relief package. More importantly, we hope to educate Congress on the immediate need for national reforms to protect against future pandemics and national disasters.

WASHINGTON AND OREGON MPL AND HPL PROTECTIONS

We are working with the Washington and Oregon State Medical Associations, hospital associations, and liability-reform coalitions to make requests to both governors to protect healthcare providers and facilities if Congress fails to implement adequate protections during this national and state-declared emergency.

WASHINGTON EXECUTIVE-ORDER REQUEST

On April 2, 2020, a letter was sent to Governor Inslee on behalf of the healthcare community, requesting that he extend the Uniform Emergency Volunteer Health Practitioners Act to Washington practitioners. Current state law favors out-of-state workers over Washington practitioners, so the letter calls on the governor to provide the same protections to Washington providers as are provided for workers who arrive from other states.

On April 23, 2020, the governor responded unfavorably to the request, stating that he does not believe the current circumstances or projections represent an immediate need for liability waivers. The governor has expressed interest in tracking COVID-19 claims data for further consideration; however, he is not convinced that blanket immunity is the answer. We will continue to work with the governor and share appropriate COVID-19 claims data with all members of the Legislature in preparation for 2021 legislative-session opportunities.

OREGON EXECUTIVE-ORDER REQUEST

On April 3, 2020, a letter was sent to Governor Brown on behalf of the healthcare and facility community, requesting that the governor follow the New York gubernatorial executive order that limited liability for healthcare providers and facilities.

Like Governor Inslee, Governor Brown has expressed interest in tracking COVID-19 claims data before making any decisions on blanket immunity for healthcare providers and facilities. We have been told she has a plan ready to activate if a professional or facility liability crisis should occur. We have engaged in a robust grassroots campaign in Oregon and will share appropriate information with all members of the Legislature in preparation for 2021 legislation-session opportunities.

CALIFORNIA NON-ECONOMIC-DAMAGE CAP

We received good news out of California on the challenge to the non-economic-damage cap. The campaign behind the ballot initiative to increase the California medical non-economic-damages cap has decided to aim for the 2022 ballot, due to the pandemic. The $250,000 non-economic-damage cap was put in place in 1975; the 2020 ballot measure, if passed, would have adjusted the non-economic-damage cap for inflation, increasing the cap to $1.2 million for 2021. Proponents for the ballot initiative could not get enough signatures to qualify amid the COVID-19 pandemic. In addition, they recognized that the environment is not favorable for overturning the cap and attacking healthcare providers and facilities currently battling the pandemic.

As a legislator once said, "Politics is the art of postponing decisions until they are no longer relevant." Physicians Insurance will continue to serve as a trusted, reliable resource of information for our insureds and lawmakers. Advocacy is crucial to ensuring that the concerns of our members and their patients are heard by lawmakers at both the state and national level, and we are well positioned to work as a leading advocate on initiatives that impact healthcare now and for the 2021 session and the next Congress. PR

More Information

For more information about our Government Relations Program, please contact Anne E. Bryant, Senior Director of Government Relations, at Anne@phyins.com or 206-343-7300, extension 6612. You can also visit our webpage at **phyins.com/gov.**

OPINION

Why Alexa's Bedside Manner is Bad for Healthcare

By Elisabeth Rosenthal | Kaiser Health News

Amazon has opened a new healthcare frontier: now Alexa can be used to transmit patient data. Using this new feature—which Amazon has labeled as a "skill"—a company named Livongo will allow diabetes patients—which it calls "members"—to use the device to "query their last blood-sugar reading and blood-sugar measurement trends, and receive insights and Health Nudges that are personalized to them."

Private-equity and venture-capital firms are in love with a legion of companies and startups touting the ability of virtual doctors' visits and telemedicine to revolutionize healthcare, investing almost $10 billion in 2018, a record for the sector. A startup called Kinetxx will provide patients with virtual physical therapy, along with messaging and exercise logging, without ever requiring them to step into a gym or a clinic. And Maven Clinic (which is not actually a physical location) offers online medical guidance and personal advice focusing on women's health needs.

In April, at *Fortune*'s Brainstorm Health conference in San Diego, Bruce Broussard, CEO of health insurer Humana, said he believes technology will help patients receive help during medical crises, and cited the benefits of home monitoring and the possibility of doctors' visits being conducted by videoconference.

But when I returned from Brainstorm Health, I was confronted by an alternative reality of virtual medicine: a $235 medical bill for a telehealth visit resulting from one of my kids calling a longtime doctor's office. The bill was for a five-minute phone call answering a question about a possible infection.

Virtual communications have streamlined life and transformed many of our relationships for the better. There is no longer much need to sit across the desk from a tax accountant or travel agent, or to stand in a queue for a bank teller.

(Continued at https://bit.ly/2BvJAMI)

(Healthcare's Digital Revolution, continued from page 19)

In the 11 years since Swanson began blogging, consumers have demanded increasing access to personal health data, with young parents leading the charge. Health-tracking is most popular among young, affluent women, per the Gallup poll. "There's a whole revolution of gadgetry in pediatrics allowing parents to track their baby's data," Swanson says. From Lumi, the Proctor & Gamble smart-diaper baby monitor that shows sleeping, feeding, and diaper activity—which Swanson helped develop—to the Dr. Mom otoscope that allows parents to spot ear infections at home, to the Kinsa QuickCare Smart Stick digital thermometer, devices let parents track their baby's every moment, movement, and milestone without setting foot in a doctor's office.

EMPOWERED PATIENTS, IMPROVED OUTCOMES

As new consumer products compete to provide users with ever-increasing amounts of health data, providers may spend more time helping patients sort out whether the data is useful, or even accurate. Personal sleep-tracking data from smartwatches is one example, says Dimitriu. While smartwatches may provide basic information about some aspects of sleep, the technology is still evolving. Users may not know that the sleep-stage readings from a wrist-worn device are nowhere near as accurate as the data from a lab-based sleep study that tracks brain waves.

When Dimitriu talks technology with patients, he often educates them on the limitations of personal sleep-tracking gadgets. "Sleep tracking is still emerging," he says. "It's now where health tracking was 10 years ago."

This type of technology is still in its infancy, agrees Swanson, but it presents opportunities for providers to

"When patients are monitoring their own health, I think they're more active participants in their own healthcare."

KATHLEEN PIZZOLATTO, CNM, ARNP,
CHI FRANCISCAN HEALTH, TACOMA, WASHINGTON

address some of healthcare's pressing problems, like how to care for growing patient panels and spend more meaningful time with each patient.

For example, digital tools can help providers scale messaging to create much-needed efficiencies in clinical settings. "Does a pediatrician need to tell each patient the same thing over and over in every appointment?" Swanson asks. "Using digital tools, we could send certain health messages specific to that appointment, or that child's developmental stage, to a parent an hour before an appointment, and the parent could ask questions if needed. This has been a huge miss in the digital space."

Health-tracking technology can also help bridge language, knowledge, and communication barriers between providers and patients, says Dimitriu. "Many of my patients use the Dalyio app to track moods, and it's helpful because everyone's version of 'having a bad day' or 'a bad night's sleep' is different," he says. "These devices also benefit users by adding awareness and granularity."

When a patient tracks their own heartrate via a wrist-worn fitness monitor, they can reference a data point that helps inform decision-making, says Pizzolatto. "That gives a provider something more solid to go on than when a patient calls and says, 'I feel like my heart is racing,'" she says.

And sometimes, home-based health technology is more about reassurance than actionable data. "If a patient wants to use a fetal Doppler monitor at home to hear their baby's heartbeat, and it makes them feel better about their pregnancy, that's fine with me," says Pizzolatto. "But they still need to learn about doing a fetal-kick count to monitor the baby's movement, because that's the information their provider needs."

But, Pizzolatto points out, self-monitoring and the learning that comes with it can empower patients to make positive changes. "When patients are monitoring their own health, I think they're more active participants in their own healthcare," she notes. "And when patients work with their provider to develop a plan, we know they're more likely to follow it, which leads to more positive outcomes."

Ultimately, personal health-tracking is paving the way for providers to spot trends in patient populations that could track viral illness and speed pandemic response, says Swanson. "Patients like the shiny new app on their phone, but the potential for the back-end data is huge," she says. "If a physician tracks 1,000 patients and can see trends in temperature, they'd be able to spot abnormalities and patterns too."

Helping patients understand their own health data is central to the future of healthcare, says Swanson. "23andMe is a beautiful example of this," she says. "[Founder] Anne Wojcicki was trying to emancipate personalized data. It doesn't need to live in your health record. We can give it to you and help you understand it over time." PR

Alex Dimitriu, *MD, is dual board-certified and founded Menlo Park Psychiatry & Sleep Medicine. He treats patients with a wide variety of mental health–related issues such as anxiety, PTSD, depression, bipolar disorder, ADHD, and sleep disorders.*

Kathleen Pizzolatto, *CNM, ARNP, is an advanced-practice provider with CHI Franciscan. She provides care for women from adolescence through menopause, with a focus on gynecology and care for women during pregnancy and childbirth.*

Wendy Sue Swanson*, MD, served as founder and chief of digital innovation at Seattle Children's Hospital before joining Before Brands as CMO. She leads communication to clinicians and parents around the development of early food allergies, and champions digital health, prevention, and healthcare advocacy.*

Trial Results

The following summaries are Physicians Insurance cases that have gone to trial and are public record. In reporting these legal results, it is our goal to inform members about issues that impact healthcare professionals. While we share information we think may be informative, we choose not to disclose the names of plaintiffs or defendants when reporting these results.

IMPROPER REPAIR OF THIRD-DEGREE TEAR FOLLOWING VAGINAL BIRTH

SPECIALTY: General Surgery

ALLEGATION: 36-year-old female presented to the hospital in active labor with her second baby. The patient gave birth to a healthy baby boy but suffered a third-degree vaginal tear during delivery. Due to the complexity of the laceration and repair, a general surgeon was called in to assist.

Plaintiffs argued that the general surgeon failed to identify the anatomy/structures involved in the repair and performed the repair incorrectly, and as a result, the patient experienced significant anal incontinence.

The defense argued that the repair failed in the absence of any negligence resulting in injury.

PLAINTIFF ATTORNEYS: James Holman and Colleen Durkin Peterson, Holman Law (Tacoma, WA)

PLAINTIFF EXPERTS: Juan Vargas, MD, OB/GYN (Oakland, CA), Marianna Alperin, MD, OB/GYN (La Jolla, CA)

DEFENSE ATTORNEYS: Jennifer Crisera and Sarah Silverman, Bennett Bigelow and Leedom (Seattle, WA)

DEFENSE EXPERT: Kelly Clinch, MD, General Surgery (Kirkland, WA)

RESULT: Defense Verdict, Pierce County

IMPROPERLY PERFORMED C-SECTION RESULTING IN EMOTIONAL INJURY

SPECIALTY: OB/GYN

ALLEGATION: 36-year-old female presented to Labor and Delivery for a scheduled C-section of her second baby. The patient alleges that the obstetrician proceeded with the incision in spite of the patient yelling that she could feel everything and was in pain.

The patient claimed she suffered PTSD, anxiety, and depression, and was unable to return to work as a result.

PLAINTIFF ATTORNEY: David Williams (Bellevue, WA)

PLAINTIFF EXPERTS: Andrew Lin, MD, OB/GYN, Robert Ertner, MD, Anesthesiology

DEFENSE ATTORNEYS: Elizabeth Leedom and Jenny Churas, Bennett Bigelow and Leedom (Seattle, WA)

DEFENSE EXPERTS: Katherine Van Kessell, MD, OB/GYN, David Hepner, MD, Anesthesiology

RESULT: Defense Verdict, Pierce County

(Electronic Health Records, continued from page 32)

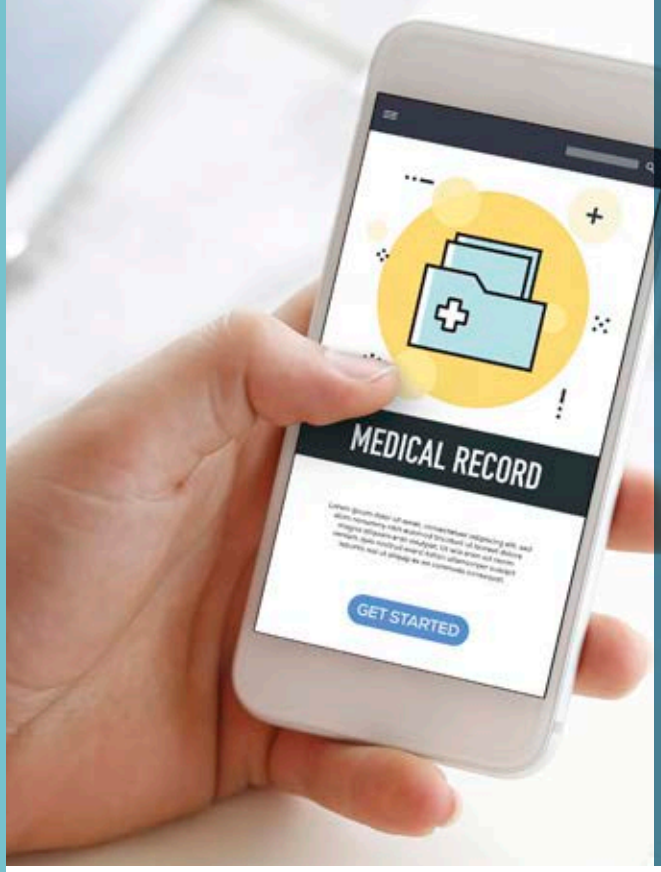
Though the EM physician spoke with both the elderly patient and her daughter during her visit, neither mentioned the patient's pre-existing kidney condition. The EM physician failed to see an alert about the condition in the patient's EHR, because it was under a tab named "Problem List" that is sometimes used by primary-care physicians, but is typically not comprehensively reviewed—depending on presenting complaint—in emergency medicine.

"The problem was, this EM physician didn't even know where to find the Problem List in that particular EHR," Aye says. "It's a tool that primary-care doctors typically use. EM doctors would usually review the Past Medical Information. The information wasn't in both places, in this case."

The physician won the case and was exonerated, thanks in part to the testimony of other EM physicians brought in as defense witnesses. They agreed that the "Problem List" tab is not something they would typically consult in an EHR, particularly one they were not used to. Further, they agreed that it was beyond the scope of an EM standard of care to expect a physician to discern a patient's kidney condition on the basis of other historical lab data not in evidence with the visit.

Still, Aye advises that her clients not make avoiding litigation the driving factor behind how they practice medicine—when it comes to how best to review patient EHRs, or anything else.

"At the end of the day, the overriding principle and focus has to be on giving good patient care," she says. PR



"They will be able to walk into the emergency department, potentially, hold their phone up, and have their health information flow from their phone, perhaps via a QR code, into the hospital's EHR."

ROBERT M. TENNANT, DIRECTOR, HEALTH INFORMATION TECHNOLOGY POLICY, MEDICAL GROUP MANAGEMENT ASSOCIATION

(EHR Interoperability, continued from page 25)

"The vision for many people, and especially for the government, is that the patient will be in control of their health data, and patients will also be in control of interoperability," Tennant says. "They will be able to walk into the emergency department, potentially, hold their phone up, and have their health information flow from their phone, perhaps via a QR code, into the hospital's EHR."

"Right now, online health information portals are great, but it's still a bit of a hassle to sign in," Tennant adds. "They don't always offer the complete record, and often the information presented is not in a patient-friendly format. If accessing your healthcare information on your phone could be curated and made easier by third-party apps, it could be a tremendous asset to the healthcare-delivery process. It would be a way to increase interoperability, and could lead to enhanced price transparency."

Tennant predicts that as app-based systems become widely available, they will become cost-saving tools for both providers and patients—allowing patients to see, in real time, their potential out-of-pocket rates for various lab and testing services.

"Let's say you go to the doctor, and the doctor feels you need to get an MRI," he says. "Using API technology, patients could quickly get a list of local MRI providers and their out-of-pocket expense for each one. With the out-of-pocket cost potentially being less at an insurance plan's preferred testing facility, I see it as an opportunity for plans to control costs and for patients to decrease their out-of-pocket expenses."

EMPOWERING COORDINATED CARE

Increased information access and potential cost savings may be the biggest advantages for patients. For providers, the new rules' most significant impact may be enhanced value-based care.

As part of the CMS Final Rule, a new Condition of Participation mandates that all hospitals send electronic notifications of a patient's admittance, discharge, or transfer (ADT) status to their primary-care provider or appropriate specialist, so that follow-up care can be provided.

"If a patient, say, has diabetes, and a negative event lands them in the hospital, if they're discharged and there's no clinical follow-up, they could likely end up back in the hospital," Tennant explains.

As the ADT messaging becomes more streamlined and standardized, the hope is that primary-care physicians will then reach out proactively to patients to encourage them to make an appointment to prevent future hospital stays.

"If the practice is in a value-based contract, then they have every incentive to get on the phone and talk with that patient, because that way they can keep their costs low while providing improved care," Tennant says.

In doing so, we hope to see railways without connections replaced by the smooth flow of information and improved care coordination. PR

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Nola M. Moore, MD, A Founder of Physicians Insurance, Passes Away

Nola M. Moore, MD, of Shoreline, WA, a founding director of Washington State Physicians Insurance Association (which later became Physicians Insurance), died April 17, due to complications from the novel coronavirus.

Dr. Moore was one of the early physician leaders who extended personal credit to capitalize the company, and who worked with the Washington State Medical Association to gain statewide support for the young company. Dr. Moore was an energetic champion of patient and physician rights, was tireless in her compassionate service of others, and remained active in the medical community until just a few years ago.

Dr. Moore earned a BS, MD, and MS in pulmonary physiology from the University of Wisconsin at Madison. She practiced for 30 years in partnership with her late husband, James H. Dahlen, MD.

Dr. Moore served for nine years on the Physicians Insurance board of directors and for nine years on the board at NORDIC (a dental liability company), and served terms as president of the King County Medical Society and King County Academy of Family Practice, from which she received the King County Academy Community Service Award.

She is survived by her sister Mavis, daughter Dee Dee (husband Bob, children Annaliese, Morgan "Mo," and Marielle "Leo"), son Eric (wife Darci, daughter Lucy), and son Kerry (wife Katie, daughters Zoe and Mattie Mae).

In lieu of flowers, remembrance contributions can made to Helen Chu's lab at the University of Washington Department of Medicine, Division of Allergy and Infectious Disease. See Dr. Chu's contact info at: https://bit.ly/36YPaIV

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