

Trends in Remote Patient Monitoring

By Lola Butcher

Leading healthcare organizations are using remote patient monitoring (RPM), which, according to some studies, is associated with improved patient outcomes and high patient and clinician satisfaction. The technology is evolving quickly, but most providers are sitting on the sidelines because reimbursement rates do not encourage its use. RPM advocates encourage all provider organizations to prepare for the day at-home monitoring becomes standard.

KEY WORDS: Remote patient monitoring; digital health; reimbursement; technology; Medicare; telemedicine.

Mayo Clinic uses remote patient monitoring (RPM) to care for patients with chronic conditions like heart failure and chronic obstructive pulmonary disease, those with acute conditions such as COVID-19, high-risk post-operative patients, and patients receiving complex specialty care, such as those being treated for cancer.

Some studies have shown RPM to be associated with improved patient outcomes and high patient and clinician satisfaction. And RPM can be a cost-effective use of resources, says Tufia Haddad, MD, a medical oncologist at Mayo Clinic and medical director of Digital Strategy at the Center for Digital Health.

“I do think this will become the standard of care,” she says. “We are going to increasingly see care move into the home and our hospitals and clinics being utilized for the most high-acuity, high-complexity patients.”

That said, many healthcare organizations are currently doing little or no RPM. Although monitoring technology has been evolving quickly for several years, there is no standard approach to getting started, no consensus about best practices, and considerable concern that healthcare’s biggest payer, the Medicare program, will not encourage RPM adoption through a robust payment strategy.

Nonetheless, patients may start gravitating to provider organizations that make their lives easier — and potentially healthier — by offering RPM, says Sos Mboijana, MD, a primary care physician and assistant chief medical information officer at Kaiser Permanente’s Mid-Atlantic region.

“We’re getting to a phase where healthcare data exchange between the patient and the care team is becoming more and more of an expectation from patients,” he says. “The algorithms are getting better, the devices are getting better, patient smartphones are getting better. So everything

is moving in the direction of saying, ‘If you don’t do this, you’ll be left behind.’”

RPM IN ACTION

Andrew Watson, MD, senior medical director for digital health at the UPMC Health Plan, agrees. Although inadequate payment poses a challenge for health systems, the big technology companies such as Google, Apple, Microsoft, and others are convincing patients that their smartphones are part of the healthcare ecosystem. For this reason, he advises healthcare leaders to start learning the operational model for RPM now.

“It’s inevitable” that patients will seek out remote monitoring, says Watson, a past president of the American Telemedicine Association. “I think this will be the largest form of virtual care when it is fully developed.”

He believes the rapid rise of artificial intelligence in healthcare will make RPM even more valuable. Currently, most RPM programs require nurses or other clinicians to review the vast amount of health data associated with RPM. “AI can start to interpret this and look at patterns and trends that we wouldn’t be able to see on the fly,” he says.

At UPMC, the Pittsburgh-based health system, remote patient monitoring is used for congestive heart failure patients after hospitalization, patients with certain acute conditions such as postpartum hypertension, and seriously ill patients who may need end-of-life care.

Kaiser Permanente’s first foray into RPM started in 2016 with hypertension patients treated at the Capitol Hill Medical Center in Washington, DC, where Mboijana works. Since then, the program has spread across all Permanente Medical Group locations and expanded to include type 2

diabetes, gestational hypertension, gestational diabetes, type 1 diabetes, heart failure, and other conditions.

A national team handles the program's technical aspects, including the Kaiser Permanente Health Ally app that supports RPM. A nurse-led care management team reviews the incoming patient data and provides care — for example, medication adjustments — according to protocols. If a patient falls out of the protocol or meets the treatment goal, such as an A1C target, the care management team notifies the patient's primary care physician.

"If the PCP wants to see the patient data and do the day-to-day adjustment and titration, they are absolutely welcome to do that," Mboijana says. "But we're very careful to make sure that this is a program that will benefit the patient without further burdening the primary care physician."

The key to the program's success, Mboijana says, is identifying patients who are motivated to take care of themselves. If every patient with diabetes were sent home with RPM, he suspects fewer than half would engage with the technology; by carefully selecting patients for RPM, he finds 80–90% of patients seize the opportunity to have their blood sugar data transmitted to the care team.

"When I select the right patient, this is a really nice way to help speed their progress from uncontrolled to controlled," he says. "That has definitely happened."

At Mayo Clinic, Haddad's oncology department in Rochester, Minnesota, was at the forefront of RPM nearly a decade ago when she and others sought a way to digitally do symptom surveillance of breast cancer survivors with support from their primary care physicians, who could then free up appointment access for newly diagnosed cancer patients.

By late 2016, the clinic started rolling out RPM for patients with chronic conditions across its three campuses — Florida, Arizona, and Minnesota — as well as its community-based health system in the upper Midwest. Since then, RPM has expanded to serve post-op patients and those who require high-touch specialty care, including CAR T cell therapy and treatment for febrile neutropenia.

The program is run by two teams that work hand-in-glove. The product team focuses on technology, vendor agreements, and making sure devices are easy for patients to use. The clinical operational team includes regulatory compliance and data analytics, plus the RPM nurses, a centralized, virtual nursing team that monitors patients across the country.

"When there are care escalations that go beyond our nursing protocols, they work with the patient's managing provider or their care teams if it's a specialty practice patient," Haddad explains.

When RPM patients are discharged from the hospital or emergency department, a kit is presented or shipped to their home. The kit contains a cellular-enabled smartphone or tablet pre-connected to Bluetooth monitoring devices.

The technology collects both subjective assessments, called electronic patient-reported outcomes (EPRO), and objective assessments, such as blood pressure readings. "As soon as they take their blood pressure at home, the data is immediately integrated into our (electronic health record) so it's viewable by our remote patient monitoring nurses," Haddad says.

Mayo Clinic's RPM program is designed for about 90 days rather than an indefinite length of time. "Our goal is to facilitate self-management so we have a big education component for patients with chronic conditions," Haddad says. "That's why we have that cut point, so the technology comes back to us, and we clean it, and it goes back out to the next patient. That is one of the ways we help to drive down the cost of the program."

For patients with chronic conditions, RPM is offered if they are at high risk of hospitalization. Conversely, all cancer patients are asked to provide EPRO so their symptoms can be closely monitored.

"There's really good research to show that patients with cancer who have at least weekly symptom monitoring, whether it's during active chemotherapy or even post-chemo surveillance for people with a high risk of recurrence, not only improves symptom control but actually improves survival," she explains.

HOW TO THINK ABOUT THE FINANCIALS

In 2018, Medicare's first code allowed physicians to bill for RPM — less than \$60 for reviewing at least 30 minutes of a patient's data in a month. It was replaced a couple of years later with a set of codes that pay more for patient education and set up for the program, supply of the device used to collect data, and treatment management services.

More clinicians are using them, says Carrie Nixon, co-chair of the American Telemedicine Association's RPM special interest group. While fee-for-service reimbursement for remote monitoring is helpful, she says, RPM is really a better fit for value-based care arrangements. In the fee-for-service model, somewhat arbitrary requirements mandate that clinicians are paid for making sure a patient's data is transmitted at least 16 days in a month and that a member of the care team monitors the data for at least 20 minutes over the month rather than, for example, rewarding them for getting a patient's blood sugar level to the right target.

"These code sets are sort of a square peg in a round hole," says Nixon, managing partner of Nixon Gwilt Law, a law firm focused on healthcare innovation. "I think that, as we see the shift to value-based care, we're going to see some new arrangements that reward the right incentives."

That's what Watson is hoping. UPMC has deployed RPM because the health system, affiliated with a health

plan, is internally capitated for part of its business. “RPM will flourish in a value arrangement or a risk arrangement—shared savings or a gain-share model or a population health model,” he says. “Value-based payments have made less progress than people would have liked, and if you’re not a payer-provider like we are, RPM is harder.”

Primary care physician John Whyte, MD, MPH, chief medical officer at WebMD, is an RPM enthusiast who spent five years at the Centers for Medicare & Medicaid Services (CMS), where he helped set national Medicare coverage policies. He is eager to see RPM fulfill its potential for better patient care, but he is not optimistic that a tipping point is at hand.

“It’s going to take work,” Whyte says of the payment conundrum, pointing to the extremely slow adoption of telehealth visits until the COVID-19 pandemic prompted CMS to change its rules and payment policy to support them.

Figuring out how much Medicare should pay for RPM in the fee-for-service system will require proof of clinical efficacy, which requires more clinicians who use the technology to build the evidence base; however, many health systems are reluctant to invest in RPM until they know they will be adequately paid.

Kaiser Permanente, as the nation’s biggest payer-provider, sees RPM as part of its value-based care strategy, Mboijana says. Beyond that, the cost of RPM is money well-spent for anyone looking at the big picture of healthcare delivery. Better control of a patient’s diabetes, for example, can prevent chronic kidney disease, heart disease, peripheral vascular disease, and amputations.

“This more than pays for itself if you’re looking at this long-term,” he says. “This benefits [patients’] health, but also benefits us as a health system because it reduces complications from diabetes, which in turn will help to reduce how much we spend in taking care of these complications.”

Mayo Clinic is not a payer-provider, but it nonetheless finds RPM to be valuable as a cost-avoidance strategy, especially for hospitalized patients with chronic conditions. RPM helps the system decrease readmissions and the potential for CMS penalties that come with them. When RPM reveals that a patient’s condition is worsening, medication adjustments may prevent a visit to the emergency department.

“We know that we can’t always avoid an ED visit, but we might avoid an ED visit that becomes a hospitalization,”

Haddad says. “If we can stabilize them in the ED, and the ED physician knows that these patients are being closely monitored, they are more likely to discharge them back home with monitoring.”

For those patients who do need to be hospitalized, the availability of RPM can decrease the length of stay. RPM costs vary based on the condition being monitored. Overall, Haddad estimates that reimbursement from Medicare and private payers covers about one-third of Mayo Clinic’s costs. “The other two-thirds we are willing to support because we have this cost avoidance,” she says.

Beyond that, RPM allows the clinic to serve more patients, thereby generating more revenue. “When you decrease hospital bedtime for lower-acuity patients, you open up bed access for more high-value patients,” she says.

WHAT TO DO NOW

In early 2023, the Medicare administrative contractors invited physicians with RPM experience to testify at a hearing about reimbursement rates. No action followed, but the event made an impression on Nixon, the ATA’s RPM co-chair.

“I have never heard so many physicians be in absolute unanimous agreement on anything in my life,” she says. “It was a two-and-a-half-hour meeting, and every physician there said, ‘Do not hurt this program. Do not reduce reimbursement. These programs have demonstrated efficacy in podiatry, in cardiology, in neurology, in nephrology, in all these use cases. This is really improving our patient outcomes. We know it is.’”

She encourages physician leaders to amplify the message by becoming vocal champions of remote monitoring services and payment that makes it feasible. “Speak loudly because the policymakers do need to understand that this is an important and effective program for improving patient outcomes,” she says. ■

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Lola Butcher is a freelance healthcare journalist based in Missouri.