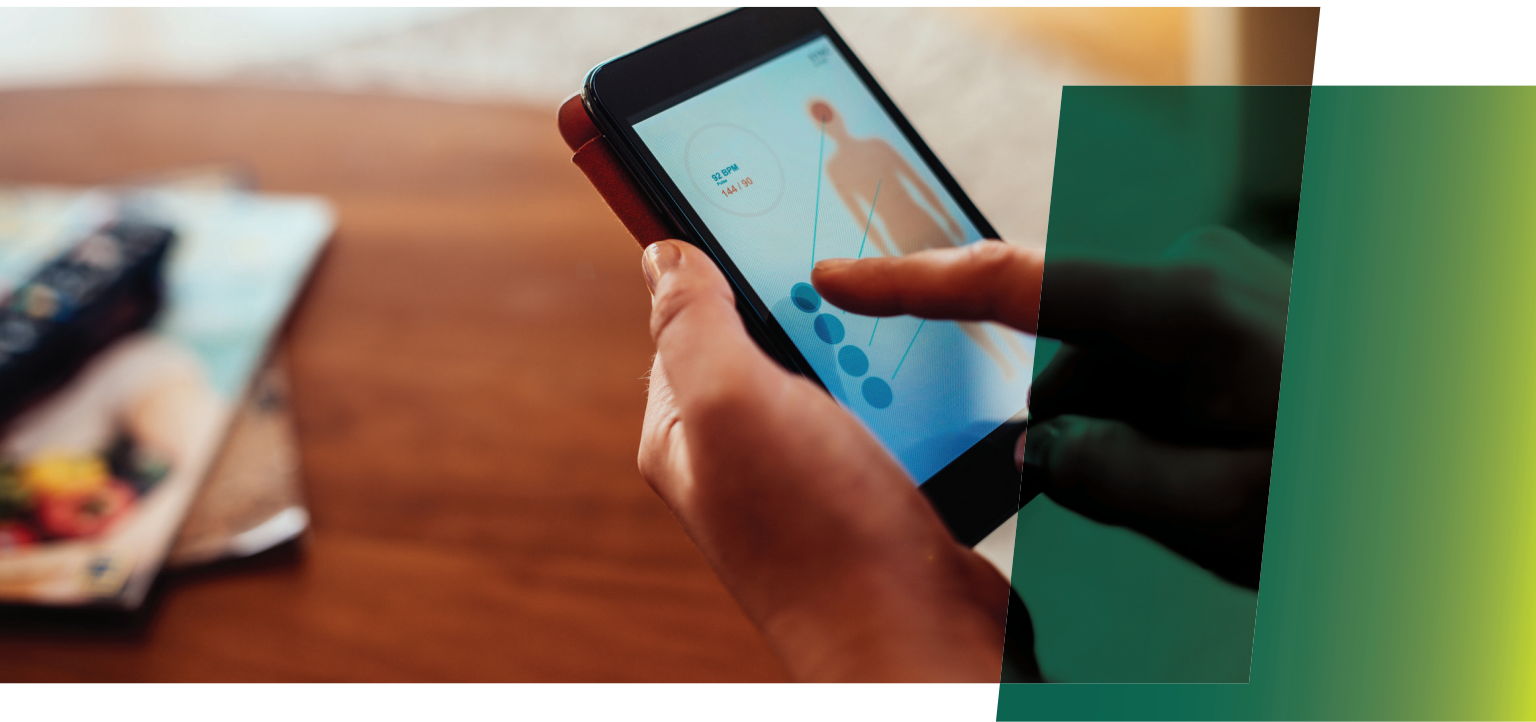




# THE DEVICE WILL SEE YOU NOW

*The use of remote patient monitoring devices accelerated rapidly when COVID-19 hit. To maintain the growth, however, healthcare systems and device manufacturers will have to overcome a host of issues.*





### The problem:

The increased adoption of remote patient monitoring is creating a host of new needs for healthcare systems and device manufacturers.

### Why it matters:

After COVID-19, more remote monitoring will be used to keep patients out of clinics and hospitals.

### The solution:

Align recruiting, training, and supply chain functions to address the growth in remote monitoring.

The text from the surgeon was simple: “Hey, don’t forget to get your walking in today.” With COVID-19 still a real and present danger, the surgeon didn’t want to schedule a follow-up hospital visit. But he knew his patient wasn’t doing the exercise regimen of walking at least 20 minutes a day to help recover from reconstructive knee surgery. The knee told him so.

Sensors in the reconstructed knee sent daily reports on function, motion, patient activity, and more so the surgeon could see how the knee was performing and the patient was progressing post-op. “The surgeon can tell from the data who is laying around and not doing their rehab,” says William Hunter, CEO of the smart medical device company Canary Medical.

In the post-COVID world, where people don’t want to be waiting around in doctors’ offices or medical clinics, and hospitals want to keep space and resources available for the most critical patients, devices that monitor patients remotely are suddenly getting a lot of attention. According to one report, the global remote monitoring devices market is expected to reach \$30.7 billion by 2022. The attention isn’t just coming from



doctors and patients — technology companies, artificial intelligence and machine-learning start-ups, venture capitalists, and more all want in on the action. “Before COVID, there was a bit of an uptake problem in remote patient monitoring,” says David Vied, global sector leader for Korn Ferry’s Medical Devices and Diagnostics practice. “But in the last three months, a generation of doctors have adopted and been trained on how to use these devices.”

Part of the reason remote patient monitoring hadn’t grown as expected was that doctors are creatures of habit. Traditional practice management dictates follow-up appointments be in the office. It isn’t that way simply because of convention, however—it’s the only way they could get reimbursed. Before the pandemic, Medicare and Medicaid only covered remote patient monitoring for patients with chronic conditions such as cancer or diabetes. With COVID-19, however, they extended coverage to patients with acute conditions, such as a knee replacement, or to monitor respiration in someone infected with the virus. In fact, now if a patient has to go back to the hospital for follow-up care, a penalty is imposed. (The penalty is consistent with the overall move in the healthcare industry toward a value-based model—where services and treatment are provided proactively in a bid to reduce health issues and limit chronic illness.)

“Now there is an economic incentive to make sure a patient who just got a knee replacement is doing their exercise, for instance,” says Hunter. “With remote monitoring, doctors can see who is headed for a bad outcome and intervene before there’s a major issue.”

But patients may not see it that way. Experts concede that even if reminders are good for them, they can easily be viewed as a nuisance,

“COVID accelerated adoption of remote monitoring, but a lot of issues still need to be resolved.”

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yet another thing someone is telling them to do. Moreover, not every patient loves the idea of technology being the gateway to his or her doctors. And while people may not mind an iPhone tracking their steps, for instance, they may be more suspicious of giving their data away to an insurance provider. After all, Apple can’t raise premiums, but insurance companies can.

Still, there’s no doubt the use of remote monitoring will normalize to a level lower than it has reached during the pandemic but much higher than it would have reached before. And that will have profound implications for every aspect of healthcare delivery. Healthcare systems will need more information technology specialists, for instance. Doctors will need digital training with each new device advance. Hospitals will need to rebalance workforce needs as more care moves to the cloud. Device makers will have to find new and flexible sources along the supply chain to keep inventory flowing in the event of another global pandemic. Regulators will have to come up with common standards around the privacy and security of data.

“COVID accelerated adoption of remote monitoring, but a lot of issues still need to be resolved,” says Vied.



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When people think of remote patient monitoring, they may think of the ubiquitous “I’ve fallen and I can’t get up” television commercials from the 1980s. Indeed, that device was one of the first mass-produced remote monitoring systems. However, not only has the technology significantly advanced over the last 40 years, so too has the purpose of remote patient monitoring.

Chris Lowery, president of global products with the medical and surgical supplies company Owens & Minor, says the focus today is more about proactive engagement and less about crisis response. “These devices are not just about transmitting vital signs to guard against emergency,” he says. “They are about maintaining information flow between the patient and doctor to encourage the right preventative behaviors.”

That information flow doesn’t have to be overly sophisticated, either—it can be as simple as an emoji. Lowery’s former company, for instance, created an app for physicians to use with their post-op patients to help judge pain levels. Here’s how it worked: for the first five days following surgery, the app pinged patients twice a day and prompted them to enter a pain score based on smiling or

frowning faces. The happier the face, the less pain, and vice versa. “By evaluating the responses, physicians can get an early warning if the patient is deteriorating from a pain perspective and make a determination of how to proceed,” says Lowery.

To be sure, the overarching goal of remote monitoring is to identify potential issues early enough to prevent a return to the hospital. “Readmissions are a key financial driver and quality indicator,” says Julie Chavey, a managing consultant with Korn Ferry’s Healthcare practice. “No one wants to go back to the ER after having surgery.”

One of the biggest challenges with remote monitoring, however, is that the devices are only as reliable as the patients using them. If patients don’t record data properly, neglect to perform required tasks, or even forget to charge the device, it could cause an inaccurate diagnosis, for instance. That’s where artificial intelligence and machine learning come into play. “Remote monitoring devices need to be as automated and seamless as possible so the onus is not on patients to do something,” says Ravi Kuppuraj, CEO of the connected sensing business at the technology company Philips.

The same goes for doctors. With so much data now available, doctors aren't exactly rushing to adopt more devices that will pump out more information. What they will adopt, however, is a new device that can collect and interpret data and generate potential insights and actions to take. It isn't about generating accurate results, it's about building algorithms that can put those results into context, says Sameer Badlani,

MD, chief information officer with the nonprofit academic health system Fairview Health Services. "If a patient wearing a respiratory monitoring device has an elevated heart rate, does that mean they are having a potential episode or did they just walk up five flights of stairs?" asks Badlani rhetorically. "Getting that kind of granular context is the next realm for remote monitoring."

## Remote Monitoring at a Glance

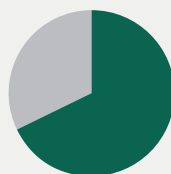
Tracking health statistics with devices didn't start with the iPhone. It actually started with X-ray images sent over telephone wire between doctors in the 1940s. As these stats show, it's grown a lot since then.

### 36 million

= patients in the U.S. using remote monitoring in 2020

### \$30.7 billion

= value of global remote patient monitoring (RPM) devices market by 2022



### 68%

= percentage of physicians surveyed by the Consumer Technology Association who say they strongly intend to use RPM



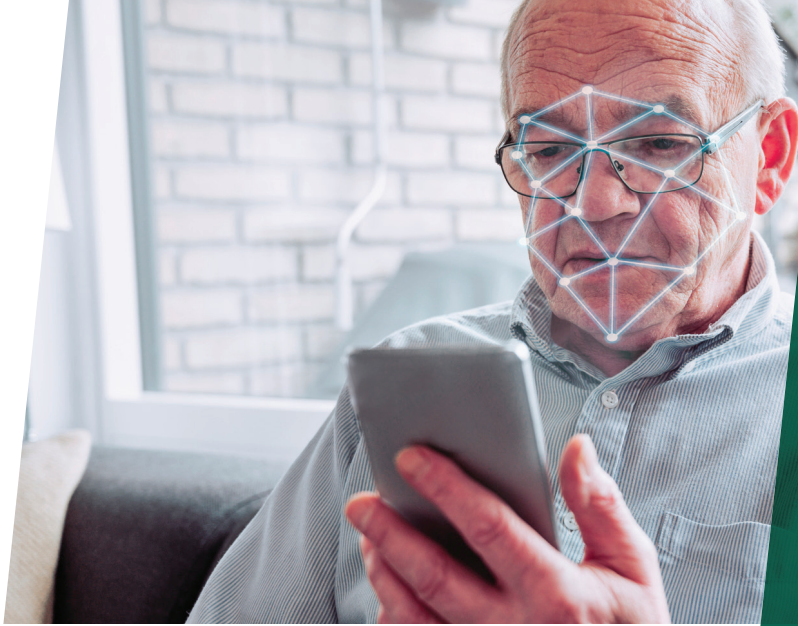
### 52%

= percentage of patients surveyed by the Consumer Technology Association who say they would use an RPM device as part of their treatment if recommended by a doctor



### 88%

= percentage of healthcare systems that have invested or plan to invest in RPM services as part of the transition to a value-based care model



*“Remote monitoring devices need to be as automated and seamless as possible so the onus is not on patients to do something.”*

The need for that kind of context is part of the reason why digital healthcare generated a record \$3.1 billion in venture capital funding during the first quarter, according to data from the venture capital firm Rock Health. Moreover, another report showed that nearly 90% of hospitals and healthcare systems had invested or planned to invest in remote patient monitoring technologies as part of their transition to a value-based care model.

The financial devastation caused by COVID-19 likely slowed the pace of investment, certainly, but didn't stop it altogether. For one thing, says Deborah DiSanzo, who teaches artificial intelligence in health and managing health information at Harvard, the pandemic itself underscored the need for remote monitoring devices. She should know—she's currently working with three different venture capital-backed

remote monitoring start-ups. “COVID is the tipping point,” says DiSanzo, who held executive positions at IBM Watson Health, Philips, and elsewhere before transitioning to academia. “Now that adoption of remote devices has taken off, there's no going back.”

If remote monitoring is indeed poised for mass adoption, the impact on healthcare systems' talent needs, organizational structure, and supply chain management cannot be overstated. The cloud, security, and privacy components alone will force healthcare systems into competition with deeper-pocketed companies for data analysts, engineers, information technology, cybersecurity, and other tech professionals, says Jessica Johnson, a principal in Korn Ferry's Health and Life Sciences Technology practice. “There needs to be close

collaboration between the technology and clinical sides so that remote monitoring solutions can be customized and integrated into workflow so that the right people are getting the right data and the right alerts,” says Johnson.

Just as healthcare systems will be battling with other industries for tech talent, they will also be fighting to retain their clinical talent. Korn Ferry's Vied says device makers are already out recruiting nurses, nurse practitioners, and other medical staff as they prepare to ramp up business. “The sentiment is that the time to move in the market is now,” says Vied.

Healthcare professionals may feel the same way themselves. An increase in virtual and digital medicine, coupled with the burnout and psychological trauma of being on the front lines



of the pandemic, could result in a situation where healthcare professionals seek to leave the field for more personal and career security. “Training, career pathing, and other retention tools are going to be more important than ever,” says Korn Ferry’s Chavey.

More remote monitoring devices also means more links along the supply chain. Not unlike other tech devices, a lot of components for remote monitoring devices are made in China. And as COVID-19 showed, being too reliant on one market risks a run on inventory—except in this case it could be respiratory monitors instead of smartphones. Experts say sourcing will have to get more aggressive, with two or three levels of alternative providers in place, and better managed in terms of keeping stocks in place to reduce risk.

But perhaps the biggest challenge with regards to remote monitoring is one that is often the most overlooked: keeping the human element in care. So much focus is on the technology that it can dilute the human experience. Patients may not want a device monitoring their every breath, and they may not want an insurance company dictating if they exercise or not. Doctors will need to increase their emotional intelligence and empathy quotient to help patients overcome those suspicions and establish a relationship that goes beyond the transactional.

Lowery says that remote monitoring is already helping to do that from a resource standpoint. “Not every patient receives the same amount of post-op interaction from surgeons,” he says. “Remote devices can help winnow down the patient pool to the ones that need human interaction the most so healthcare systems can apply the right resources to the right person at the right time.”

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