Remote Patient Monitoring Toolkit

CALIFORNIA TELEHEALTH RESOURCE CENTER

Part of OCHIN

California Telehealth Resource Center

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ABOUT CTRC

The California Telehealth Resource Center (CTRC) offers no-cost, unbiased training, educational resources, and technical assistance to help California providers and patients get the most from telehealth. As the federally designated telehealth resource center for the region, we offer unbiased tools and services based upon proven telehealth practices. We create lasting change and improvement by focusing on implementation, sustainability, reimbursement and policy, integration, workflows, and patient/provider adoption.

As part of the National Consortium of Telehealth Resource Centers and the OCHIN family of companies, CTRC assists thousands of providers and patients annually. We have extensive experience supporting the health care safety net, rural and urban providers, and patients and families throughout California who would otherwise be unable to access quality health care due to geographic isolation, language/cultural barriers, lack of insurance, disability, homelessness, and more.

CTRC Remote Patient Monitoring Toolkit

As health care moves from a fee-for-service model to a value-based approach that rewards performance and outcomes, remote patient monitoring is helping to accelerate the transition from episodic, reactive care delivered in clinical settings to a continuous, proactive model that blends virtual and in-clinic care.

Patients can use medically-prescribed RPM devices in the course of everyday activities to collect and transmit biometric data such as blood pressure readings, blood glucose levels, body weight, heart rate, respiration, and temperature directly into the electronic health record (EHR) in near-real time.

These data sets give a detailed and nuanced view of the state of the patient's health as values fluctuate over hours, days, and weeks, enabling providers to deliver more personalized care characterized by frequent minor adjustments. Subtle changes in the data can trigger interventions sooner in lower-cost settings, supporting the Quadruple Aim. [1]

We are poised at the edge of a new era in medicine that applies machine learning, AI, predictive analytics, and other emerging technologies to bodies of RPM data to unlock untapped potential to describe clinical phenotypes, create more sensitive diagnostic indicators, and develop more personalized treatments. It is technology that fits well into a

value-based system that rewards performance and outcomes.

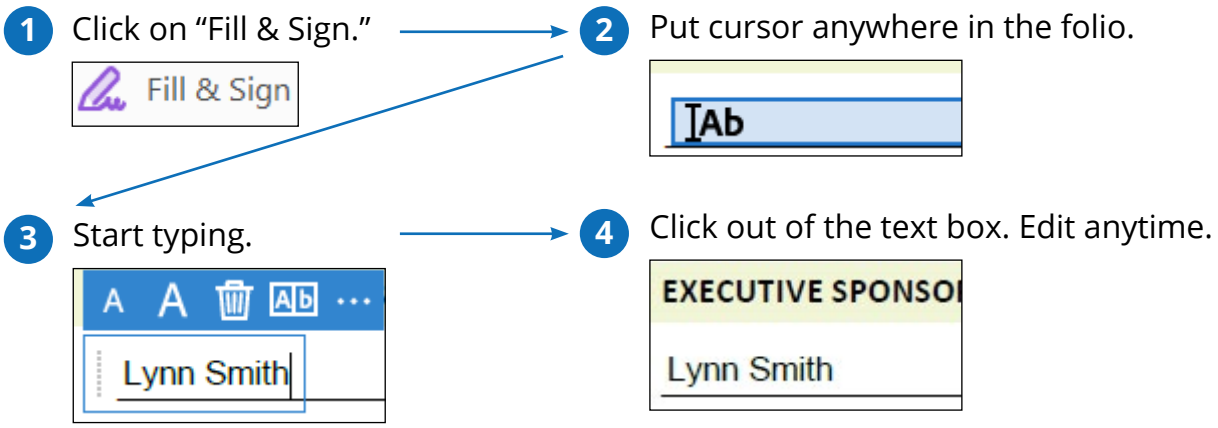
This toolkit is intended to help California providers and patients optimize RPM for better, more equitable care. Practices that embrace RPM technologies today, will be well-positioned to leverage eminent powerful advances that build on RPM to transform care as we know it.

How to Use this Toolkit

Divided across six searchable folios, find basic definitions, key considerations, and stepwise processes to tailor an RPM program to the needs of your unique practice. Folios can be used sequentially or as free-standing references for various RPM topics.

To search each folio using keywords, press CONTROL + F on your keyboard (COMMAND + F for Mac).

Print out each folio and use pen and paper to make notes in the provided spaces or use free Adobe Acrobat Reader software to type directly into the document.



If you need assistance with any of the content presented in this toolkit, please click here.

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FOLIO 1: Introduction & Overview

What is Remote Patient Monitoring?

Remote patient monitoring (RPM) uses connected digital tools in the places people live, work, and play to electronically capture and transmit an individual's health and medical data for review by a provider in a separate location from the patient. [2]

Examples of RPM devices include:

- Heart monitors
- Body weight scales
- Blood pressure cuffs
- Glucometers
- Pulse oximeters
- Thermometers

When RPM data is integrated into the EHR, it is quickly available for the provider to review, and can be used for clinical decision-making.

RPM Helps Practices Achieve the Quadruple Aim

RPM helps practices achieve the Quadruple Aim. [1] It has been demonstrated to increase satisfaction, improve health outcomes, and reduce costs. [3] RPM can potentially generate streams of data between office visits. Slight changes or abnormal values can flag providers to make small adjustments to the care plan or deploy interventions early in a disease process, preempting a trip to the emergency room or admission to the hospital.

This illustrates how RPM-enabled care supports the Quadruple Aim:

- Improved health outcomes
- Greater patient satisfaction
- Reduced provider burden/increased provider satisfaction
- Cost-effectiveness

RPM Data Collected in the Course of Daily Living: A Fuller Picture of Patient Health

RPM data collected between in-office visits by patients in the course of everyday living provide a fuller picture of patient health for longitudinal, continuous care. For example, home blood pressure readings can supplement those recorded in the clinical setting to develop, track, and finely adjust a personalized hypertension control treatment plan for improved health outcomes. [4] [5]

RPM for Timely, Precision, Cost-Effective Care

Ideally, RPM can drive more timely, personalized interventions, and cost-effective care, potentially sparing patient complications or hospitalizations. Providers can visualize trends and spot irregularities earlier, triggering fine adjustments to the care plan before patient's condition worsens. Often providers and patients can make these adjustments virtually, enabling the patient to receive care without leaving home.

However, it is not enough to simply prescribe an RPM device or app to a patient, and expect a positive health outcome. To reap the benefits, patients and their care teams need to make RPM part of an evidence-based clinical framework that includes adequate training, technical support, education, and frequent communication to interpret data and apply it appropriately. [3]

RPM devices tend to produce superior results as a component in a comprehensive program designed for a specific clinical condition or disease. For example, the Medicare Chronic Care Management program for hypertension control requires patients to use a specific validated wireless Bluetooth-enabled blood pressure cuff to electronically measure and transmit blood pressure readings into the EHR. In addition, the United States Preventive Services Task Force (USPSTF) recommends home blood pressure

readings to confirm a diagnosis of hypertension. [6] An average of 12 to 14 (7 days of morning and evening readings) home blood pressure readings is highly reliable for treatment and monitoring. [7] [8] Further, the literature finds home blood pressure readings are more predictive of cardiovascular outcomes than readings taken in the clinic. [9]

RPM offers particular advantages for:

- Chronic disease management
- Cancer treatment
- Post-operative recovery
- Transitions of care such as the period following discharge home from the hospital or ED

RPM Boosts Patient Engagement and Satisfaction

RPM requires the active participation of the patient, making it a natural way to help patients become more engaged in their self-care. [10] This is significant because greater patient engagement is tied to better health outcomes. [11] [12] [13] [14] [15] In addition, patients report that RPM data serves as reassurance that providers take them seriously when self-reporting health information and learning to interpret the meanings of RPM values improves self-management of disease. [2] These direct and indirect benefits translate into a better patient experience and increased satisfaction.

RPM Can Expand Health Equity in the Safety Net

It is a best practice to offer health IT solutions with potential to increase the quality of care to all patients without bias. Underserved patients are generally equally enthusiastic about using RPM technologies to improve their health. It is important to identify the needs of your patients and understand factors that stand in the way of trying RPM to enhance their care.

Resistance is often tied to barriers such as the cost of RPM devices, lack of access to a reliable internet connection or cellular data plan, low technical literacy, or language barriers. With appropriate support and technical assistance to address barriers, nearly all patients, no matter the barriers they may face, can successfully use RPM to enhance their care.

For these very same patients, RPM can be a powerful tool to expand health equity. Barriers to accessing care such as financial strain, lack of transportation, lack of childcare, or residing in a geographically remote location can be greatly reduced by RPM solutions.

At the risk of exacerbating the digital divide, be prepared with provisions in your RPM program to accommodate patients likely to need additional support. For example, consider creating a loaner library of validated RPM devices low-income patients can borrow. Connect patients without smartphones, data plans, or internet access to subsidy programs. Investigate partnerships with community-based organizations such as the YMCA, public libraries, recreation centers, and faith-based organizations to provide technical assistance in multiple languages.

Conclusion

RPM offers significant clinical benefits.

- Associated with improved clinical outcomes for patients
- Provides a more complete picture of a patient's health
- Facilitates more timely interventions between office visits
- Associated with greater patient engagement and increased patient satisfaction
- Creates a more equitable environment of care

The benefits of RPM increase substantially when implemented as part of a comprehensive program with a particular clinical focus. Introducing RPM into routine clinical care may mark a significant change in your practice. An early step in your process includes assembling a diverse team of stakeholders to weigh key considerations, prioritize needs, set goals, plan and lead implementation, and champion the work. Health centers that embrace RPM today, will be well-positioned to incorporate powerful emerging health care technologies reliant on continuous streams of biometric data generated by RPM devices.

FOLIO 2: Build Your Team

Now that you have learned about ways RPM can enhance clinical care, it is time to build the team that will carry out the work. First, identify your stakeholders and champions.

Stakeholders are groups, organizations, and institutions that hold influence over a new clinical practice or are in some way impacted by the change. Some stakeholders will be involved in the RPM implementation process from end to end, while others may be consulted for their expertise as needed.

For instance, patients, providers, and clinical support staff are groups with varying degrees of influence who are likely to be directly impacted by introduction of RPM into routine clinical care. Other RPM program stakeholders include health center leadership, your EHR vendor, RPM device vendors, payors, policymakers, and community partners.

Draw up a list of all the individuals, departments, vendors, contractors, and other groups potentially impacted by bringing RPM into your health center. Consider the resources, skills, and expertise you will need to implement, grow, and sustain RPM in your organization. Finally, pinpoint key stakeholders who hold influence over the success or failure of integrating RPM into routine care.

Among your list of stakeholders, there will be a small core group that spearheads essential steps and has authority to make decisions or recommendations about allocations of resources necessary to take actions. At the very least, this core group should include an executive sponsor, a designated RPM coordinator, a clinician champion, and a patient representative. Another subgroup of stakeholders is comprised of those who champion the work.

Champions Lead Change

Not all stakeholders are champions. Champions not only lend their expertise and perspective to planning and implementation, but they are also vocal change leaders who help increase buy-in. Persuasive among their peers and respected by their patients, clinicians are often among the most effective champions in the health center. Clinician champions can use strategic messaging and model behaviors that can help others become comfortable with new ideas and shift cultural norms. For example, the clinicians championing RPM in your practice can use the evidence base to gain staff buy-in, and can tout the convenience and health benefits as they prescribe RPM devices to their patients. [16]

For your health center to successfully and fully integrate RPM into routine care, it may be useful think of it as a practice transformation project that can be approached in phases. Consider assigning a designated role to coordinate RPM project assessment, planning, testing, implementation, scaling up, and maintenance.

Designate an RPM Coordinator

The scope of this role will vary according to the needs of your health center. It may be beneficial to have multiple RPM coordinators per each clinical focus area. Some health centers may choose to pair clinical champions with RPM coordinators to alleviate potential added provider burden.

Responsibilities of the RPM Coordinator

Support team of stakeholders and champions

- Guide team to introduce RPM in phases
- Facilitate setting measurable goals
- Track progress performance metrics
- Help the team apply data to inform decisions and plans

Develop Health Center RPM Cultural Norms

- Build a library of clinical evidence for the value of RPM
- Normalize RPM as integral to routine care
- Standardize RPM trainings, workflows, messaging across the health center

Build RPM Policies and Workflows

- Determine top of license staff capacity to support RPM
- Help team map and pilot RPM workflows
- Define patient terms of use and set expectations
- Create patient education and communication campaigns

Serve as the point of contact for patient RPM assistance and support

In the assessment and planning phases, it will be important to scan the current environment, assess needs of your various stakeholders, set goals, and estimate a budget for implementation. It may be useful to take stock of examples of RPM your health center currently has in place.

For example, during the pandemic, many health centers rapidly deployed RPM technologies to monitor patients in their homes for COVID-19 symptoms. Some health centers routinely use RPM to track patients in the days following discharge home from the hospital. Health centers participating in the Medicare Chronic Care Management (CCM) program often use billable RPM services to manage hypertension or diabetes.

Key Champions Already Use Digital Tools for Routine Care

Think about the clinicians, patients, and staff in your health center who may have expressed excitement about RPM. Are there any forms of RPM already in use for patient care at your clinic? Who are the colleagues or patients that come to mind who use digital technologies for their personal health or fitness? Who are your patients with specific clinical conditions that could benefit from RPM solutions? These are the prime candidates for your team of champions.

Stakeholders, Champions, and a Core Group of Change Leaders

Fill in the table with roles and names of your stakeholders who might also serve as RPM champions or the core group leading your RPM program. In some cases, particularly in small practices, one person may wear many hats. Choose the roles that fit the size and staffing structure for your organization so that all the major touchpoints in your RPM program are represented.

RPM Stakeholders, Champions, and Core Group Members		
Stakeholder Role/Name	**Core Group Member**	**Champion**
Executive Sponsor	X	X
RPM Coordinator	X	X
Patients		
		X
Providers	X	X
		X
		X
Clinical Support Staff	X	X
Health IT Specialist	X	
Practice Manager/Operations	X	X
Compliance/Legal Consultant		
Quality Reporting Staff		
Billing/Finance Specialists		
Technical Support Staff		X
EHR Vendor Representative		
RPM Device Vendor Representative		
Communications Specialist		X
Community Partners		
Payors		
Federal, State, Local Agencies		
Other:		
Other:		

Involve stakeholders early in decision-making

To boost the success of your RPM program, capture the perspectives of patient stakeholders as early in the process as possible. It can be valuable in this preliminary stage to task clinician champions with choosing the specific RPM devices your health center might like to pilot for use with your patients. Clinical staff making these decisions are more inclined to later use these RPM devices in clinical care. [17]

Explain Why RPM is Right for Your Health Center

It is important for your stakeholders, and especially your champions and core group members, to clearly understand of why your health center is choosing to introduce RPM into routine care, and to persuasively articulate that rationale. To cement that understanding and buy-in, work as a team to explain in 50 words or less, why RMP is right for your health center.

This short statement can provide messaging to help smooth the change process. Periodically revisit this exercise as your practice's RPM program matures.

Folio 1 touches on many ways RPM can benefit clinical care. Reference **Folio 3** for details on how to identify clinical use cases for RPM. You can use these reasons to articulate why RPM makes sense for your practice.

"Remote patient monitoring is right for [health center]_____

because _____

_____

_____**."**

FOLIO 3: Assess, Plan, & Identify Clinical Use Cases

Approach RPM in Phases

Folio 2 offers guidance on assembling an effective team to integrate RPM into clinical care. Once your team is in place, you are ready to begin the work of introducing RPM into clinical care at your health center. Consider breaking the work into four phases, each with a distinct focus and purpose.

- **Phase I: Assess, Plan, and Identify Clinical Use Cases**
- **Phase II: Pilot Test, Refine, and Implement**
- **Phase III: Grow Your Program**
- **Phase IV: Maintenance and Sustainability**

This folio focuses on **Phase I**. The folios that follow cover Phases II, III, and IV.

Take Stock of Where You Are Now: Assess Needs and Readiness

Assess unmet needs RPM might fulfill or areas of clinical care RPM might improve. Consider needs from the perspectives of diverse stakeholders. Providers may want a better way to track patients with chronic disease between office visits. Patients facing barriers to attend office appointments may find it inconvenient or burdensome to come to the office for a blood pressure check or slight medication adjustment. Your health center may be seeking ways to improve patient safety during transitions of care following discharge home from the hospital or provide more personalized cancer treatment.

Consider surveying care team members across a range of professional roles and backgrounds on what they know about RPM. Use it as an opportunity to gauge enthusiasm for RPM on your clinical team.

Questions might include:

- Have they ever used RPM in practice?
- Have they used RPM in their personal care?
- If so, what were their experiences with RPM?
- In what ways do they believe their patients might gain the most benefit from RPM?
- What kinds of RPM data do they want or need to improve the quality of care?
- How excited are they about introducing RPM into routine care?

In a similar way, ask questions to assess the needs of your patients and your health center. Consider surveying patients about RPM readiness.

Questions might include:

- Do you have access to reliable Wi-Fi and essential RPM equipment?
- What is your level of comfort with technology?
- What is your level of health literacy?
- What is your preferred language?
- Are there other potential barriers to using RPM?
  (e.g., impaired vision, hearing, dexterity, or cognition)

Is health center leadership prepared to make an adequate investment in RPM pilot testing, ongoing staff training, and patient support to sustain a successful program? Is the connection between digital patient engagement (bolstered by RPM) and improved health outcomes clear? As part of strategic planning, is leadership considering ways RPM might pave the way for emerging medical technologies that rely on sets of continuous biometric patient data?

As you gather information about needs and readiness, use these findings to drive decisions. Encourage the team to develop solutions to address identified barriers. For example, many providers require a certain amount of clinical evidence to feel confident about introducing a new therapy. Work with your clinical champions to assemble a collection of peer-reviewed articles about efficacy of a range of RPM applications under consideration for your health center. In a similar vein, if the cost of validated RPM

devices is beyond the financial means of many of your patients, consider establishing a loaner library.

Lastly, patients may have reservations about RPM related to the privacy and security of their health data. Work with your compliance and IT champions to develop scripting and FAQs ensure patients understand how their data will be used, who will have access to it, and what protections exist.

Scan the Environment for Key Considerations

Scan the environment for factors to consider before launching your RPM program.

Lean into your team's expertise
It may make sense to assign each member of your team to develop a list of key considerations on aspects of RPM relevant to their areas of expertise.

Areas to investigate can include:

Infrastructure

Does your community have robust broadband services available?

Patient Readiness

Do patients have sufficient broadband speeds in their homes? Smartphones and reliable data plans? Technology, health, and language proficiency?

Organizational Readiness

Does your health center have adequate budget/resources, staff, equipment, expertise and training to implement and maintain an RPM program?

Legal/Compliance

Are providers properly licensed and insured to offer RPM services? Are provisions in place to ensure RPM data remains secure and private? What kinds of consents must be obtained to collect RPM data from adults and pediatric patients [18] [19] ?

Financial/Billing

What RPM services are billable to payors? What are the rates of reimbursement? What are the indirect costs and savings tied to RPM?

Operations

Do you have staff and patient policies in place for RPM terms of use and expectations? Do you have a plan to develop, test, and standardize RPM workflows?

Communications

Do you have standardized messaging or scripts to support staff as they explain the benefits of RPM to patients? Do you have prepared FAQs for common patient questions about data privacy and security?

RPM Data Security and Privacy

A critical piece of assessment and planning includes thinking through steps to protect the privacy and security of your patient's RPM data at every point in its journey from the patient's device to your health center's EHR. If your practice plans to use RPM to treat pediatric patients, there may be additional related regulations. For example, the Children's Online Privacy Protection Act (COPPA) requires the consent of a parent or guardian before collecting personal identifiable information (PHI) from children under 13 years of age. [18]

Under the Health Insurance Portability and Accountability Act of 1996 (HIPAA), covered entities such as clinics, health centers, and their subcontractors must ensure the privacy and security of protected health information (PHI). [19] In addition, health organizations are increasingly a target of cybercriminals seeking PHI to sell on the black market.

Once RPM data crosses into your health center's EHR, it is protected under HIPAA. [20] However, your practice may have limited control over prior steps in the process. Not all RPM devices, apps, services, or interfaces are HIPAA-compliant, meaning they are not subject to the same stringent rules to keep PHI private and secure.

Obtain HIPAA Business Associate Agreements (BAAs) with RPM Vendors

To reduce the risk of a security breach, obtain HIPAA Business Associate Agreements (BAA) with all health center subcontractors that potentially handle PHI. The BAA stipulates that the subcontractor is held to the same HIPAA privacy and security regulations as the

covered entity. Examples of subcontractors include your EHR vendor, medical device and app vendors, and data aggregation services. [19] It may make sense to strictly prescribe from a digital formulary of RPM devices supplied by vendors that have signed BAAs.

Identify Best Practices to Protect RPM Data

Call on members of your team with expertise in IT security and compliance to develop a checklist of best practices for third-party vendors involved with any aspect of RPM data collection and transfer. For example, RPM data should be encrypted and de-identified as it flows from the patient's device to the patient portal or an API, and then into your health center's EHR. Uploading RPM data to the EHR via the patient portal or application programming interfaces (APIs) using SMART on FHIR technologies can protect PHI with added layers of patient authentication and authorization.

Provide Staff with Standardized Scripts for Patient Education

Make it a required step in prescribing RPM for clinicians and support staff to clearly explain to patients how their data will be used, who will have access to it, and what protections exist.

Create Patient Education on Data Security and Fold into RPM Patient Training

Bring these same team members together with your communications champions to develop patient education FAQs to address common patient concerns about the privacy and security of their health data. It is essential that patients understand how their data will be used, who will have access to it, and what protections exist. In addition, patients must understand the importance of keeping all device and app software up-to-date as well as operating systems for browsers, smartphones, desktop computers, and tablets. Fold this patient information into the patient training that is a routine part of prescribing RPM in your health center.

Make abundantly clear to patients that not all devices and apps are HIPAA-compliant. Should patients choose to use non-compliant devices, apps, or APIs such as AppleHealth or GoogleFit, discuss the risk that their data may be used without their consent in ways they do not want.

Identify Clinical Use Cases

Identify RPM clinical use cases that are well-matched to the needs of your health center and the patients you serve. Specifically determine what kinds of RPM data your clinicians want and need to inform clinical care.

Notice ways providers and patients are already using patient-generated health data to enhance care, and think about how to streamline these processes with RPM technologies. For example, do some of your providers encourage patients with hypertension to self-monitor with home blood pressure readings? Are these same patients bringing these data to appointments on slips of paper?

Envision the kind of RPM program in your health center that resolves these issues in ways that produce better health outcomes, increase patient satisfaction, reduce provider burden, and expand equity.

Set measurable goals that guide your health center's RPM program from its starting point today to an ideal future state.

Current Clinical Use Cases Can Point to Areas of Need

One useful starting point is to identify areas where RPM is already being used in your practice. Think broadly and include informal applications as you take inventory. These current use cases often point to areas of need and can help your health center prioritize which kinds of RPM to pilot first.

Examples might include:

- Providers who routinely request analog data that from patients to inform clinical care
- Patients who bring analog data to their appointments to help inform clinical care
- Chronic disease management programs (e.g., Medicare CCM)
- Remotely monitoring presumptive COVID-19 cases for emerging symptoms
- Remotely monitoring fertility/reproductive health patients during IVF
- Remotely monitoring patient recovery following a surgical procedure
- Remotely monitoring patient recovery following discharge home from the hospital
- Home diagnostics
  (e.g., sleep studies for apnea, Holter monitor for cardiovascular disorders)
- Mental health monitoring

RPM has primarily been used for chronic disease management [e.g., glucometer, blood pressure cuff, body weight scale, pulse oximeter, spirometer for patients with diabetes, hypertension, congestive heart failure (CHF), or chronic obstructive pulmonary disease (COPD)].

What is the simplest clinical use case for RPM in your health center? _____

_____

_____

What needs does this clinical use case address? _____

_____

_____

What does the ideal version of this RPM application look like in your health center?

_____

_____

Considerations: RPM Devices

You have identified clinical use cases for RPM. The next step is to select the RPM device to use for this clinical application. When it comes to RPM devices, the market offers many options. How do you choose the best RPM devices for your health center?

RPM Devices Compatible with Your EHR

A good place to start is your EHR vendor. Ask about which RPM solutions are compatible with your EHR. Some EHR vendors offer RPM kits or a bundle of devices tailored to specific conditions or diseases. For example, a COVID-19 symptom tracker kit might include a digital thermometer, pulse oximeter, and wireless blood pressure cuff. Be mindful that scenarios that call for multiple RPM devices will increase the complexity for both your practice and your patients.

In many cases, once the provider places the order in the EHR for the patient's RPM device, the EHR vendor ships the kit directly to the patient's home with instructions for proper use. The vendor may also offer patient training and technical support for the RPM device.

Data Frequency and Volume

There is great variation in how frequently different types of RPM devices pulse data to the EHR as well as the volumes of data generated. There may be variation between individual patients as well. For example, patients using a Bluetooth-enabled blood pressure cuff might record readings once or twice a day or a few times a week, whereas wireless heart monitors or continuous glucose monitors (CGMs) generate data every few seconds. It will be important to determine your EHR's capacity to manage volumes of data and present it in clinically actionable formats.

RPM Tools Include FDA-approved Devices and Consumer Products

Some RPM devices such as continuous glucose monitors (CGM) used to help control diabetes, are high-fidelity, FDA-approved medical devices, whereas fitness trackers, smartwatches, and some smartphone apps often rely on consumer-grade biosensors that are not subject to FDA regulation.

Clinicians are more inclined to trust the quality of data generated by validated RPM devices. Find resources for device validation in **Folio 6**.

RPM Devices Required for Payor Reimbursement

Once you have established which RPM devices are compatible with your EHR, confer with your billing specialist to determine if any of your payors stipulate specific RPM devices to reimburse for services. For example, the Medicare Chronic Care Management (CCM) program requires patients to use a specific model of Bluetooth-enabled blood pressure cuff to capture and transmit the data to the EHR.

Build a Digital Formulary

Once you have identified RPM devices that are compatible with your EHR and meet the requirements of payors, you may want to narrow choices further on the basis of cost to the patient, ease of use, battery life, protection of a HIPAA Business Associate Agreement (BAA) with the RPM vendor, or other criteria. Work with your EHR vendor to package your selections into a digital formulary in your EHR that can potentially streamline prescribing.

Digital Formulary or BYOD?

Even if your practice opts to create a digital formulary, there may be certain instances when it may make sense to consider RPM devices or apps selected by your patients. You may have some patients that can benefit from clinically appropriate devices or apps that are not on your formulary. This so-called bring your own device (BYOD) approach offers patients the flexibility to collect their own data with devices or apps that they are comfortable using. Your practice may elect to adapt a hybrid that utilizes both a digital formulary of validated devices and a BYOD model for certain use cases.

Be aware that BYOD models are more prone to compatibility issues with the EHR. In addition, BYOD training and technical support may be outside the scope of your RPM program.

Next Steps

Once you have identified clinical use cases and prioritized them based on your health center's needs, work with appropriate stakeholders on your team to select an RPM device that is compatible with your EHR and meets other criteria you may have such as cost to the patient, ease of use, and quality of data.

At this point, your financial champion and executive sponsor should have adequate information to develop a budget estimate for RPM pilot testing as well as projections for scaling up and maintaining RPM services.

BUDGET ITEMS TO CONSIDER FOR YOUR RPM PROGRAM

- **EHR vendor costs for build, installation, testing, training, maintenance fees**
- **RPM device vendor interfaces, training, maintenance**
- **Hardware and software**
- **Operational costs**
- **Communications**
- **Patient engagement**
- **Staffing**

In **Folio 4**, explore **Phase II: Pilot Testing, Refining, and Implementing**. Start small with your simplest clinical use case. Find guidance on how to develop a preliminary RPM protocol and workflow as a starting point for rapid cycle testing. Set a measurable goal and time period for your pilot. Recruit a limited number of patients, and begin testing.

FOLIO 4: Test, Refine, Iterate, Repeat

As your health center moves from assessment and planning to testing and implementation, change management and quality improvement frameworks can provide structure for your team's activities.

In the previous folio, your team learned about factors that may facilitate or impede providers and patients to use RPM solutions in routine care. You also learned to leverage expertise of your stakeholders to raise key considerations that can impact the success or failure of your RPM program. Finally, you scanned your practice to match RPM clinical use cases to your needs.

This folio will focus on **Phase II: Pilot Test, Refine, and Implement**

Frameworks to Structure Pilot Testing and Implementation

To provide structure for pilot testing RPM in your health center, consider borrowing from established quality improvement (QI) and change management frameworks. QI models set clear, measurable goals achieved through iterative small tests of change. Change management frameworks blend psychology, strategic planning, and communication to align stakeholders, build buy-in, coordinate messaging, and influence behaviors to move organizations through cultural transformation that supports lasting change.

Assembling a team of champions, articulating your rationale for bringing RPM into your practice, establishing baseline values for performance measures, and defining your ideal future state are examples touched on here and in previous folios of change management activities that have QI baked into the processes.

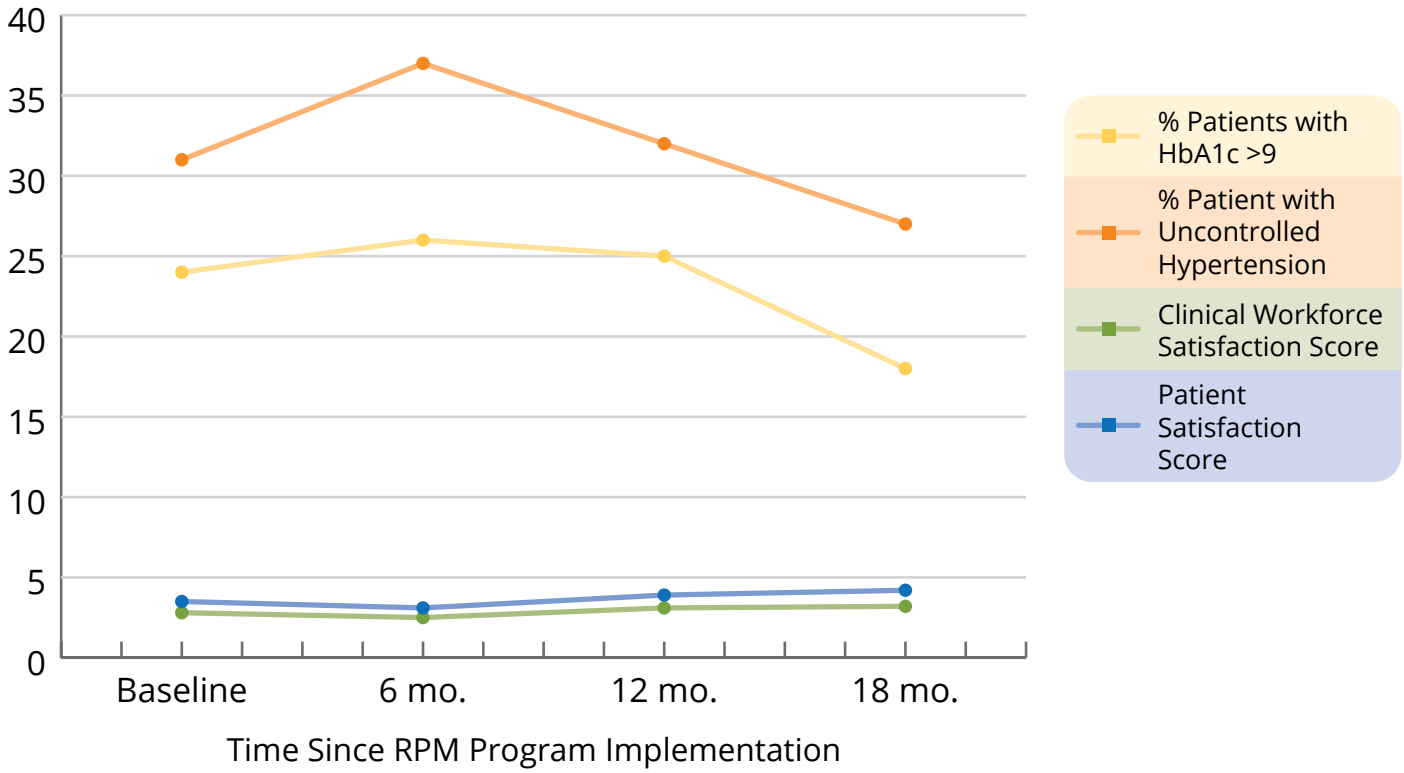
Capture Baseline Data

Prior to entering the testing phase, identify datapoints that describe your health center's current state. Track these data at regular intervals to gauge the success of your RPM program. Ideally, tracking progress towards evolving measurable goals becomes a permanent program feature that helps sustain continual improvement.

Two key indicators of the health of your practice are patient satisfaction and clinical workforce satisfaction. [21] Your practice manager may already conduct annual patient satisfaction and provider satisfaction surveys and can draw on these data to establish baseline measures for the current state of your RPM program.

Additionally, think about ways to leverage useful datapoints that are collected in your EHR during routine patient care. Many RPM technologies are intended to support chronic care management. Identify clinical quality indicators might be used to measure the state of your RPM program. Establish baseline values for clinical quality indicators related to clinical use cases and use these values to track progress. See the graph below for an example of performance metrics tracked over time.

Describtive Metrics for the State of Our Health Center



As you begin pilot testing, it will be important for the RPM coordinator to regularly report to the team about progress towards measurable goals. Consider this a first step in building robust evaluation processes into your RPM program. This will ensure your health center has a mechanism for continual improvement as you move from implementation and growth to maintenance and sustainability.

Start Small with Your Simplest Clinical Use Case

As you move from planning and goal setting into a phase of testing and implementation, start small with your simplest clinical use case and a limited number of providers and patients. Work in scalable units so that when you are satisfied with your process, it is easier to adapt broadly across your health center.

Continuing with your simplest clinical use case, set a measurable goal. Track progress toward your goal as you test and refine change ideas.

Examples of measurable RPM goals:

- Use Bluetooth-enabled blood pressure cuffs and RPM technology to help ten hypertension patients record and transmit morning and evening blood pressure readings into the EHR over seven consecutive days.
- Remotely track daily body temperature and oxygen saturation levels of 25 patients in the EHR for a period of two weeks using a wireless thermometer and wireless pulse oximeter.
- Recruit three patients with diabetes who use a particular brand of continuous glucose monitor (CGM) to transmit blood glucose level data to the EHR over a period of six weeks.

Use this measurable goal as the starting point to design the protocol for your health center's first RPM pilot.

Policies, Protocols, Workflows

Call on RPM stakeholders and champions with expertise at each key touchpoint to develop end-to-end RPM policies and protocols. Clinicians should be involved in RPM workflow development to address and resolve hesitations around added provider burden from the beginning.

Operational policies and protocols will guide your practice in using RPM data day-to-day. Work as a team to anticipate possible scenarios and develop solutions. Thoughtful RPM policy and protocols can set patient expectations, ensure compliance and safety, improve provider and patient experience, and drive better health outcomes.

If your health center has prior experience implementing similar virtual care technologies, adapt existing policies and workflows to the extent that you can and develop new processes as needed.

Ensure RPM policies address:

- Compliance with legal and regulatory requirements
- Patient safety
- Technology compatibility
- Terms of use
- Hours of operation
- Follow-up time to review and respond to data
- Efforts to minimize provider burden

It is important to establish clear policy and protocol around patient terms of use for your RPM program. For example, patients must grasp that this type of RPM is not intended to manage urgent or emergent conditions. Nor is it intended to trigger an alarm or alert for immediate medical attention. Patients using RPM devices registering abnormal values in an unsafe range should be advised to go to the emergency room or call 911.

Widely disperse RPM messaging

Communicate this messaging prominently across all patient-facing media including the patient portal, printed collateral, recorded audio loops, and call center scripting.

Few practices have the capacity to monitor and respond appropriately to RPM data in near-real-time. Many clinics are closed in the evening and over the weekend. This increases the importance of policies and protocols It is common for health centers to inform patients to allow several business days for a provider to review RPM values out of normal range and respond with an adjustment to the care plan.

Design Policies and Workflows to Reduce Clinician Burnout

It is important to acknowledge clinician concerns related to managing large volumes of RPM data, chiefly worries about increased workload and potential patient safety issues related to inadvertently overlooking small bits of RPM data.

Consider these strategies to counter provider burden: [22]

- Clinician-friendly policies and workflows
- Technology optimization and automation
- Intuitive user interface designs

When designing and testing workflows, pay close attention to any additional burden and workload it may place on clinicians. If a step is a heavier lift and cannot be shouldered by other care team members and support staff, then it may not be optimal.

Five Rights of Clinical Decision Support

The Five Rights of Clinical Decision Support are useful rules of thumb to guide your team as they design RPM workflows that minimize provider burden. As you map the flow of RPM data from the patient to the EHR to the care team, keep in mind processes that 1) deliver the RIGHT information 2) to the RIGHT person 3) in the RIGHT format 4) via the RIGHT channel 5) at the RIGHT time in the workflow to inform clinical decision-making. [23] Ideal workflows maximize ease and convenience for patients and minimize clinician burden by furnishing the right data at the right time to best inform clinical decision-making.

Workflow Development

Workflow is simultaneously the one of the most important and most challenging components of RPM integration. A user-centered approach to workflow design takes the perspective of each stakeholder involved—support staff, clinicians, patients, and others. It is the workflow that will unite the technology, the culture, and the human factors that can make RPM integration successful.

USER-CENTERED DESIGN

User-centered design (UCD) relies on the user perspective to develop superior products, processes, and services. Working in partnership with end-users to understand their experiences opens opportunities to create solutions created through an empathic lens that aims to meet their needs [24] [25]

To employ UCD in your health center, consider how end-users experience workflows, such as patients, providers, nurses, and support staff. Better yet, collect feedback from end-users about their experiences as you are developing new RPM workflows. Combine these inputs with progress on performance measures to inform iterative changes as you refine processes through small tests of change.

Folding user-centered design into your RPM implementation strategy will help your health center strike the right balance between technology and human factors. [26]

- **Take time to understand how the provider and patient experiences RPM**
- **Involve end-users in the development and testing of workflows**
- **Roleplay with rough prototypes**
- **Solicit end-user feedback and iterate to refine and improve workflows**

Starting with prescribing the RPM device, prepare your care team, patients, and other stakeholders to broadly think through every step that is needed for both the patient and provider to be well-supported. Determine which roles will be responsible for accomplishing each detail. Keep in mind that an idealized workflow can lead to problems. A user-centered approach can help the team to stay grounded. [22]

Examples of process details to think through:

- Who sets a safety range for the patient?
- Who shows the patient how to use the device?
- How does the patient collect and transmit the data to the EHR?
- Who reviews incoming RPM data?
- How is data routed from a triage pool to a provider?
- Who troubleshoots a device if it malfunctions?

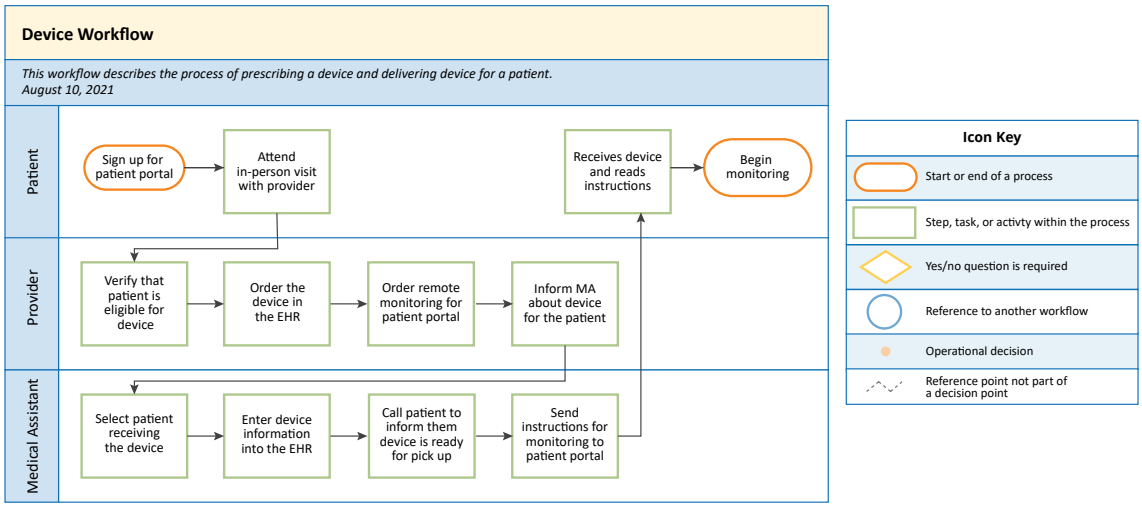
Clinicians and support staff performing the work can provide insight on contingencies that may not be immediately apparent. For example, clinicians may need to build additional time into RPM workflows to review RPM data. Clinicians may also have suggestions about certain pieces of the process that can leverage automation in the EHR to alleviate burden. [22]

Clinical RPM workflows may include:

- Clinician prescription/ordering of device or tool
- Patient training and education
- Patient collection of data
- Data transfer from patient to device/tool to EHR
- Data transfer from API to EHR
- Triage pool review of RPM data/escalation to provider
- Data visualizations for RPM data
- Clinician review of RPM data
- Clinical Decision Support Response
- Orders and referrals based on RPM
- Follow-up based on RPM
- Documenting RPM data in notes

Map Workflows: Swimlane Diagrams

Swimlane diagrams are a way to visually map all the steps within a process by breaking it into the roles responsible for each step. Each role is assigned its own lane. Icons indicate pivotal decision points and various types of actions. The example on the following page demonstrates how a swimlane diagram involving a patient, provider, and medical assistant might look.



To get the most out mapping your RPM workflows, consider these best practices:

Preparation:

- Gather all stakeholders directly involved in the RPM workflow
- Provide pads of sticky notes and a whiteboard, wall, or clean tabletop
- Agree to map one process at a time

Work Session

- First, map your health center's current processes—if any—to support RPM
- Base each step on the actions that take place the majority of the time with most patients
- Concisely describe steps using action verbs
- Use a "parking lot" for exceptions, outliers, or ideas that are out of scope
- Connect roles to each step; use roles rather than names
- Link steps together in a sequence
- Note opportunities for improvement

Test, Improve, Disseminate, and Maintain:

- Validate workflows with end-users
- Modify according to feedback
- Designate an owner to disseminate and maintain each workflow (This could be the RPM Coordinator.)
- Review and update on a regular schedule
- Keep workflows in a central, accessible location
- Communicate when workflows change

Once the team has mapped your health center's RPM workflows, you are ready to recruit participants for your pilot and begin testing.

Selecting Good Candidates for Pilot Testing

Good candidates are often your most technically savvy and enthusiastic providers and patients, many of whom may already use RPM in clinical care. You have likely identified providers, but how will you recruit patients?

Use Patient Activation Surveys to Identify Good Candidates

A pilar of patient engagement is patient activation, defined as a patient's willingness and ability to actively manage their health. Patient activation can be measured with instruments such as the PAM® and PAM-13®. [27] [28] **Just as your practice might use screening tools to stratify risk for chronic disease across your patient population, consider using the PAM and PAM-13 to select the best candidates for pilot testing RPM.**

Rapid-Cycle Tests of Change and End-User Feedback

Consider piloting your RPM workflows using rapid-cycle testing supplemented with end-user feedback with small groups of providers and patients. Shewhart's Plan-Do-Study-Act (PDSA) cycle is a simple tool to structure iterative tests of change. [29] DSA cycles are intended to be short in duration. For each test cycle, think in terms of days and weeks rather than months and years. Incorporate refinements and repeat testing for as many cycles as necessary to fine tune workflows. [30]

Once your RPM workflows have been developed, tested, and documented, disseminate standardized workflows across your health center. It is important for staff to adhere to workflows that have been tested in this way. However, end-users on the frontline also tend to be the first to discover ways to streamline processes.

Make it easy to disseminate workflow updates

Build into your process a way for end-users to quickly and easily communicate workflow improvements to the RPM coordinator.

Periodically review RPM workflows for accuracy, adequacy, and efficiency. Test any suggested changes or improvements with end-users, modify documentation, and communicate these updates across the entire staff.

FOLIO 5: Grow Your RPM Program

After pilot testing is complete, it is time to shift focus to growing your RPM program. In this next phase (**Phase III: Grow Your Program**), your team will concentrate on developing a coordinated training program and communications campaign to integrate RPM into clinical care across your entire organization. Training and communications will each have dual tracks, an internal track for staff and an external track for patients. Rely on your team of champions to take the lead on these intertwined activities.

At the same time, your financial champion and executive sponsor can take data from pilot testing to form projections about resources that will be needed to introduce RPM across the clinic, and sustain the program into the future (**Phase IV: Maintenance and Sustainability**).

Phase III: Grow Your Program

Rely on Clinician Champions to Lead Training and Communications Efforts

As you scale up your RPM program, this is the time for your champions—particularly clinician champions—to shine. Clinician champions are often the most visible and influential members of your team. Trusted by colleagues and patients alike, they can make a substantial impact as they tout the benefits of RPM, model attitudes and behaviors, and raise excitement about using RPM in routine care. Leverage their expertise to tailor instructional materials for your practice.

For Vivid, Relatable Materials, Fold in Learnings from Pilot Testing

What learnings can your team take from pilot testing to make training and communications more relatable and vivid? How did patient and provider satisfaction and clinical quality measures at the end of the pilot compare with baseline measure? What memorable stories or insights did staff and patients share in end-user feedback about their experiences using RPM? Highlight training and communications materials with examples of these successes.

Collect success stories

Task your communications champion or RPM coordinator with creating a repository to collect staff and patient RPM success stories.

Explore Training Resources from Vendors and Community Partners

Though it is likely you will need to develop at least a portion of your training materials in-house, it may make sense to investigate what kinds of prepared training materials and support your EHR vendor and RPM device vendors might offer staff and patients.

Explore opportunities to partner with community organizations such as public libraries, recreation centers, senior centers, faith-based organizations, and others to provide supplemental patient training and support.

Two Communications Plans: One for Staff and One for Patients

Your communications champion will take the lead create an RPM promotional campaign for staff and a separate RPM campaign for patients. Just as the team took a user-centered approach to create RPM protocols and workflows, plan communications campaigns with needs of your target audience in mind. Bake this approach into your training methods. For example, offer staff opportunities to practice RPM workflows with a variety test patient scenarios. Include as part of your staff training simulated experiences with RPM technologies from the patient perspective. Encourage staff to use RPM in their personal care.

What are the Priorities of Your Target Audiences?

RPM priorities and concerns differ for staff and patients. For example, top issues for staff include the evidence base for RPM in treating common conditions, how to ensure patient safety, and ways RPM might impact their workload.

Leverage voices of clinician champions to share the evidence base for the benefits of RPM in clinical care. Clinicians can relate their positive experiences during RPM pilot testing to help dispel common worries such as managing the volume of RPM data, impact on workload, and patient safety. Clinicians involved in selecting RPM devices can explain their choices, describe how they prescribe RPM and talk with patients, and demonstrate what it is like to interpret and apply RPM data in clinical care. Those involved in developing workflows can shine light on team-based care solutions to minimize clinician burden.

Patients may need basic education about what RPM is and how it can improve care for their specific health conditions. Ease of use and convenience are also key. Some patients may need assurance that their data remains private and secure. Use simple, concise language that speaks directly to the benefits of RPM that matter most to your patients.

Furnish staff and providers with scripted messaging to clearly explain to patients how their RPM data will be used, who will have access to it, and how it will be kept secure and private. Underscore the importance of these conversations with your patients.

To make content relatable, draw on real patient successes to illustrate ways RPM can support better outcomes for specific chronic conditions. For example, RPM may be an attractive alternative to periodic in-clinic blood pressure checks for patients with hypertension, particularly if it is burdensome to find transportation to the clinic, take time off from work, or pay for childcare.

Embed simple ways patients can express interest about using RPM into patient-facing communications. For printed materials this can include QR codes; digital materials can incorporate hyperlinks to webpages, or a clickable button as part of your design.

Use Consistent Messaging and Graphics

Choose messaging and images appropriate for each audience, and use them consistently across each campaign. Rely on visuals to illustrate instructions and troubleshooting advice.

For staff communications, a starting place might be the rationale statement your team created to explain why RPM is right for your health center.

When creating patient-facing materials, consider health literacy, comfort with technology, access to technology, and English proficiency. To increase accessibility, provide these materials in a variety of media and languages tailored to your patient populations.

As part of your messaging, address common barriers your patients may need to overcome to use RPM, and offer ready solutions to encourage full participation.

Your RPM coordinator is the point person to field all staff and patient RPM-related queries. Include contact information for your RPM coordinator on all communications. Create a generic email address based on the role rather than a staff name such as: RPMCoord@MyCHC.org.

What is the Right Blend of Media?

Think about the right blend of media for each audience. For staff working on-site in the clinic, printed flyers might supplement email reminders about deadlines to enroll for RPM trainings, whereas patients might be more apt to pay attention to a coordinated RPM campaign that includes colorful postcards, promotion on the health center website, and direct email, topped by a clinical recommendation or RPM prescription from their provider during office visits. It may make sense to record an audio loop for your telephone answering system so patients can hear about the benefits of RPM while waiting on hold. Some health centers print patient-facing messaging on forms that go home with the patient such as after-visit summaries and billing statements.

Call to Action: What are Measurable Goals for Your Campaigns?

Every communications campaign has a call to action. What is the action you want your audience to take? Do you want staff to enroll in RPM training by the end of the month? Would you like 20 percent of your hypertension patients to try RPM to help control their blood pressure?

Think about the goals for each campaign, and ways to measure effectiveness. If the main purpose of your internal campaign is to enroll staff in required RPM training, a measure of success might be the percentage of staff that complete RPM training by a certain date.

Design your campaigns so that it is easy complete the action. To facilitate staff enrollment in RPM training, include a clickable button in emails or a scannable QR code on printed matter that takes the reader directly to the registration page.

Your patient-facing campaign might set a goal for a certain number of RPM devices prescribed within a specific timeframe. Again, embed tools to make it easy for patients to follow up on the call to action. For patients, this may be a prefilled interest form on the patient portal that gets routed to someone on their care team.

Incentivize Staff and Patients to Reach Campaign Goals

To increase the likelihood of reaching your communications goals, incentivize your call to action. For example, to increase the number of patients who request information from their care teams about using RPM in their care, all respondents might be entered in a drawing to win a Bluetooth-enabled blood pressure cuff or an electronic tablet.

To encourage staff to enroll in RPM training by a given deadline, offer to sponsor a staff outing, catered lunch, or other small reward for the first department to enroll all their staff by a certain date.

Training and Technical Support

Develop training programs in parallel with communications campaigns. It will be necessary to create separate training and technical support tracks for staff and patients. Use change management strategies to structure the rollout of your RPM training program. Introduce opportunities for staff and patients learn about the benefits of RPM, develop the skills to use RPM well in clinical care, and through ongoing reinforcement adapt attitudes and behaviors that support lasting cultural transformation. Store RPM training documentation in a centralized location, and ensure all staff know how to quickly locate it.

Successful training programs rely on:

- Effective training protocols
- Quality educational materials
- Dedicated time for learning
- Non-clinical staff to provide technical training [3]

Plan a schedule over a period of weeks to gradually introduce RPM across your organization, employing your team of champions to spread standardized messaging, model behaviors, develop educational materials, and lead trainings.

Reference previous successful training programs as you devise RPM training materials and protocols. It can be useful for trainers to demonstrate RPM workflows in the EHR using dual screens that enable staff to simultaneously see both the patient view and the provider view as data moves from the patient's device to the EHR.

Staff Training: Start with the Rationale for RPM

To kick off staff training, use your team's rationale statement to explain **why** RPM makes sense for your health center. It may be useful for staff to understand that getting started with RPM lays the foundation for your health center to offer leading-edge care in the future. Build on this by incorporating trainings that address the **what**, **why**, and **how** so staff can see the big picture of ways RPM supports quality patient care and clinic efficiency.

Recent studies find that it is important to designate technical training and support responsibilities to non-clinical staff. Leverage these designated staff for key roles in developing training materials, delivering staff instruction, and providing coaching for those who need additional support. [3]

Use similar standardized messaging to develop patient-facing scripts for front desk, clinical support staff, providers and other staff that interact with patients at RPM touchpoints. This provides continuity that supports new cultural norms. It can be useful to frame RPM for patients as their provider's main, standard way to deliver certain types of care. At first, staff might use scripts verbatim, but each staff member can adapt the style to their personality and the patient's needs, so long as the content is consistent.

As with all new skills, there is a learning curve for RPM. Ideally, your health center leadership will support dedicated time for staff to become comfortable with RPM technology. Advocate for initially scheduling additional time into appointments as staff learn to integrate RPM data into routine care.

Research finds that clinicians forced to master an increasing number of technological tasks related to patient care within the span of a standard office visit are increasingly prone to burnout. Dedicated time for learning is an important way to protect your providers. [3]

BUILD HEALTH EQUITY INTO RPM TRAINING

A first rule of thumb is to train staff to offer RPM to every patient who can clinically benefit.

It is a mistake to rule out RPM based on factors such as patient income, age, living situation, or education. These patients may be ideal candidates. If some of your patients face barriers to using RPM, have ready solutions to help them use the technology successfully.

To help eliminate biased judgment, it may be useful to routinely survey all patients about their preparedness to use RPM. Consider folding questions about internet connectivity into new patient intake forms or annual social determinants of health screenings.

Offer Multiple Ways for Staff to Learn

Register staff in small groups to do deep dives into RPM led by an RPM champion. Offer multiple training sessions in a variety of formats. It may make sense to develop specialized trainings for different parts of your staff depending on their areas of focus. For example, your clinical staff and billing staff will need to learn different skill sets.

In addition, staff may benefit from learning about RPM in different ways. Whereas a self-paced online training and supplemental workbook might be sufficient to learn RPM billing codes, clinical care teams may benefit from a combination of online training, live RPM equipment demonstrations, opportunities to practice workflows with test patients in the EHR, taking loaner RPM equipment home to simulate patient experiences, and shadowing more experienced colleagues in the course of patient care.

Encourage Staff to Experience RPM from the Patient Perspective

If possible, give staff hands-on experience with the RPM devices you will be prescribing. Invite staff to stand in the shoes of your patients to understand the patient experience as they become acquainted with these new technologies. Encourage staff to use RPM in their own personal care.

Patient Training and Technical Support

Patients also need dedicated time to learn to use RPM technologies. Consider making it a routine practice to schedule longer appointments for patients newly prescribed RPM devices. This will allow providers and non-clinical training staff time to validate or calibrate RPM devices and provide patient instruction before the patient leaves the clinic.

It is important to develop solutions to barriers to using RPM that your patients might face. Be mindful of the digital divide and establish provisions to help underserved or disadvantaged patients to use RPM technologies. Offer educational support in multiple languages and media to bridge language barriers, visual or hearing impairments, and other common obstacles.

Initial Close Monitoring and Feedback is Critical for Success

Prepare for closer monitoring and more frequent communication in the initial days and weeks as your patients learn to use RPM devices and technologies. Most patients have never used RPM before, and often have no point of reference as to whether they are generating valid data. It is critical during this period for providers and clinical support staff to check in frequently with patients to provide feedback, coaching and reassurance. If data does not look right, ask the patient to describe how they are using their devices. Provide feedback to help the patient understand what their RPM data means, and make informed adjustments. This period of high patient engagement can instill greater provider trust in the validity of the data, retain data integrity, improve the patient experience, setting you and your patient on the course for success.

Bring RPM Devices to Office Appointments

Ask patients to bring their RPM devices to in-office appointments to demonstrate how they use them. In addition, many devices should be calibrated periodically to ensure the quality of the data.

MOBILE TELEMEDICINE TECHNICIANS (MTT)

Mobile telemedicine technicians (MTT) make house calls to assist patients to set up various types of virtual care technologies or troubleshoot when they malfunction. This can be especially useful if you have an arrangement with your EHR vendor to directly ship RPM device kits to the patient's home. MTTs can help patients learn to use RPM devices and electronically transmit RPM data to their providers. Health centers may contract with third parties that furnish MTT services or add MTT staff to the care team. [3]

Phase IV: Maintenance and Sustainability

RPM Program Maintenance and Sustainability

Much of the responsibility for maintaining your program falls to the RPM coordinator. Continue to set new measurable RPM goals and report progress to your team of champions. Develop new ways to collect and apply end-user feedback for continual improvement of your program. For example, consider adding questions to new patient intake forms or SDH screenings about internet connectivity and other items with bearing on readiness to use RPM.

Bring new members into your team of champions as the program evolves. More experienced champions might mentor newcomers and then pass the baton. As your program matures, it may make sense to designate RPM coordinators for programs tied to specific clinical conditions.

Task members of your team of champions to track RPM developments relevant to their areas of expertise. Compile this information into an annual recommendation to share with leadership.

Pool success stories in a central repository to use for RPM communications campaigns. Since it may be some time before payor reimbursement for RPM activities cover program costs, track indirect costs and savings attributable to RPM.

It is part of the responsibility of the RPM coordinator to ensure all staff and patients have appropriate training and support. Create systems to keep RPM documentation, training materials, software and hardware up to date.

In addition, consider how your health center will provide periodic refresher staff trainings, onboard new staff, and verify patient-facing training materials remain current and accurate.

Recognize Patient Effort to Collect and Share RPM Data

Another angle that is essential to the sustainability of your RPM program, but is often overlooked, is to acknowledge the effort patients make to collect and transmit RPM data. Patients want to know if and how their RPM data is being used, and appreciate validation of their efforts. A patient-centered approach builds trust, engagement, and relationships essential to improving health outcomes using RPM.

If your EHR supports data visualization features to translate RPM data into meaningful trendlines, encourage your providers to use it to illustrate how patient RPM data contributes to clinical decision-making. Providers can share the screen with patients, discuss what the trends mean for their health, and ways they can influence trends through self-management. This can be a powerful way to cement trust and fortify patient commitment.

RPM empowers patients to not only engage, but also creates a lasting psychological awareness that may change behaviors over time, potentially making services more available, facilitating better coordination, and increasing quality and safety.

FOLIO 6: Resources

This folio contains alphabetized key terms and concepts as well as resources to support various aspect of your RPM program.

Key Terms and Concepts

A

API

An acronym for "application programming interface" defined by ONC as translators or messengers that sit at the junctures between two unrelated software programs and enable them to communicate. APIs are critical to facilitate interoperability between disparate EHR platforms or between an EHR and health data exchange partners such as payors, state registries, pharmacies, and laboratories. [31]

D

Discrete Data vs. Free Text

Discrete data, also known as structured data, is data that has a set of quantifiable defined values that can be mapped to specific fields in the EHR. Discrete data can be tracked via various data visualization techniques and manipulated in various ways for analysis of individuals or populations. Free text is alphanumeric values in a narrative form. While free text often contains valuable details, it is not as easy to analyze for patterns as discrete data.

F

FHIR (Fast Healthcare Interoperability Resources)

FHIR is a standardized set of data elements and formats and an API developed by Health Level Seven International (HL7) to facilitate interoperability between EHR platforms and other health data exchange partners that use incompatible data structures and elements. HL7 maintains a webpage and Twitter feed (follow @FHIRnews using #FHIR) for FHIR updates.

Formulary vs. BYOD

A formulary is a list of prescription medications, devices, or apps for use in clinical care approved by health center governance, payors, or other decision-making bodies. BYOD (Bring Your Own Device) refers to a health center policy that permits patients to use the device of their choosing in their care.

P

Passive vs. Active

In relation to remote patient monitoring, passive data transmission operates in the background without any special patient action or awareness. Passive data may include vital signs, falls, location, activity, gait speed, or environmental temperature. Active monitoring systems require users to take some action such as manually entering data into an online form.

Patient Activation Measure

PAM® and PAM-13® are validated tools that can help identify highly-engaged patients. [32] [33]

Patient Essentials for RPM

At minimum, patients need access to internet connectivity, RPM devices, the know-how to use them, and an understanding of what their data mean.

Access to broadband or Wi-Fi

For connected RPM devices to function, it is essential to have reliable access to internet services.

Digital health literacy (e-health literacy)

The ability to use technology to exchange, evaluate, and use health information from digital sources. [34] This type of literacy is fundamental to using RPM.

English proficiency

The ability to understand and communicate using the English language verbally and in writing.

Health literacy

The ability to find, understand, and use information and services to make health decisions for themselves and others. [35]

Smartphone

Many RPM devices and applications rely on smartphones (iPhone or Android) for use.

Technical proficiency

The ability to apply required knowledge and skills to effectively operate and understand a technological service or device (e.g., the internet, smartphone, Bluetooth device).

S

SMART (Substitutable Medical Applications, Reusable Technologies) on FHIR

SMART on FHIR is the collection of tools to securely deploy apps within the EHR. FHIR is the required clinical interoperability standard for EHR certification under the 21st Century Cures Act or 2016 as well as the CMS Interoperability Final Rule issued in December 2020. SMART on FHIR is akin to the iTunes store hosting a selection of apps for your phone, only SMART platforms host galleries of FHIR APIs to facilitate healthcare interoperability.

Resources

Community Resources

The Emergency Broadband Benefit (EBB) Program can assist eligible patients with subsidized internet access.

The Lifeline program for affordable telecommunications offers access to subsidized cellphones and data plans.

2-1-1 is an example of a local social service resource locator (SSRL). SSRLs connect residents of a city, county, or region to government agencies, community-based organizations, faith-based organizations and other resources that address essential needs ranging from food and housing assistance to transportation, employment, and broadband access.

Community-level socioeconomic data, sometimes referred to as "community vital signs," can be used in tandem with patient demographics data in your EHR to provide valuable contextual information about needs of the patients you serve. These tools enable users to visualize data by Zip code across the US. Examples of databases include: the US Census American Community Survey, the Community Commons Vulnerable Populations Footprint Map, the CDC, the Robert Graham Center for Social Deprivation Index, the USDA Atlas of Rural and Small-Town America, and the Robert Wood Johnson Foundation County Health Rankings and Roadmaps.

The UCSF Center for Vulnerable Populations publishes research findings about equitable digital health solutions designed to bridge the digital divide.

RPM Devices and Applications

The HIMSS Health App Workgroup (formerly known as Xcertia™) oversees guidelines for mHealth apps that may be used for RPM.

The US Blood Pressure Validated Device Listing is a resource for a selection of more than 30 validated wireless blood pressure cuffs.

The US Food and Drug Administration's Digital Health Center of Excellence provides comprehensive information about wireless medical devices including those used for RPM.

Rock Health is a digital health venture capital firm that publishes *The Rock Weekly*, a newsletter featuring emerging developments in digital health technology.

The Duke Mobile App Gateway for Digital Health is a project of the Duke Clinical & Translational Science Institute (CTSI) focused on digital health and mobile health app research and innovation.

RPM Policy

The Center for Connected Health Policy (CCHP) publishes a biannual State Telehealth Laws and Reimbursement Policies Report. Topics may include licensure requirements, insurance requirements, stipulations about locations of providers and patients, as well as reimbursement rates for billable activities and procedures.

CCHP also maintains a database of federal telehealth laws and policies for Medicare and private payors.

The Office of the National Coordinator for Health Information Technology (ONC) maintains information about digital health technologies, policies, and regulations.

The ONC 21st Century Cures Act Final Rule requires certified EHR technologies (CERHTs) to support SMART on FHIR APIs that facilitate seamless health data exchange through enhanced interoperability. These include measures to prevent information blocking and assist patient to access their health information with no special effort using the smartphone app of their choosing.

Centers for Medicare & Medicaid Services (CMS) Interoperability Final Rule requires eligible providers and participating organizations to use certified EHR technologies (CERHTs) that support SMART on FHIR API technologies to facilitate seamless health data exchange.

Centers for Medicare and Medicaid Services Electronic Clinical Quality Measures Resource Center FHIR education page offers support with implementing this standard to accelerate data exchange. Find many open source tools to test and evaluate FHIR APIs.

RPM Data Privacy and Security

The Department of Health and Human Services offers guidance on ways to advise patients about keeping their data secure when using mHealth apps and wireless devices.

DHHS Health Industry Cybersecurity Practices: Managing Threats and Protecting Patients

HHS HIPAA and Health Apps

RPM Reimbursement

The Center for Connected Health Policy publishes a biannual State Telehealth Laws and Reimbursement Policies Report. Topics include reimbursement rates for billable RPM activities and procedures.

Each year, CMS publishes a new Medicare Physician Fee Schedule to describe billable activities as well as criteria for reimbursement for the year. Consult this publication annually for CPT codes and criteria pertaining to RPM services.

At the time of this publication, Medicare reimburses for RPM services rendered to established patients* described by CPT codes 99453, 99454, 99091, 99457, and 99458. These services may be medically necessary for acute care or to manage chronic conditions.

Patients must use RPM devices that meet the FDA's definition of a medical device to electronically collect and transmit their data.

SIDEBAR Examples of PGHD in Regulatory Reporting

As of 2020, the HRSA UDS Controlling High Blood Pressure measure will only accept blood pressure readings collected by a clinician or a remote monitoring device. This UDS measure aligns with CMS clinical quality measure CMS165.

Operational Resources

Plan-Do-Study-Act (PDSA) cycles can provide structure for pilot testing.

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