Internet of Medical Things: Enabling efficiencies in patient care and healthcare operations

Shaping better health experiences with Connected Solutions

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The pandemic has accelerated the shift to a more virtual existence. This trend is unlikely to transition back post COVID-19 and is driving innovation across industries, including healthcare. Acute labor shortages, staff burnout, gaps in health equity, access to care — on top of rising consumer, stakeholder and caregiver expectations — have contributed to the mounting pressure to provide remote care.

Remote patient monitoring (RPM), and the broader connected health markets, are examples of digital acceleration. The US Food and Drug Administration approved new methods of remote or wearable patient monitoring at the height of the pandemic. These devices help healthcare professionals monitor vital signs such as heart rate, blood pressure, respiratory rate and body temperature. They also help hospital systems provide care, track patient progress, and provide improved patient outcomes with a combination of physical and virtual care.

There's an opportunity to leverage this technology to help deliver better overall care, quality of life and broader access to medical technology and treatment both inside and outside of a hospital or clinic. The technology behind remote patient monitoring—the Internet of Medical Things (IoMT) — can help in shaping better patient experiences all while reducing the strain on healthcare personnel, providing organizational efficiencies and cutting costs.

The need for remote patient monitoring has come at a time in which the healthcare industry is experiencing:

- Labor shortages
- Staff burnout
- Gaps in health equity and access to care
- Rising patient, caregiver and stakeholder expectations to provide a high-quality customer experience

Improving patient experience with remote patient monitoring

As older generations and families continue to navigate the impact of COVID-19, patients and families may be looking for more convenient options for long-term and acute care without the risks of prolonged in-person exposure. The US Department of Health and Human Services reported that the share of Medicare visits conducted through telehealth rose to 52.7 million in 2020 from 840,000 in 2019 — a 63-fold increase. And PwC's Global Top Health Industry Issues survey reported that 91% of respondents said they'd be willing to use virtual care again after the pandemic decreased.

But offering telehealth alone may not be enough to keep patients out of the hospital. Even with increased telehealth services, throughout the pandemic many hospitals became severely strained as inpatient beds, oxygen, equipment and staff were used to their peak capacity.

Additionally, many health companies lack the data needed to meet customer needs and expectations — 81% of patients are unsatisfied with their current healthcare experience and 73% of consumers point to experience as an important factor in purchasing decisions. With the shift to value-based care on the horizon, organizations that can provide a closer patient-provider relationship may be poised to capitalize the market.

Remote monitoring systems give physicians the option to reduce the strain on hospitals while providing patients a better customer experience — and better chance at managing their health.

Remote monitoring can help enhance patient, caregiver and employee experiences while improving efficiencies

With RPM, patients can be discharged early and monitored after leaving the hospital, helping to reduce the need for follow-up visits, prevent conditions from worsening and rehospitalization. In one study, the length of hospitalization was reduced by 134 days, with an average of five days per patient.

Many practices offer remote patient monitoring, and the number of uses–and benefits–for RPM continue to grow. But there are significant benefits for chronically ill and elderly patients as well as overall healthcare costs as a whole:

1 | Monitoring chronic illnesses

2 | Improving the well-being for older people

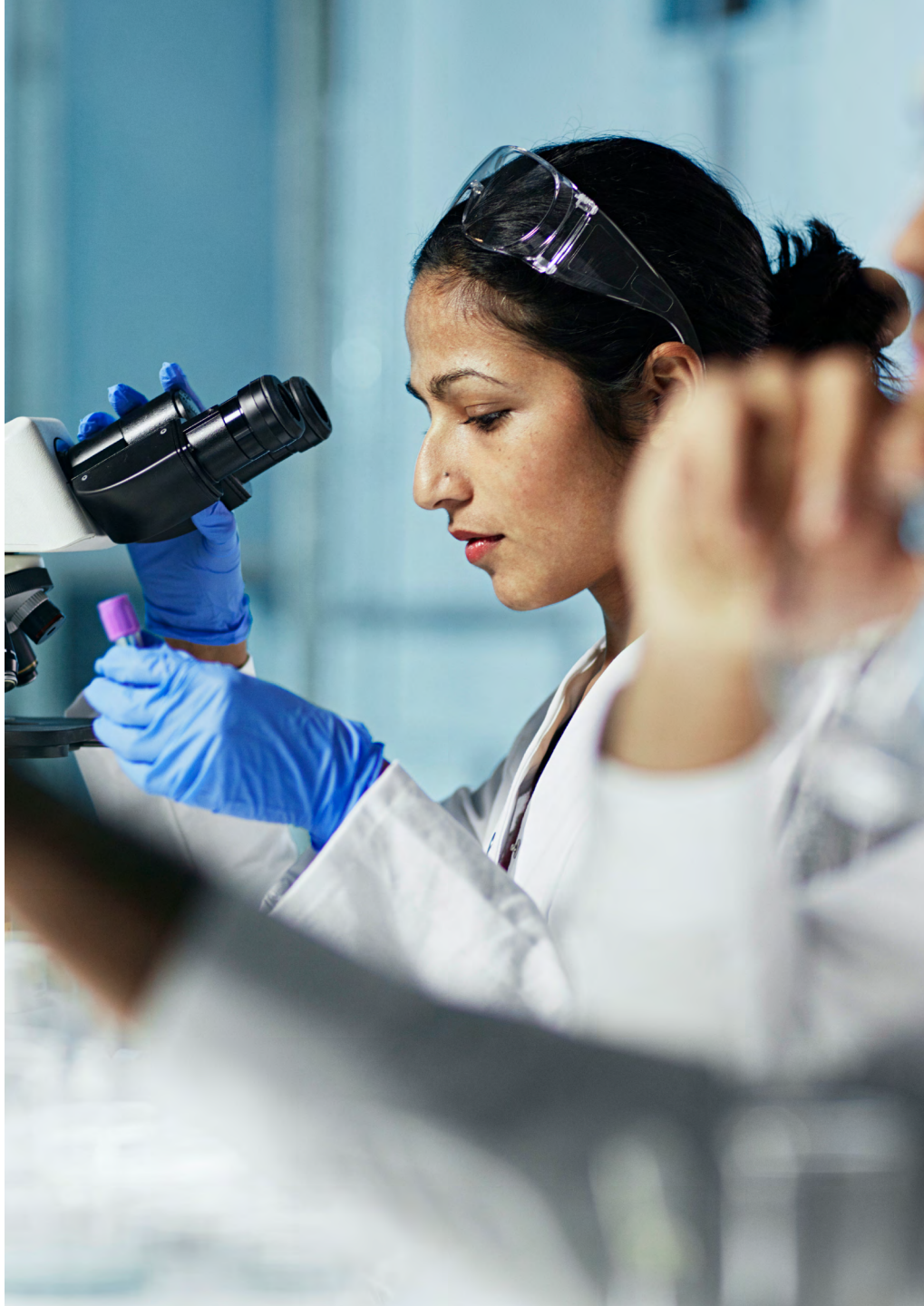
3 | Increasing operational efficiencies

1 | Monitoring chronic illnesses

Often, individuals suffering from chronic diseases like heart disease, cancer, diabetes, stroke, arthritis and obesity frequent hospitals and clinics, which creates a burden on healthcare organizations, their staff and the economy. The US Center for Disease Control and Prevention (CDC) reports that 90% of the nation's $4.1 trillion in annual health care expenditures are for people with chronic and mental health conditions. Heart disease and stroke costs the US's healthcare system $216 billion per year while the cost of cancer care is expected to reach more than $240 billion by 2030.

With RPM, healthcare staff can be alerted to sharp changes in a patient's vital signs, like blood glucose levels, heart rhythm and blood pressure. Patients can more easily manage their treatments and medication adherence. Communication between doctor-patient is also improved, creating a better customer experience and successful outcomes.

Consider, for example, 73-year-old Jon, who has coronary heart disease—which is the leading cause of death for men in the United States— and diabetes. He's recently been admitted to the hospital for a heart attack. Under a traditional care model, he'd most likely be sent home with some instructions on a healthier lifestyle and a scheduled follow-up appointment, but without any engagement in between, Jon may not make any progress to improve his health. With an RPM system, including the use of IoT devices such as wearables, Jon can be assigned a care professional to monitor and evaluate his progress.



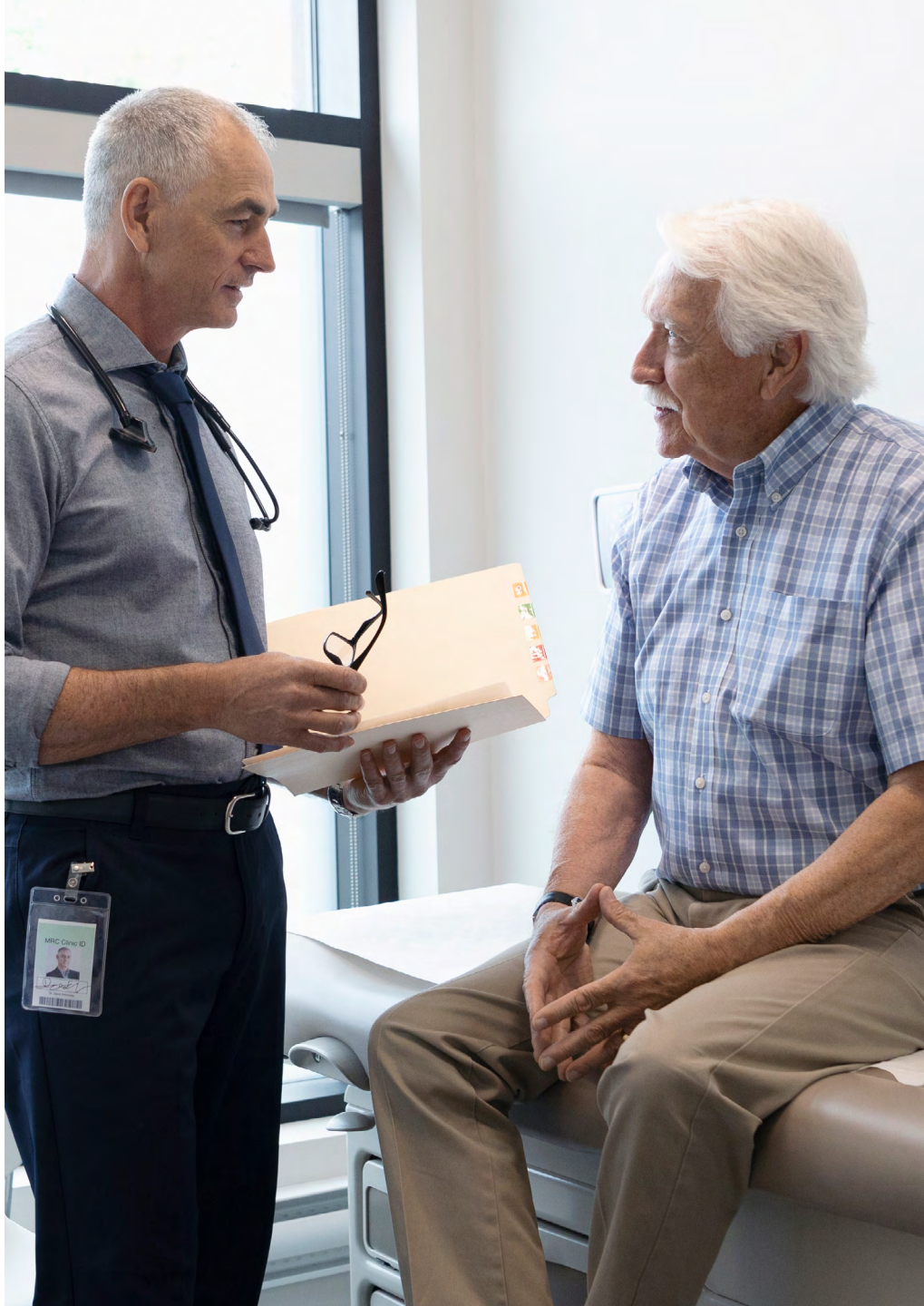
2 | Improving the well-being for older people

Each year, millions of older people 65 and up fall, and every 11 seconds, an older adult is treated in an emergency room for a fall. That adds up to more than 3 million injuries treated in emergency departments annually, including over 800,000 hospitalizations. The cost of treating fall-related injuries is projected to increase to over $101 billion by 2030.

And the cost is more than just financial. The fear and shame associated with falling leaves many adults hesitant to engage in social activities and engagements, which can lead to further physical decline, depression and social isolation.

With the majority of falls occurring at home, remote patient monitoring could play an important role in helping improve the well-being of older patients and monitor the activities of daily living.

Healthcare workers and in-home caregivers can be notified of a drop in blood pressure and intervene before a harmful event occurs. Similar specialized monitors for dementia and Parkinson's disease can also be used to help improve the well-being of older adults. RPM devices can detect irregular movement, track the location of a lost individual or alert a nurse to check in when there is a jump in heart rate and breathing rate.



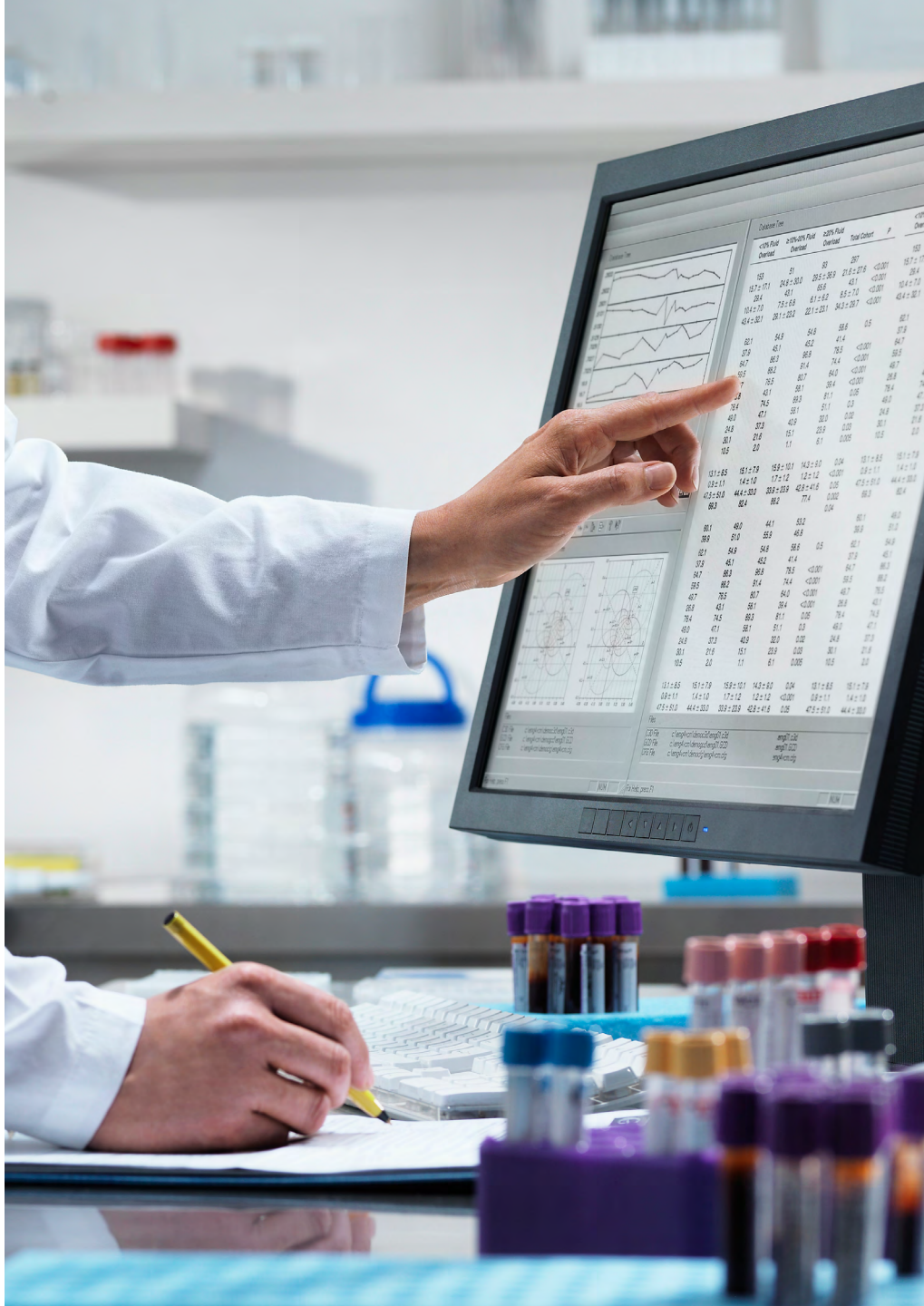
3 | Increasing operational efficiencies

Beyond improving the well-being of patients, IoMT-enabled devices can be used to help solve a number of operational management issues within the healthcare organizational system while also improving patient and employee experiences.

Asset tracking

Healthcare staff move medical devices, equipment and mobile assets around to different locations. Couple that movement with an organization's geographically dispersed clinics and hospitals, a single asset can disappear and reappear in different rooms and buildings across a single organization. Asset tracking allows staff to locate the right equipment at the right time, freeing them up to spend more time with patients.

IoMT-enabled devices can help staff track high-value equipment and assets like infusion pumps, wheelchairs, defibrillators and mobile stations so staff can locate and return equipment quickly. Asset tracking capabilities also enable more regular equipment maintenance and can reduce the need to repurchase misplaced items. You can also link to an IoMT platform for better inventory management to get smarter and more cost-efficient about purchasing supplies and pharmaceuticals.



Building and energy monitoring

Energy consumption and equipment monitoring sensors can help extend the life of equipment, cut energy costs, and optimize work order and maintenance management. They can also help predict and identify faults before they occur, avoiding degradation of patient experience, lost revenue, and costly emergency maintenance and repair. Climate sensors help manage optimal temperature and humidity for medications and door sensors can help security personnel keep track of pharmaceutical access and restricted areas.

Patient and employee experience

Devices and sensors can automate the tracking of a patient's arrival from registration to operation to post-care. Hospitals can also set up sensors at hand washing stations to track whether employees are following hygiene protocols. In addition, employees can wear rapid response buttons so they can request help when they need it.

Enabling fast and affordable IoMT connectivity

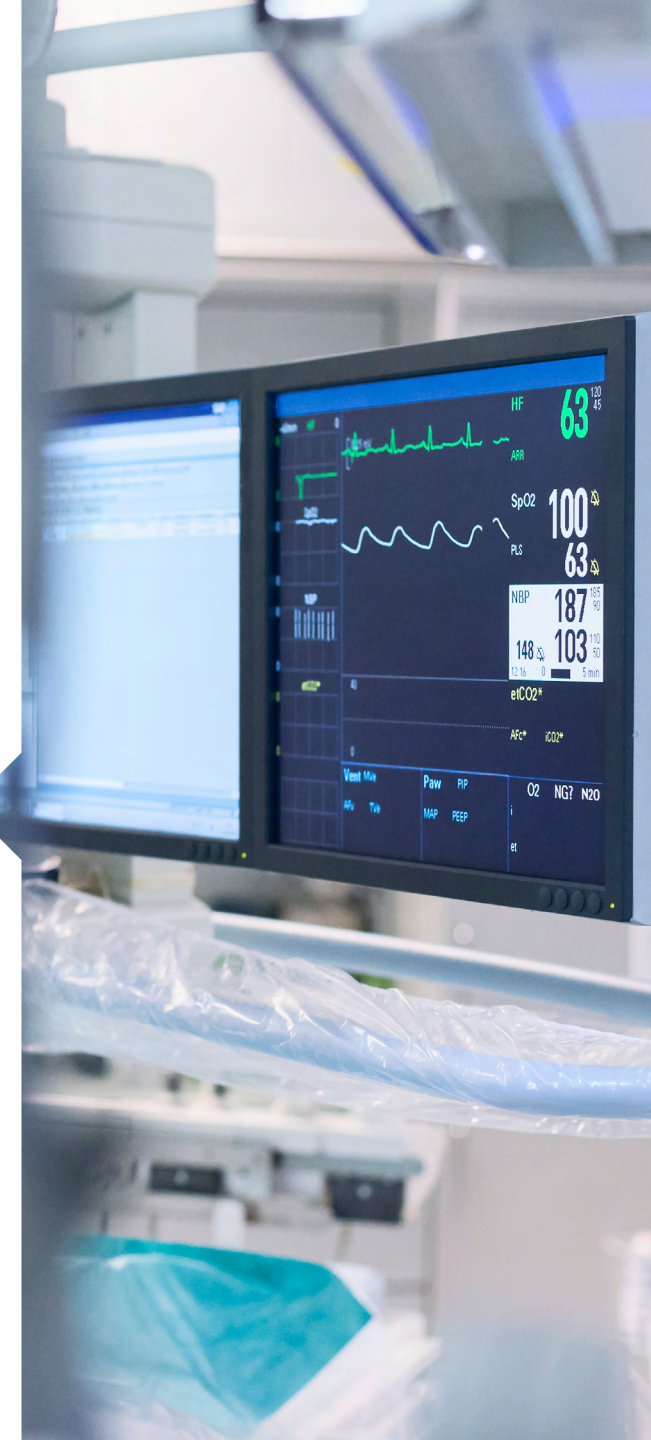
Many consumers are open to virtual options for a variety of types of care, but there is a gap between demand and the capacity to deliver it effectively. Many health organizations struggle with or lack data, infrastructure, cloud adoption and digital technology. The proliferation of IoMT platforms can help bridge this gap using dashboards, remote patient monitoring and sensors — while also addressing challenges related to privacy, security, data management and scalability.

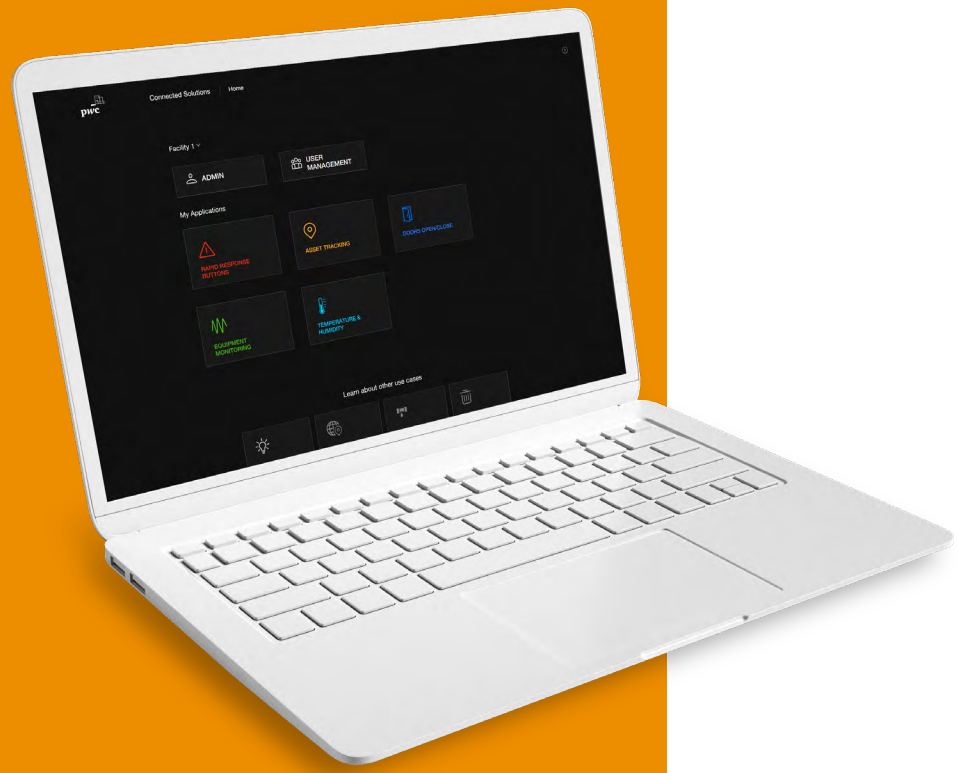
There is also a hesitation to invest. Traditionally, IoMT platforms have been viewed more as a cost center — limiting revenue instead of creating it. But customers demand more value out of their patient experience with convenience, quality, support, personalization and communication landing as their top five priorities.

As a result, 49% of provider executives say customer experience is a top priority and are starting to view connected devices more and more as strategic capabilities. With the right connectivity behind these devices, you can decrease costs — upfront and long term — while deriving more insights and value.

A system built on an Internet of Medical Things network can help create a scalable solution that houses all things connected. IoMT provides healthcare systems with flexible, real-time, location platforms (RTLS) and alert systems. Devices connect through a secure internet connection from the hospital or clinic, a patient's home, hub or cellular network and transmits real-time data back to the hospital's monitoring system.

IoMT opens up the opportunity to improve patient experiences and healthcare organizations' bottom line.





Connected Solutions

A PwC Product

Connected Solutions from PwC

Locate and manage your most valuable assets in real-time — including your people.

Connected Solutions, a PwC product, can bridge the gap between virtual and in-person care with a scalable Internet of Things (IoT) platform. PwC offers an affordable IoT-powered solution that can track assets and collect data from remote devices like those used for remote patient monitoring systems. We use a low-cost network with sensors and analytic-driven dashboards and platform integrations that can notify you when someone — or something — needs attention.

Connected Solutions offers quicker installation and easier maintenance than other traditional asset tracking systems. We can equip a hospital in days, not weeks, and there's no need to disrupt the patient experience or shut down operations for installation and upkeep.

Learn more about Connected Solutions.

Contact us