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Technology guide:

How to build a successful remote patient monitoring program

Introduction

Remote patient monitoring (RPM) has been a hot topic in healthcare for more than a decade, but it's only recently become a hot commodity.

Every January, healthcare IT experts have predicted this would be the year hospitals and physicians finally embrace remote monitoring. But most providers continued to admire the trend from afar. It was on their radar as a tool they planned to use someday — when there was room in the budget, when the use case was right, when it made business sense.

It began to make sense for many providers in 2019, when the Centers for Medicare and Medicaid Services (CMS) started reimbursing doctors for remote monitoring services. It also made sense to forward-thinking health systems and struggling hospitals trying to reduce readmissions and avoid CMS penalties.

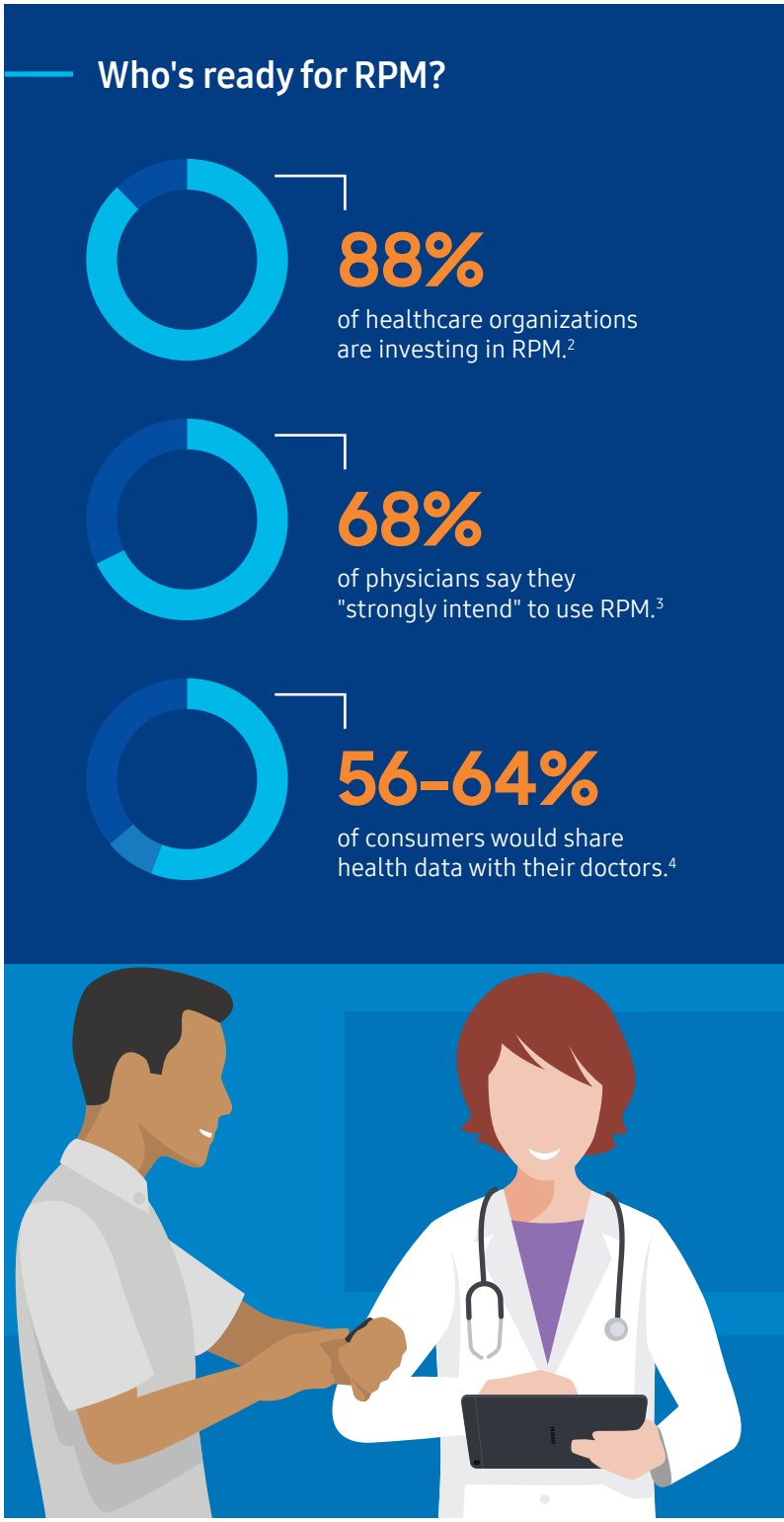
Then COVID-19 came along, and suddenly every hospital and health system needed a way to remotely monitor patients — whether those patients were quarantined at home with coronavirus or they had chronic diseases and needed to avoid high-risk clinical environments. In this new era of social distancing, RPM moved from the wish list to the priority list for most hospitals, practically overnight.

Even before the pandemic, the global RPM systems market was expected to double over the next few years, but revised predictions from Research and Markets show it growing even faster now — from $745.7 million this year to more than $1.7 billion by 2027.[1]

Regardless of the numbers, the story is the same: RPM's time has come, and not just for the duration of the pandemic. The RPM programs that providers are rapidly deploying today will help define the “new normal” patient experience of the future — a blend of in-person and virtual care that leverages digital technology to meet patients wherever they are.

So, how does RPM work, and what are the benefits and best practices?

This guide answers those questions and provides an in-depth look at how the technology, use cases and reimbursement rules have evolved in recent years, especially in 2020. Learn how leading solutions work, which devices they leverage and how hospitals can deploy a successful RPM program that transforms the patient experience, improves health outcomes and saves money for patients and providers.



Part 1: The evolution of RPM

Remote monitoring is the use of digital technology to collect biometric data from a patient at one location and transmit that information to a care provider at another location.

Prior to 2010, remote monitoring was mostly used for diagnostic purposes. Patients connected themselves to proprietary health monitoring devices via wires and patches so they could share data with their physicians from afar, but usually only for a short time.

Today's remote monitoring solutions are different. The wires have been replaced by Bluetooth, and expensive proprietary devices are being replaced by smart mobile devices and apps.

This drives down the cost of the solution, so RPM can be more than just a short-term diagnostic practice. Now it's a way to keep people with chronic diseases (i.e., the majority of American adults) connected to clinicians who can help them avert health crises and avoid ER visits and hospital readmissions.

It can also be a way for hospitals to discharge post-surgical patients and those recovering from acute conditions a little earlier than usual, knowing clinicians can keep close tabs on them remotely. This capability is particularly valuable during a public health emergency like COVID-19.

Part 2: How RPM works

RPM solutions leverage a variety of mobile devices and sophisticated cloud-based software to gather and analyze patient data, and then share that information with clinicians in a format that is easily accessible with actionable insights. Here's how it works:

Step 1: Patient collects biometric data

Depending on the solution, the patient wears a smartwatch or wearable patch with sensors that collect biometric data, or they use Bluetooth-enabled biometric monitoring devices to collect the data.

Step 2: Data collection device syncs with interface device

Regardless of how data is collected, it usually gets transmitted to a dedicated tablet or smartphone, which serves as the patient's interface with the RPM solution.

Step 3: Data is transferred to RPM platform

The tablet or smartphone securely transmits patient data to a HIPAA-compliant remote monitoring platform, which analyzes the data, looks for patterns and trends and applies predictive analytics to anticipate future problems.

Step 4: Clinician receives data and insights

Physicians view this information via an online platform with user-friendly dashboards and receive an alert when a patient needs prompt attention. This way, physicians can intervene early to prevent health crises and reduce healthcare costs.

4 approaches to patient data collection

Leading RPM providers accomplish the same goals using different mobile technologies.

Vivify

The Vivify Pathways Home solution includes a customized Samsung Galaxy tablet preloaded with Vivify software and various Bluetooth-enabled biometric devices (e.g., blood pressure cuff, weight scale, glucometer). Patients use these devices to gather biometric data and use the tablet to answer a series of daily health questions. In a clinical trial with Christus Health, the solution reduced readmissions by 65 percent for patients with congestive heart failure.[5]

Preventice

Preventice started out making wireless heart monitors but now offers an RPM platform on a Samsung Galaxy smartwatch. Using Samsung Knox Configure, Preventice customizes the watch to be a dedicated part of the RPM solution. Sensors in the watch gather electrocardiogram (ECG) data and other biometric readings and transmit that information to the Preventice platform, which analyzes and organizes it for physicians. In a soon-to-publish study, Preventice found the watch could prevent 40 percent of unnecessary ER and outpatient visits.[6]

VitalConnect

VitalConnect makes the VitalPatch, an FDA-approved wearable biosensor that continuously gathers eight types of data: ECG, heart rate, heart rate variability, respiratory rate, skin temperature, body posture, fall detection and activity levels. The lightweight wireless patch streams data to a smartphone, from which it's uploaded to the cloud. Caregivers and physicians can view this information via the VistaTablet, a customized Samsung tablet. In a trial at Brigham and Women's Hospital in Massachusetts, the solution reduced hospitalization costs by 52 percent and improved patient outcomes.[7]

Health Recovery Solutions

Health Recovery Solutions supports patients outside the hospital environment with PatientConnect Complete, which gives caregivers a continuing view into patient wellness. The patient uses a Samsung Galaxy tablet to collect and report biometric data such as blood pressure and glucose levels from Bluetooth-enabled sensors. The tablet also enables real-time video calls and phone calls, symptom surveys and education specific to the patient's condition. Caregivers use this information to adjust patient care in response to their symptoms and provide better clinical outcomes.

Part 3: Why RPM is taking off

As RPM solutions have evolved, so have the healthcare use cases. Most early adopters were hospitals looking to reduce readmissions and the home health organizations that supported those hospitals. Now physicians groups and health insurance companies are launching their own RPM programs for chronic care management. And providers of all shapes and sizes are deploying telehealth solutions like RPM during the coronavirus pandemic.

Why are all these stakeholders getting on board with remote monitoring? The short answer is it improves patient outcomes, which benefits everyone, so more payers are willing to foot the bill. It also enables remote care when in-person care becomes risky.

Contactless care for COVID-19

During the pandemic, public health experts have advised seniors and people with chronic diseases — the people who most need regular care and physician follow-ups — to shelter in place for the foreseeable future and to avoid places where they might come into contact with infected people, including medical environments. And for people who have COVID-19 but aren't sick enough to be hospitalized, physicians have needed ways to keep tabs on them without bringing them out of quarantine and putting others at risk.

Many healthcare providers are using telemedicine and videoconferencing tools to connect with patients during the pandemic, but unless patients own their own biometric monitoring devices, physicians can't capture their vital signs. Even in a clinical setting, checking vital signs only gives physicians a snapshot of the patient's health. With an RPM solution that gathers biometric data from patients every day and applies analytics, physicians get a big-picture view and can spot troubling trends before they turn into major problems.

Connected care for chronic diseases

In the U.S., six in 10 adults have at least one chronic disease, and four in 10 adults have more than one, according to the Centers for Disease Control and Prevention (CDC). Chronic diseases are the leading cause of death and disability in the U.S. and account for 85 percent of the nation's $3.5 trillion healthcare costs.[8] But these high costs and negative outcomes can often be avoided with disease management education, physician support and early intervention.

Remote monitoring makes it easier for clinicians to support vulnerable patient populations and intervene before minor problems turn into major ones. It also gives patients the tools they need to take greater ownership of their own health. More than 60 percent of patients say they feel more engaged during discussions with their healthcare providers when patient-generated health data is part of the experience.[9]

All of that translates to better health outcomes. Simply put, when patients are empowered with health data and connected to their care providers, they're less likely to end up in the hospital. At the University of Pittsburgh Medical Center, for example, Medicare patients with congestive heart failure using the Vivify Health RPM platform are 76 percent less likely to be readmitted than similar patient populations without the solution.[10]

Bringing value to value-based care

Reduced readmissions can mean higher reimbursements for hospitals, thanks to the Affordable Care Act (ACA), which incentivizes healthcare providers to move away from fee-for-service models and toward value-based care.

Under the ACA, hospitals are penalized for excessive readmissions. CMS looks at how many patients are readmitted within 30 days post-discharge after being treated for any of the following conditions: heart failure, heart attack, pneumonia, chronic lung disease, hip and knee replacement surgery or coronary artery bypass graft surgery.

If a hospital's readmission rate exceeds a certain threshold, the hospital could lose up to 3 percent of all Medicare reimbursements for the following year.[11]

In 2019, 2,583 hospitals — 87 percent of those eligible — had their Medicare payments reduced. Together they will lose roughly $563 million.[12]

To avoid these penalties, hospitals are looking for ways to improve post-acute care and chronic disease management. RPM has been proven to do exactly that.

Health payers get on board

Study after study demonstrates RPM's ability to decrease readmissions and improve patient outcomes, and health payers have taken notice. Even before the pandemic, many insurers had begun reimbursing hospitals and physicians' offices for remote monitoring services, even in states where they were not required to do so. Meanwhile, other insurers started launching their own remote monitoring programs for high-risk members.

During the pandemic, most states and insurance companies have radically shifted their RPM policies (if only temporarily) and now cover the service for individuals who didn't meet the requirements before. But starting last year, CMS — the single largest payer for senior and chronically ill Americans — made RPM available to all Medicare patients.

Part 4: CMS embraces 'chronic care remote physiologic monitoring'

Until recently, CMS lumped remote monitoring in with other telehealth services and limited its use to Medicare patients living in rural or remote areas. Then a two-year study on Medicare's Chronic Care Management (CCM) program demonstrated CMS's potential to save millions of dollars, decrease readmissions and improve disease management education.[13]

Recognizing that remote monitoring could be a valuable part of the CCM program, CMS separated it from the broader telehealth category, removed the geographic restrictions and began incentivizing care providers to use it. Now, in the midst of COVID-19, CMS has further loosened RPM restrictions. Here's how RPM reimbursement has evolved.

New rules of reimbursement

In 2018, CMS designated a separate billing code for remote monitoring: CPT code 99091.[14] This allowed physicians to bill for remote monitoring services, but only if they personally spent at least 30 minutes per month interacting with the patient. If clinical staff provided this service, it wasn't reimbursable, and the code didn't cover equipment setup or patient training.

CMS addressed these challenges with three new codes on the 2019 Medicare Physician Fee Schedule (PFS) for RPM, which CMS calls "Chronic Care Remote Physiologic Monitoring."[15]

The codes include:

- 99453: "Remote monitoring of physiologic parameter(s) (e.g., weight, blood pressure, pulse oximetry, respiratory flow rate), initial set-up; and patient education on use of equipment" (average Medicare reimbursement rate: $21)
- 99454: "Remote monitoring... device(s) supply with daily recording(s) or programmed alert(s) transmission, each 30 days" (average Medicare reimbursement rate: $69)
- 99457: "Remote physiologic monitoring treatment management services, 20 minutes or more of clinical staff/physician/other qualified healthcare professional time in a calendar month requiring interactive communication with the patient/caregiver during the month" (average Medicare reimbursement rate: $54)

Under these codes, Medicare pays for the device, initial setup, patient training and ongoing data monitoring. The minimum time requirement per patient has been reduced from 30 minutes to 20, and physicians don't have to manage these patients alone. Clinical staff, including registered nurses (RNs) and nursing assistants, can work with them on physicians' behalf.

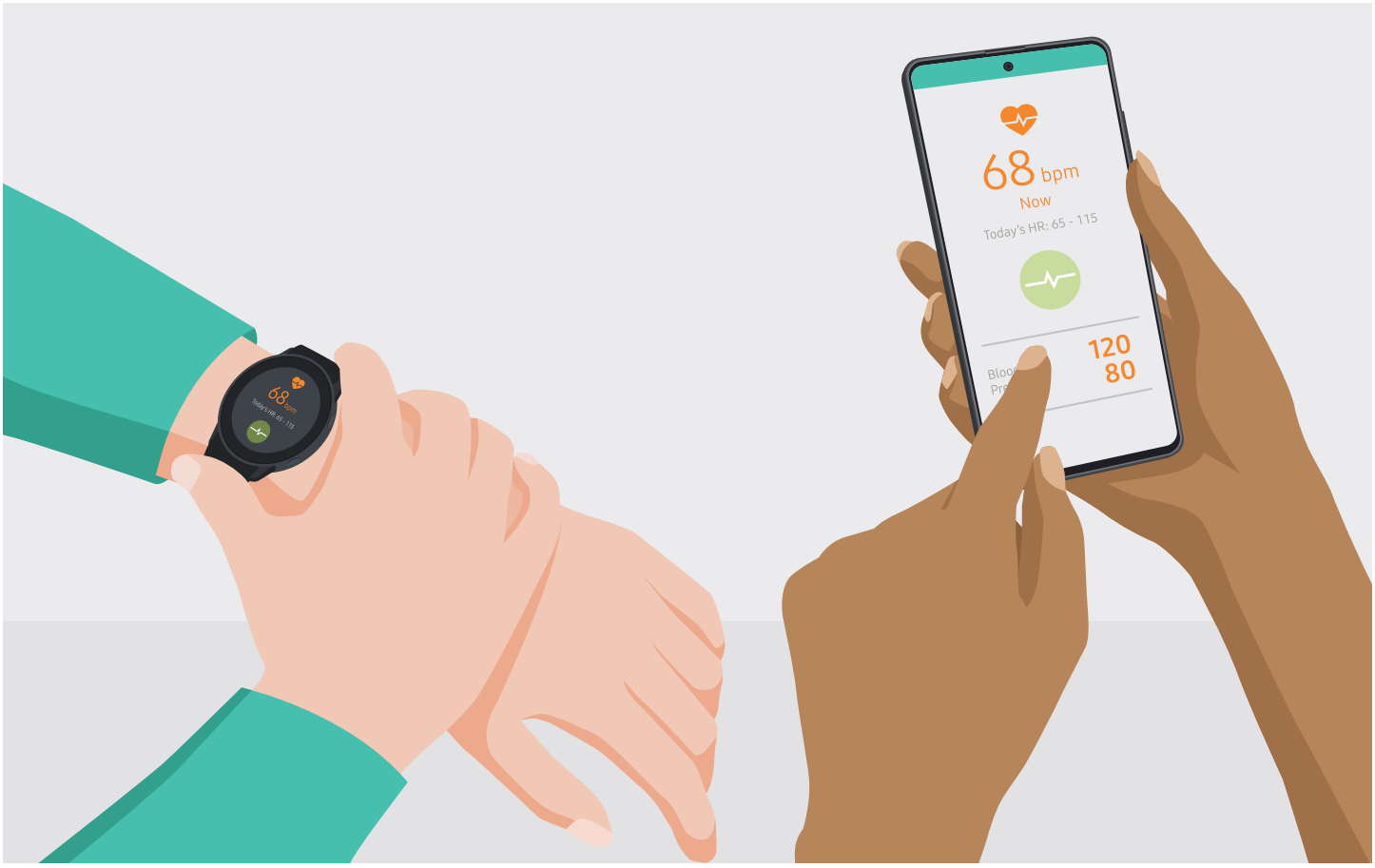
Based on these reimbursement rates, remote monitoring can earn physicians nearly $1,500 a year per patient. The 2019 PFS also clarified that CCM and remote monitoring are separate services, so care providers can bill for both for the same patient — meaning remote monitoring adds new revenue without adding new patients.

Qualifying for reimbursement

CMS also clarified that to qualify for reimbursement, providers would need to ensure that:

- Medicare Part B patients are charged a 20 percent copay (routinely waiving copays can trigger fines under the federal Civil Monetary Penalties Law and the Anti-Kickback Statute)
- Patients have a preexisting relationship with the provider
- Patients opt in for remote monitoring services
- The service is ordered by a physician or other "qualified healthcare professional" (such as a nurse practitioner, certified nurse specialist or physician assistant)
- Data can be wirelessly synced for evaluation
- Patients are monitored for at least 16 days to be applied to a billing period

Some of these restrictions have changed — if only temporarily — in the COVID-19 era.



In 2020, CMS again expanded the reimbursement possibilities for physicians by adding CPT code 99458, which pays for an additional 20 minutes per patient per month.[16] They also updated the rules to allow clinical staff to help manage remote monitoring patients. Under the 2019 codes, remote monitoring services had to be billed "incident to," which meant clinical staff had to be in the same location as the physician to provide these services. With the new codes, remote monitoring can be provided "under general supervision" of a physician.

All of that is good news for most healthcare providers, but there was a catch for some hospitals. CMS announced that federally qualified health centers (FQHCs) and rural health centers (RHCs) could not bill under the remote monitoring CPT codes.

New interim rules for national health emergency

In response to the coronavirus, CMS released an Interim Final Rule in March 2020[17] and Second Interim Final Rule in May 2020[18] — both of which ease telehealth restrictions and broaden access. The Interim Rules have introduced 80 new CPT codes for telehealth and opened these services to all Medicare patients, regardless of their location.

RPM was already more accessible than most telehealth services, but the Interim Rules also relaxed some remote monitoring restrictions as well. Among the most notable changes:

- RHCs and FQHCs now receive standalone reimbursement for telehealth services.
- Providers can provide remote monitoring for new patients, without a preexisting relationship.
- COVID-19 patients can receive remote monitoring services for fewer than the standard 16 days, but no less than two.

In the Interim Rules, CMS also took the opportunity to clarify which Medicare patients qualify for remote monitoring under the standard (nonemergency) rules. The way CMS defines physiological monitoring has created confusion about whether the service can only be used for people with one or more chronic conditions, but CMS has now clarified that it can also be used to manage acute conditions (including, but not limited to, COVID-19) and post-surgical patients.

Part 5: Getting started with RPM

With the right RPM provider, initial launch requires little effort from clinical or IT staff. RPM doesn't change how people work. Ongoing patient monitoring takes up some clinician time, but for many patients (and all those with Medicare), that time is reimbursable.

The key to a successful RPM launch is thoughtful planning. Due diligence on the front end saves legwork, headaches and money on the back end.

What should healthcare providers consider as they begin their RPM journey?

What to consider

1. Patient needs

Most leading remote monitoring platforms are flexible enough to work for a variety of clinical cases. Before choosing a vendor, find out what conditions are on the RPM wish list so that care providers get a solution that meets all their patient needs. It also helps to know which patient populations are top priority for RPM so care providers can roll out RPM programs in stages and not overwhelm clinical staff.

2. BYOD vs. dedicated devices

Some RPM vendors offer a Bring Your Own Device (BYOD) solution. The patient downloads an app on their smartphone, authenticates their identity and uses the device to enter information and receive notifications. For security and patient privacy, data is encrypted on the device and during transmission to the RPM platform. The RPM provider then analyzes and interprets the data before passing it along to the physician.

That approach might make sense for some use cases — for example, younger people trying to quit smoking — but not for older people or people with complex health needs. The last thing anyone wants to do after a heart attack or surgery is download an app, authenticate logins and passwords and troubleshoot compatibility issues between Bluetooth devices and their smartphone — if they even have a smartphone.

That's why most leading vendors install their software on preconfigured mobile devices — smartphones or, more commonly, tablets — that patients return when their remote monitoring ends. The devices are locked down so patients can't browse the internet, download apps or accidentally change settings. Instead, the dedicated devices provide a streamlined, straightforward user experience. Patients simply turn on the device and they're ready to go. This method also allows RPM providers to make better use of the device's sensors and add other functions.

3. Form factors

There's a reason tablets are more popular dedicated RPM solutions than smartphones. The larger screen and keyboard make it easier to enter information, and providers have enough real estate to design a user experience that's easily accessible to people of all ages, including seniors.

Wearable remote monitoring devices are a new trend, and some RPM vendors are now putting their solutions on smartwatches. A new federally funded study by Johns Hopkins Medicine suggests wearable accelerometers (sensors that track movement) are more accurate at measuring activity levels than patient surveys.[19] They're also better predictors of death risk in seniors than traditional metrics, including age, smoking, alcohol use and history of heart disease or cancer.

That said, wearables may not always be the best solution. Depending on the use case, activity level might not be the most important data point, and manual data entry on a tablet may be a more effective option. When it comes to form factor, there isn't one-size-fits-all solution. The best choice depends on the RPM use case(s) and the patient population that will be using the solution.

4. Vendor comparison

The remote monitoring market has grown rapidly. All RPM vendors enable physicians to monitor patient data remotely, but with different devices at different scales. To choose the right vendor, seek guidance from colleagues who have already implemented RPM and from technology partners — like device manufacturers and cellular carriers — who have relationships with RPM providers.

In screening potential RPM providers, you need to ask the right questions. Start with these:

- **Company background:** How long have you been in business? How many healthcare organizations do you serve? Do you have case studies that demonstrate the results you've gotten for other clients? Do you have use cases like ours? What is your level of expertise with chronic diseases, addiction and psychiatry?
- **Scalability:** How many patients will your solution serve? How easy is it to scale our patient load up or down?
- **EHR integration:** Can your solution be integrated with our organization's electronic health records (EHRs)?
- **Physician experience:** How do physicians receive data? What insights can they get from your platform? Can they receive automated alerts about troubling trends in patient data?
- **Hardware:** Does your solution include customized devices? If so, how much do you mark them up? If not, can you help us procure quality devices at an affordable rate?
- **Kitting/provisioning:** Who provisions devices and kits the solution? Who ships them to patient homes? Is there anything our IT team will need to do?
- **Cost versus ROI:** What does your solution cost? What's the average ROI you provide customers?
- **Support:** Who provides tech support to RPM patients? Who provides customer service?
- **Privacy/security:** Is your solution HIPAA-compliant? How do you secure patient data? Have you ever experienced a data breach?

Conclusion

Not so long ago, telehealth solutions like RPM were mostly reserved for big-budget health systems and forward-thinking hospitals that stood to lose the most from CMS readmission penalties. Now, physicians have the opportunity to better manage their growing (and aging) patient populations — and get paid for it. This is especially true during the COVID-19 crisis, when CMS and insurance companies have loosened many of the restrictions on RPM reimbursement.

At the same time that the demand for RPM services is growing, the cost-effective mobile technology that many RPM providers leverage is rapidly evolving. With the introduction of next-gen technology like 5G and the ever-expanding internet of things (IoT), healthcare providers will soon have even more opportunity to transform the continuum of care.

To take advantage of these innovations, care providers need to stop window-shopping for RPM and start realizing its clinical and financial value — not just during the pandemic, but well beyond. Why wait?

Learn more about Samsung's solutions for virtual care

Footnotes

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