

# 5 Key Steps to Operationally Deploying Remote Monitoring

Healthcare industry leaders  
share insights on best  
practices for data-driven  
remote monitoring programs



Today, more patients than ever are seeking more comprehensive care to manage their health – and many of these patients have conditions that require more continuous communication and at-home care management to improve their quality of life, prevent negative health events, and reduce disease progression.

It is estimated that [half of all American adults](#) today live with a chronic condition, and one in four have at least two. What's more, people with chronic conditions account for 84 percent of national healthcare spending – meaning that as populations with diabetes, hypertension, heart failure, and other conditions continue to grow, so too do costs related to care.

Traditional remote monitoring programs offer an opportunity for providers to deliver comprehensive care to patients as part of their daily life – allowing for proactive interventions, continuous feedback loops, and better self-management. And, as these programs become more data- and intelligence-driven, a new kind of remote monitoring is emerging. With the increasing automation of tasks and communication, better methods created for alerts and triggers, and the ongoing reduction for personnel to collect and enter patient data, more provider time is spent discussing behaviors or treatment options and less on daily readings or routine. These new kinds of remote monitoring programs are gaining ground as compounding considerations in healthcare today put an emphasis on the value of remote patient monitoring (RPM).

While remote monitoring programs are being scaled across leading health systems today, challenges remain on how to effectively deploy, implement, and scale a program for success across departments and disease states. At a roundtable during the 2018 Connected Health Conference, leaders and stakeholders from all corners of the healthcare system – including patients, payers, providers, and technologists – discussed how to overcome barriers to the deployment of remote monitoring programs. These stakeholders identified five critical steps for deployment to successfully implement remote monitoring programs that move the needle on patient outcomes without adding burden or costs.

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# Key Tactics for Operationally Deploying Data-Driven Remote Care

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**Make the data actionable.** Programs which integrate patient-generated data into existing clinical systems are not enough; remote monitoring tools need to derive meaningful insights via the aggregation, elevation, and visualization of key data so clinicians are able to quickly act.

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**Build an integrated program.** Providers are inundated with systems, tools, and high volumes of patients and their data. Programs must be easily accessible and usable within existing clinical workflows to add value. Likewise, remote monitoring tools should fit into the daily lives of patients to maximize success.

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**Prepare organizations for change.** Change management is key to implementing new remote monitoring solutions, and leaders agree that setting clear up front goals, and iterating upon successes at scale is critical.

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**Take advantage of existing financial support.** New reimbursement codes from CMS, as well as opportunities from value-based payment models, are providing new ways for hospitals and health systems to support the growth of remote monitoring programs.

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**Understand the value of remote monitoring.** In order to evaluate the success of data-driven remote care programs, level-setting expectations and responsibilities is critical. Programs should have clear objectives and goals and stakeholders should identify problems they expect the programs to solve.

"We care about how to make data actionable, and how to bring it into the clinical workflow in a meaningful way without increasing workforce burden."

*Drew Schiller, CEO  
Validic*

## Step 1 Make the Data Actionable

Today, humans are generating more data than ever. We have created [over 90 percent](#) of all existing data in the world during the last two years alone. With lifestyle data from wearables and apps, patient-reported information, and biometric data from in-home medical devices like blood pressure cuffs, weight scales, and glucometers, there is more information available today than ever before. Access to these data enable a deeper understanding of a person's lifestyle, day-to-day decision making, and real world health. However, the majority of this information lives outside the clinical system today. While integrating the data into clinical systems like the electronic health record (EHR) and an enterprise data warehouse (EDW) is critical, for providers, making the data actionable within those systems and workflows is just as important.

It's well known that EHRs are adding time to the clinician's day and contributing to notable physician burnout. [A 2017 report](#) showed that 51 percent of providers report feeling burnt out – and time spent in the EHR is a major contributor. For providers to make use of patient-generated health data (PGHD) within remote monitoring programs, it must be received within existing systems in a way that is readable and actionable – without demanding more time from a physician's day. In order to make this data valuable, data must be standardized, delivered, and elevated in a format that enables clinicians to easily analyze and derive meaningful clinical insights from data values.

Though the value of PGHD is clear, many providers are understandably concerned about the delivery of mass amounts of data into the clinical system – an opinion that was nearly unanimous among roundtable participants.

Without protocols in place for the standardization of data, many fear a data deluge, in which providers will be overloaded with raw data that they are unable to analyze in a timely manner to deliver better care. It is clear that simply delivering PGHD into clinical systems isn't the answer – these data must be aggregated and visualized in a way that enables providers to efficiently analyze the data and make decisions supported by the information. "There's a common theme. Okay, we have the data but now we need to make this data smart. How do we make this data useful?" explained the head of innovation for a leading global medical device manufacturer.

Data brought into clinical systems – systems that often already require significant time investments from providers – must be standardized before it appears, so providers can leverage the information to make more informed care decisions without requiring additional time investment. A director of telehealth for one of the nation's premier cancer centers echoed this sentiment. "The question we need answered is 'how do we create information in a format that can be used every day?'"

Building these programs directly into the EHR or clinician workflow is critical. According to [a recent survey](#) from Validic and Becker's Hospital Review, one-third of providers today use four or more disparate clinical systems within a given day. Participants in the roundtable agreed: technology must enable clinicians to be able to execute more tasks within a shorter amount of time to prove its value or automate previously manual processes, such as data entry. If a program is not integrated into the existing workflow, the time required to use the system could be too onerous to make the program worthwhile.

Developing successful programs requires seamless integration into established workflows to make for a seamless process for care teams – meaning the tool should not be another standalone system requiring a separate login and unable to share data bidirectionally with the core system, the EHR. "We care about how to make data actionable, and how to bring it into the clinical workflow in a meaningful way without increasing workforce burden," said Validic CEO Drew Schiller.

To derive insights from PGHD, visualization of information is critical. By populating data within charts and graphs, care teams can easily identify trends or out-of-range values in a patient's readings, and can decide whether to intervene. And, by presenting this visualized data within existing clinical systems, providers are enabled to gather and analyze more information about their patient without leaving the workflow – allowing for more informed, proactive care.

To make processes more efficient, providers are also turning to artificial intelligence and machine learning, which can offer opportunities to further automate tasks, like data entry and pushing educational content to patients, allowing technology to truly support clinical decision making. The use of triggers and rules can notify a physician, care team member, or even patient when an out-of-range reading is recorded. This empowers clinicians to intervene before a negative health event occurs or to make treatment adjustments prior to in-person visits.

Ultimately, roundtable participants agree that PGHD, and the technology that supports these data, must be used to enable care teams to be more efficient and effective with their time. According to Schiller, “technology shouldn't replace doctors, but empower them.”

## Step 2 Build an Integrated Program – for Patients and Providers

[Research shows](#) that by 2030, there will be a shortage of between 42,600 and 121,300 physicians in the U.S. Today's providers are already overburdened with difficult technical systems and large patient populations to manage while working to provide quality care to each individual. As the physician shortage grows alongside a growing population of individuals with chronic conditions, it's necessary that the care management programs put in place to treat populations are not onerous or additive. With the numerous responsibilities placed on providers today, even a few clicks can be too many to make a remote monitoring tool attractive to providers on the frontlines delivering care day-to-day.

Remote monitoring offers the potential for providers to more comprehensively deliver care by allocating their time to the patients who need immediate care or more initial hands-on management – enabling providers to spend less time checking in on patients who are self-managing their condition. To create this efficiency, data and derived insights must be easily and quickly accessible to a provider. Visualization of data – which has been established as needing to be a part of the clinical workflow – must be clean, actionable, and digitally accessible with minimal clicks and no workarounds required.

Passively integrating data from devices into the EHR and remote monitoring program is crucial; care managers spending time printing and scanning from various systems to piece together insights takes away from their ability to analyze the data to understand a best course of action, such as behavior suggestions, treatment amendments, and interventions. Tools that provide an analysis of the data are critical as well, preventing care managers from acting as data scientists to establish trends between behavior and outcomes. The technology to accomplish this exists today; the next step is implementation. “Data is great, but at the end of the day the physicians are too busy, and the workflow must be as seamless as possible for them to embrace something new,” explained the telehealth director.

To offer quality care to a growing population of patients with chronic conditions – at a time when many physicians are burned out – requires technology that augments care management, in order to allow clinicians to do what they do best. With the support that remote monitoring technology offers, providers can spend less time checking in and more time helping out.

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*Steve Van,  
Patient Advocate*

## Patient Adoption Requires Clear Integration

However, for patients to adopt such programs, it's also critical that the tools patients use are easily accessible and available in a way that fits with their situational, cultural, and social lifestyle. When joining a program of care means simply connecting a smartphone app, wearable, or home health device that's already in use by the patient with his or her healthcare provider, patients are more easily able to integrate a new program of care into their existing behavioral patterns. If patients are using devices already in-hand, no training, device procurement, or device management is required by a provider. Patients are then able to adopt programs of care and remain adherent, because it requires little change in daily habits. What's more, when patients are able to integrate these tools into their routines, providers are better able to identify unhealthy behaviors and intervene to initiate a change.

"As I look at my own experience with this type of tool, one of the things I see is that I used this to change my behavior, which improved my health," said Steve Van, a patient advocate. "It was incremental. Getting all this data, for the patient, can be overwhelming. It's these little steps you take that make you healthier, not one big change. Looking at the data in more detail let me see my behavior patterns and make changes."

For Van, participating in a data-driven remote monitoring program meant just one additional step in his daily routine. As a type II diabetic, he was already taking his blood sugar four to six times daily. It wasn't until these readings were integrated into a comprehensive program of care that they began to drive meaningful behavior changes. With a data-driven care management program and accompanying app, Van could use the camera on his smartphone to send the reading on his glucometer to his care team multiple times a day.

Data that were previously trapped within his legacy device were now informing care decisions from his team. And, these data were enhanced by data from his wearable, his blood pressure cuff, and his Bluetooth-connected weight scale, which were also sent automatically to his provider.

"[My providers] looked at all that data, detail, time of day, trends I was developing. They saw data I could never see or recognize. Then we had more of a conversation," said Van.

When patients are able to see programs making a difference in real time, and it doesn't require onerous steps outside of one's daily routine, treatment adoption and adherence is more likely to occur. For many people who are already collecting health data regularly in their daily lives, roundtable participants agreed, these programs can be successfully implemented to improve patient outcomes.

## Step 3 Prepare Organizations for Change

Many roundtable participants agreed that C-level interest in remote monitoring is higher than ever. Yet, despite widespread buy-in across organizations, successful deployment and implementation of programs is a challenge without proper change management. The ability to execute on remote monitoring is limited by a lack of supporting clinical systems and workflows – and many programs would require reallocating resources and infrastructure changes, which is an additional challenge for many organizations.

In fact, for many, the lack of change management appears to be the largest barrier between interest in programs and actual long-term, scaled deployment. "The biggest challenges in using patient-generated health data to improve care are in the change management required for adoption. Challenges lie in the process for adopting the new technology in a given institution, not just with the technology itself," said Martin Entwistle, president and CEO of Ares Health Systems.

To overcome this barrier, Entwistle emphasized the importance of taking incremental steps and iterating upon programs to find a solution, and a method for adoption and implementation that is successful for an individual organization. While a big-picture strategy for scalable implementation is important, so too are smaller steps and changes along the way to ensure success before a system-wide deployment.

“That initial strategy of when, where and how the data will be used needs to be established first, then built for,” says Entwistle. Planning the deployment specifics of a program beforehand – and ensuring the proper resources are available and both patients and front-line clinicians understand metrics and expectations from a program – is critical. Organizations must be ready to critically evaluate initial approaches and recognize failure and success to iterate on programs. In order to scale, organizations must be prepared to take lessons learned from a small rollout or pilot and apply this information to deploy programs across departments, conditions, and use cases.

“If we sit and think ‘what will healthcare look like in five years?’ does anyone disagree that we’ll have to shift dramatically to increase the number of patients we manage remotely? How do we get from here to there?” posed Entwistle. “There’s no magic switch. The right approach is to start now and iterate. Fail fast and keep moving.”

To encourage an open approach to change management surrounding RPM programs, roundtable participants emphasized the importance of defining criteria for success. Organizations must be prepared to evaluate changes in costs and savings, levels of engagement and satisfaction, and physician workload to understand the impact of programs and iterate more efficiently when scaling.

“When really clear success criteria aren’t defined up front, it makes the process really long and it becomes hard to feel like you’re accomplishing anything,” noted Entwistle. By closely tracking predetermined criteria, organizations can identify what aspects of a program are successful, better understand how to expand programs across an organization, and where to develop programs that will deliver the most impact.

## Step 4 Take Advantage of Existing Financial Support

Participants in the roundtable overwhelmingly agreed that a lack of reimbursement for remote monitoring is a major barrier to deployment, but that new opportunities are promising. In today’s fee-for-service world, many organizations have been unable to justify the financial support to launch long-term, scalable remote monitoring programs or to take on associated risk. Though many have been able to run pilots, expanding programs was noted as a challenge. In [a recent survey](#) of health system leaders, the most-cited barrier to adopting a remote care strategy was a lack of reimbursement from providers, followed closely by an unproven financial model.

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*Martin Entwistle  
CEO & President,  
Ares Health Systems*

## Opportunities for Reimbursement for RPM

Specifically, participants noted the value of new reimbursement codes from CMS. In recent years, CMS has shown their dedication to a move toward a value-based model that supports improving patient outcomes; and, new CPT codes to support remote monitoring initiatives demonstrate this. Specifically, the [2019 Physician Fee Schedule Rule](#) takes a significant leap in offering reimbursement for remote monitoring programs. In the final rule, three new codes were introduced to support RPM. CPT codes 99453 and 99454 reimburse for setting up technologies, patient education and transmission of data for the “remote monitoring of physiologic parameters,” and CPT code 99457 covers “20 minutes or more of clinical staff/physician/ other qualified healthcare professional time in a calendar month” reviewing and utilizing physiologic data.

Though these codes are a major indicator of CMS support for value-based initiatives, these steps are just the beginning for remote monitoring reimbursement. Today, these codes only support the use of “physiologic” data, which include parameters such as weight, blood pressure, pulse oximetry, and respiratory flow rate, as defined by the rule. Because reimbursement under these codes is limited exclusively to this type of data, remote monitoring is supported only for the use of data collected from in-home medical devices, disincentivizing the use of additional data types relevant to patient care. This means that information like patient-reported outcome measures (PROMs), behavioral health data, and social determinants of health (SDOH) are not supported – information which could offer much deeper insights into patient access to nutrition and education, as well as more subjective information about a patient’s health and lifestyle. The codes also do not support reimbursement for in-home medical devices, which can be essential for patients who are not financially able to cover those purchases themselves.

CPT code 99457, which offers reimbursement for 20 minutes or more of time spent reviewing remote monitoring data can encompass messaging with patients, adjusting treatment, reviewing data, or many other tactics of care management within a remote monitoring program. However, with advancements in machine learning and digital health technologies that can elevate critical insights from PGHD, providers are enabled to work more efficiently – meaning technology can augment the work clinicians are doing to minimize the amount of time spent on monitoring a single patient. As programs continue to scale with additional technology to drive execution, it’s likely that less than 20 minutes will be more than sufficient for a clinician to deliver quality care.

“New reimbursements from CMS are promising in their support for the use of digital health technologies and patient-generated health data in remote monitoring programs,” said CEO Drew Schiller in response to the 2019 Physician Fee Schedule Final Rule. “However, there is still a need for broader financial support for the use of additional types of patient-generated health data, for the reimbursement of in-home medical devices, and to broaden the roles and type of healthcare professionals that can bill for the review of these data.”

Despite these shortcomings, the promise of these codes are vast and many health systems recognize the potential new reimbursements offer the support of RPM. Not only are leading organizations taking advantage, but smaller healthcare organizations with lower budgets and fewer resources are finding these opportunities incredibly valuable. “There are smaller providers in rural southern California that you wouldn’t think would do this, but they’re now looking into remote monitoring due to the availability of reimbursable codes. It’s encouraging,” said Entwistle.

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CEO, Validic*



## Finding Value in Value-Based Care

Participants also agreed that the shift toward risk-based payment models is providing numerous opportunities for remote monitoring programs to succeed. Today, many larger organizations, such as the U.S. Department of Veterans Affairs (VA), leverage RPM under a value-based care model, as they are incentivized to decrease ED visits and subsequent costs, and improve patient outcomes, noted one participant.

According to a [recent survey](#) of hospital and health system leaders, more than 75 percent of organizations using a pay-for-performance model have implemented remote monitoring programs or pilots, compared to just 66 percent of those who see the most revenue from a traditional fee-for-service model. Stakeholders agree: this is because programs offer care that improves patient outcomes while simultaneously lowering costs and reducing preventable ED visits and readmissions.

As readmissions penalties for patients who re-enter the hospital within 30 days can be a major cost for health systems, programs which can prevent these visits are clearly of value. By identifying issues and intervening proactively, clinicians remotely monitoring patients can prevent the occurrence of these readmissions – and help to maintain or improve health.

In addition, participants agreed that Medicare Advantage plans are supporting opportunities for remote monitoring as well. Given that [70 percent](#) of Medicare beneficiaries have at least one chronic condition, there is a strong use case for RPM for this population – and these programs are proving their value in reducing costs and improving patient outcomes through better health management. In fact, [one recent study](#) examining the effects of a telehealth intervention on the control of type 2 diabetes and subsequent cost-savings found that total healthcare costs, including the intervention costs, were lower (mean \$3781 vs. \$4662;  $p < .001$ ) compared with usual care – and patients' saw lowered HbA1c.

## Step 5 Understand the Value of Remote Monitoring

Ultimately, participants agreed that level-setting and establishing expectations up front – with all stakeholders – is key before deploying a program. Clinicians, patients, and system leadership must understand their roles and what to expect as a result of remote monitoring programs. Patients must be educated not only on how to participate in the program and use the proper technologies, but also what their responsibilities are in order to be successful. The same goes for the care team. Understanding the different roles of each team member, and when and how they should take action is critical for an efficient process and effective, proactive, beneficial care.

Some participants in the roundtable also cited the importance of ensuring that stakeholders know that RPM is not a cure-all. “Patient monitoring won’t work for all patients, and that’s okay,” said Entwistle. “This is a certain style of care that we may not get all patients to use. In my experience, about 65 percent of patients can engage with the technology. These aren’t just the geeks, but people without tech experience. A patient’s level of interest has more to do with their willingness to use data, and their personal interest in quantification.”

However, for the patients who do participate, these programs offer the opportunity for more engagement and better communication with their doctors. “The data helped me look at myself in a way that was different,” said Van. “The data became the language by which my doctor and I communicated, rather than receiving his top-down instructions. We had true, meaningful dialogue. It lets us have a common language. It was only then that there was a change.”

For patients participating in remote monitoring, the opportunity to understand their health in numbers and make incremental changes for better condition management is invaluable. “Getting all this data, for the patient, can be overwhelming. It’s these little steps you take that make you healthier, not one big change. Looking at the data in more detail let me see my behavior patterns and make changes,” noted Van. By having a regular connection to a care team – outside the hospital setting – patients are enabled to understand how daily activities affect their health and make positive change in real time.

And, for providers, remote monitoring offers the opportunity for clinicians to work at the top of their license and more efficiently provide patient care. “The physicians are not the ones who look at this data and technology regularly, it’s the RN or lower who look at the dashboards and do the coaching, escalating when needed,” explained the telehealth director. “This unburdens the PCP to see the patients they need to see.”

Remote monitoring, when implemented correctly and with clear expectations, allows doctors to unburden themselves from continuous “checking in” on patients, and instead intervening only for those patients who need help. Providers are then enabled to provide quality care to a higher volume of patients more effectively.

# Making Data-Driven RPM a Reality

At a time when a higher volume of patients require more comprehensive care – especially to manage chronic conditions like diabetes and hypertension which warrant continuous management – remote monitoring offers the opportunity to deliver more impactful care and reduce healthcare costs and penalties while improving outcomes for the most high-risk patients. However, the industry is at a crossroads in determining how to best implement digital health solutions in a way that improves patient engagement, provider satisfaction, and clinical outcomes.

Roundtable participants agree that in order to see success from remote monitoring programs – and effectively scale them across an organization – proper planning, implementation, and education is critical. By determining the best use cases, involving the right stakeholders at the right stages of the process, and defining criteria for success early on, leaders can deploy a remote monitoring program that engages patients to improve their outcomes and self-management, reduces system costs and readmissions penalties, and lessens the technology burden on providers. As the industry continues to lean into value-based models of care and support for virtual care solutions, providers will continue to see an increase in the opportunities to deploy novel care delivery solutions that improve health outcomes for patients and provide more meaningful care.

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## About Validic

Validic's advanced data connectivity platform removes the burdens associated with data access, integration, standardization, and storage. Validic continues to work with industry leaders across healthcare and pioneer solutions that simplify device connectivity and data access — enabling our clients to derive and analyze meaningful insights and interactions with their population. We guide healthcare and wellness organizations through the technical complexities associated with operationalizing personal health data by delivering scalable technology that increases efficiency, effectiveness, and security. By delivering standardized data from home health devices seamlessly into any system, we help empower healthcare organizations to create more personalized, integrative and engaging user experiences.

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