Making Remote Physiological Monitoring Work

Making RPM Work: People, Process, and Technology

Thursday, May 29, 2025

Christian Milaster · Founder & CEO

COMMUNITY HEALTH CARE ASSOCIATION of New York State

Ingenium Digital Health Advisors

Making RPM Work

People, Process, and Technology

- RPM Overview: Definitions & Overview
- RPM Strategy: Applications & Benefits
- RPM Workflows: People & Processes
- RPM Technology: Tools & Solutions
- The Case for RPM: Strategic, Business, Clinical
- RPM Launch: Getting Started

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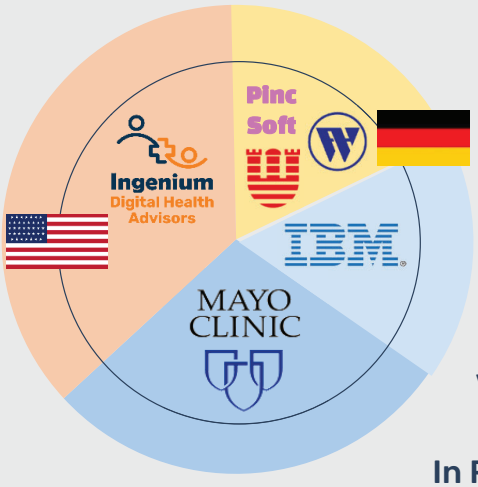
About Christian Milaster



35+ years

"Optimizing Service Delivery"

In Telehealth since 2003

Video Visit Implementations since 2008

In Rural Health, Behavioral Health since 2012

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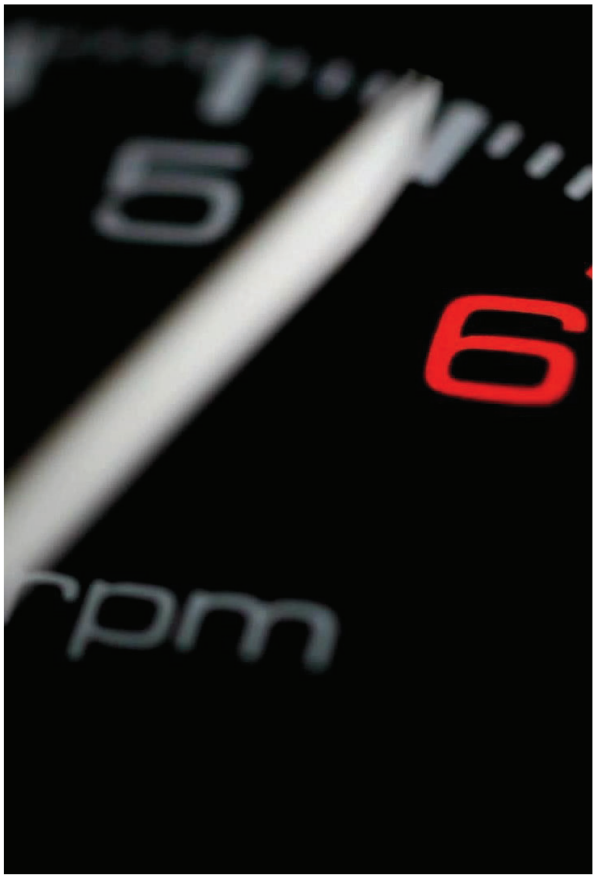
Making RPM Work

CHCANYS Webinar Series

Thursday, May 29 – People, Processes, and Technology

Thursday, June 5 – Launching, Optimizing, and Growing RPM

Thursday, June 12 – Billing, Coding, and Reimbursement,



RPM OVERVIEW

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R P M

RPM Definition

~~Revolutions per minute~~

Remote **P**atient **M**onitoring

Remote **P**hysiological **M**onitoring

The continuous or periodic collection, transmission and review of physiological data to inform care decisions.

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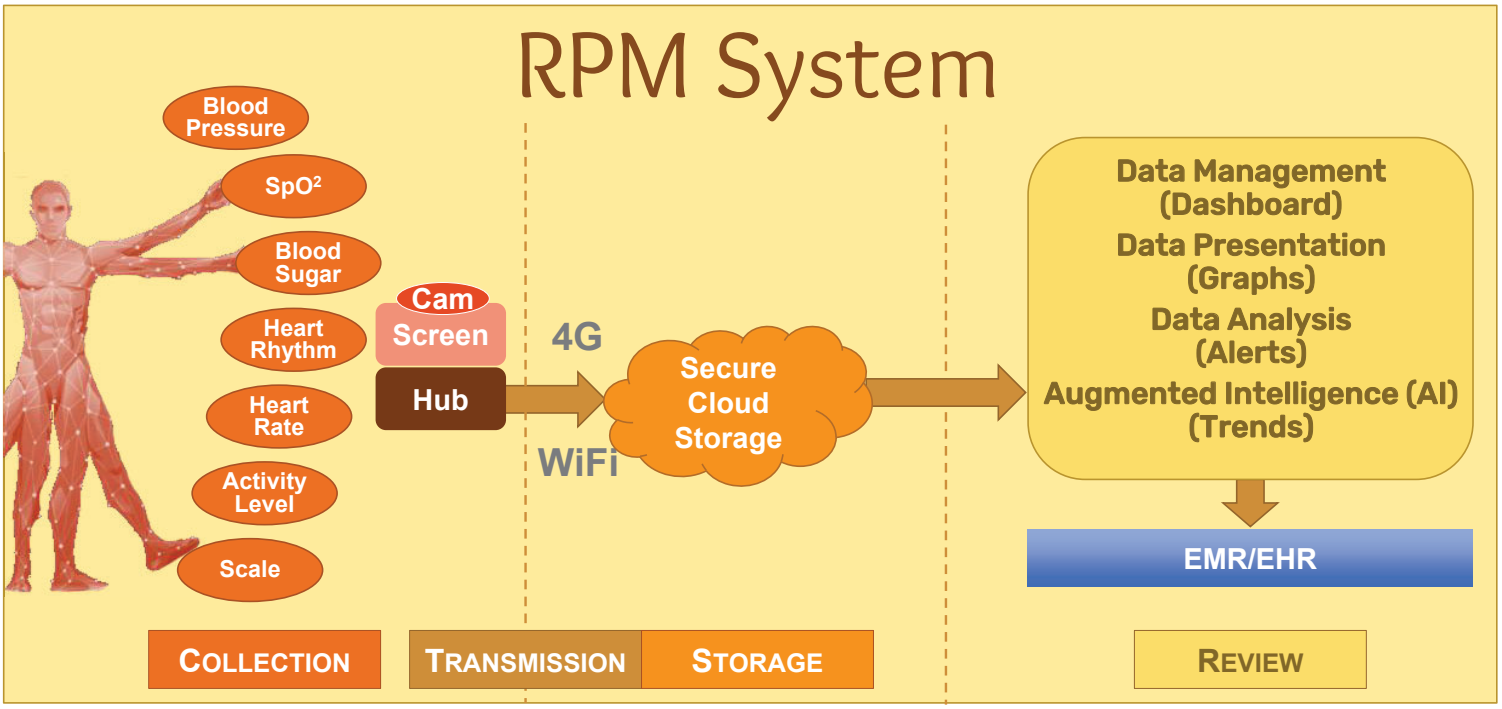

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RPM APPLICATIONS

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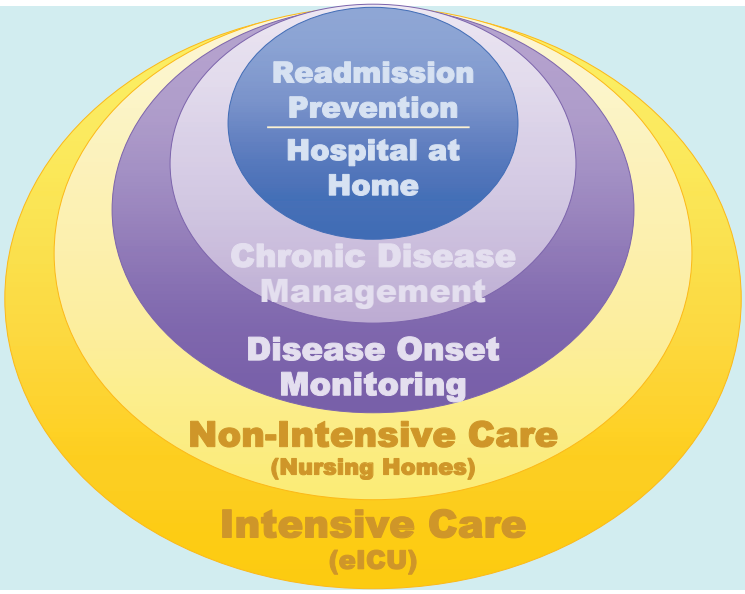
RPM Use Cases

- **RPM in a Clinical Setting**
  - Intensive Care (eICU)
  - Non-intensive Care (e.g., SNF)
- **RPM in a Home or Home-like Setting**
  - "Hospital at Home" models (early discharge)
  - Short-term readmission prevention
  - Long-term chronic disease management
  - Long-term disease onset monitoring (at risk pop.)

RPM Use Cases



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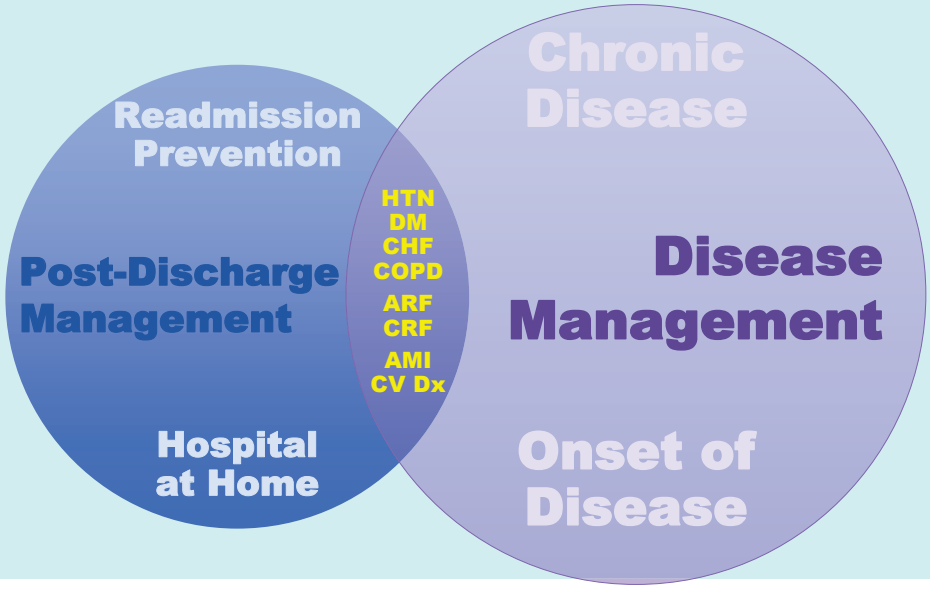
Clinical Use Cases for RPM



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RPM BENEFITS

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RPM: Clinical Benefits

Clinical Care Quality

- Daily Insights allowing adjustment of the Care Plan
- With video capabilities, opportunities for interactive visits
- Better "exam" capabilities – not "flying in the dark"
- Establishing a Baseline to detect onset of disease

Patient Engagement

- "Seeing your body" increases patients' engagement
- Opportunities for Just-in-Time Education of patients

RPM: Community Benefits

- Reduced Stress & Anxiety
  - For spouses, children, care givers
- "Functioning Members of Society"
  - As parents, spouses, care givers
  - As church members, association members
- Increased Workforce Productivity
  - Fewer sick days / quicker return to work
  - Improved alertness

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RPM: Return on Investment

- **Reduced Health Care Costs**
  - Reduced readmissions (e.g., -53%, -60%, -67%, -71%, -75%, -82%)
  - Reduced skilled nursing visits (e.g., -40%)
  - Reduced emergency room visits
  - Savings for payer (e.g., $1.9M)
- **More Engaged Patients**
  - Increased care engagement by 24 minutes/day
  - Early identification and treatment of disease exacerbation
- **Overall ROI**
  - e.g., up to $14.50 for every $1 invested (1,350% ROI)
    ($100k invested = $1.45M return)

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RPM WORKFLOW

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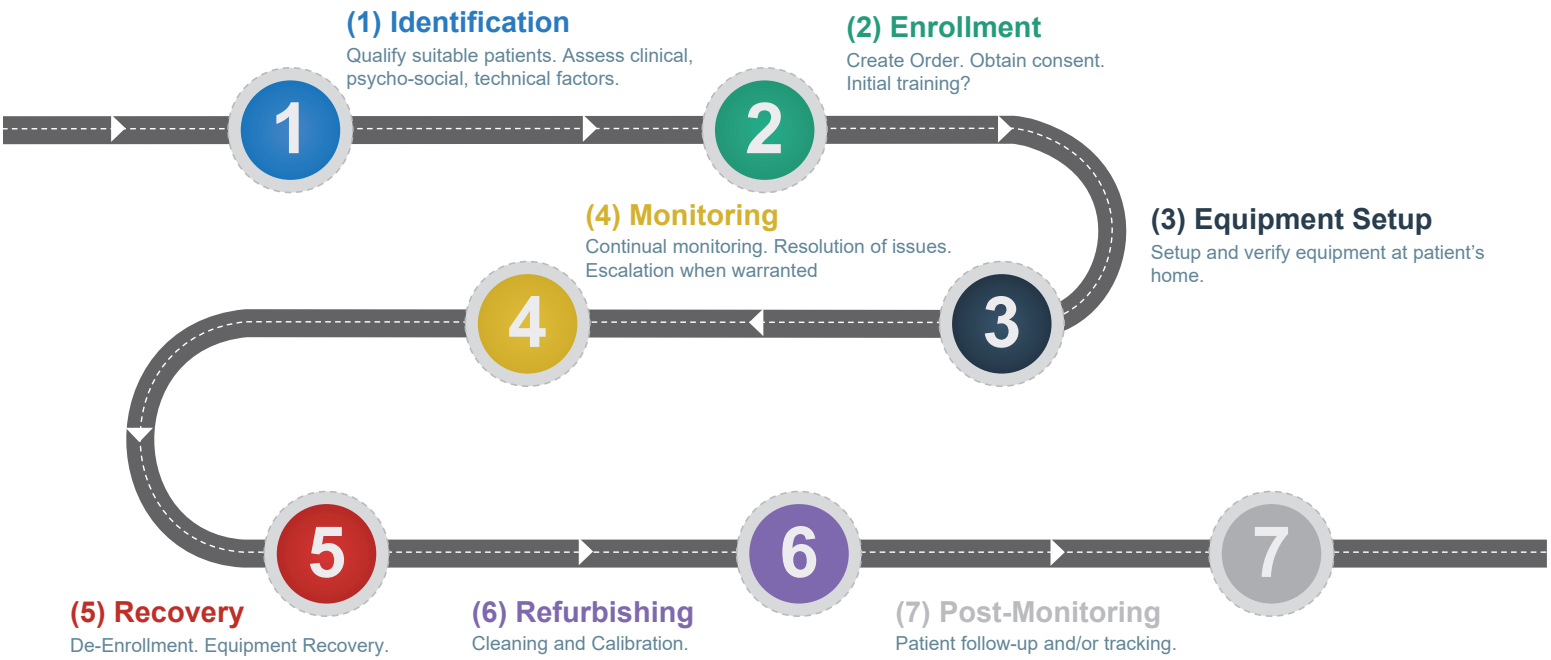
RPM Workflow Roadmap



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Sample Documents/Protocols

Patient Competency Validation Form

RPM Authorization Agreements

RPM Device Maintenance Policy

Alert Parameters

CHF Weight Gain Protocol

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Stp	Type		Name	Creator	Owner	Link	Status	Vivify?
(0) General					Lynne			
	Policy	P-1	RPM Policy		Lynne		1-identified	
	Policy	P-2	RPM Equipment Management Policy					
	Policy	P-3	RPM Equipment Handling Policy	Bonnie			1-identified	x
(1) Identification					Donna P.?			
	Workflow	W-1.1	Patient Identification Clinical Workflow	Bonnie				
	Workflow	W-1.2	Off-floor referral process	Christian				
	Workflow	W-1.3	EHR Referral					
	Form	1-F1.1	Inclusion/Exclusion Criteria Checklist	Bonnie				
	Form	1-F1.2	Referral form					
	Policy							
(2) Enrollment					Do			
	Workflow	2-W1	Patient Enrollment					
	Form	1-F1.1	Inclusion/Exclusion Criteria Checklist					
	Form	2-F2	Authorization Agreement					
(3) Equipment Setup					TB			
	Workflow	3-W1	Equipment Deployment Preparation	Bonnie/Christia	Ste			
	Workflow	3-W2	Equipment Setup & Configuration	Christian	Ste			
	Workflow	3-W3	Patient Education	Bonnie	Ste			
	Form	3-F1	Patient Competency Validation	Bonnie	Ste			
	Form	3-F2	Installation & Retrieval Form	Bonnie	Ste			
	Form	3-F3	RPM Patient Instructions		Ste			
(4) Monitoring					Aaron?			
	Workflow	4-W1	Patient Monitoring	Bonnie	Ellen			x
		4-W1.1	Alert Parameter Modification	Bonnie	Ellen			x

- 2-F1 Authorization Agreement.docx
- 2-W1 Enrollment, and Installation workflow ex.docx
- 3-F1 RPM Patient Instructions.docx
- 3-F2 Patient Competency Validation Form.docx
- 3-F3 Device Installation Checklist Form.docx
- 4-F1 Alert Parameters.docx
- 4-P1.1 High Heart Rate.docx
- 4-P1.2 Low Heart Rate.docx
- 4-P2.1 High Blood Pressure.docx
- 4-P2.2 Low Blood Pressure.docx
- 4-P3 Low SpO2.docx
- 4-P4 HF Weight Gain.docx
- 4-P5.1 High Blood Sugar.docx
- 4-P5.2 Low Blood Sugar.docx
- 5P Remote Monitoring Devices Maintenance Policy....
- 5-W1 Deinstallation and Discharge Workflow.docx

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[1] Identification

1

- **Inclusion/Exclusion Criteria**
  - Clinical, Physical, Cognitive, Environmental
- **Workflow for HTN RPM:**
  - Pre-Identification – HTN Dx, other factors?
  - Joint Decision – PCP, Pop Health/Care Coord.?
  - Referral to HTN RPM Service

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Inclusion/Exclusion Criteria

1

Clinical

Diagnoses

e.g., HTN Score
e.g., CV Risk Score

Home

Assessments

Environmental
(e.g., tidiness)

Technical
(e.g., WiFi, cellular, outlets

Patient

Evaluation

Dexterity

Cognitive Abilities

Digital Literacy

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Inclusion/Exclusion Criteria

1

Environmental/technical

- Living at home
- Working phone
- Cellular coverage / Home WiFi

Physical Dexterity

- Ability collect the data

Cognitive

- Ability to follow instructions

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[2] Enrollment
[3] Equipment Setup

2 3

Sample Workflow Steps:

- ❖ Establish patient in RPM monitoring system
- ❖ Prepare patient forms & documents
  - authorization agreement, consent form
  - patient competency assessment (“teach back”)
- ❖ Set up & test RPM kit at patient’s home
  - Checklist: contact info, record serial numbers, etc.

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Setup Variations

3

- **Set up in Clinic**
  - Demonstration & teach back in Clinic
  - Remote Test Transmission
- **Set up at Home**
  - Community Health Worker, Community Paramedics, Home Health, Case Manager?
  - Test Transmission

Don't:

- Send a self-service kit to the patient's home

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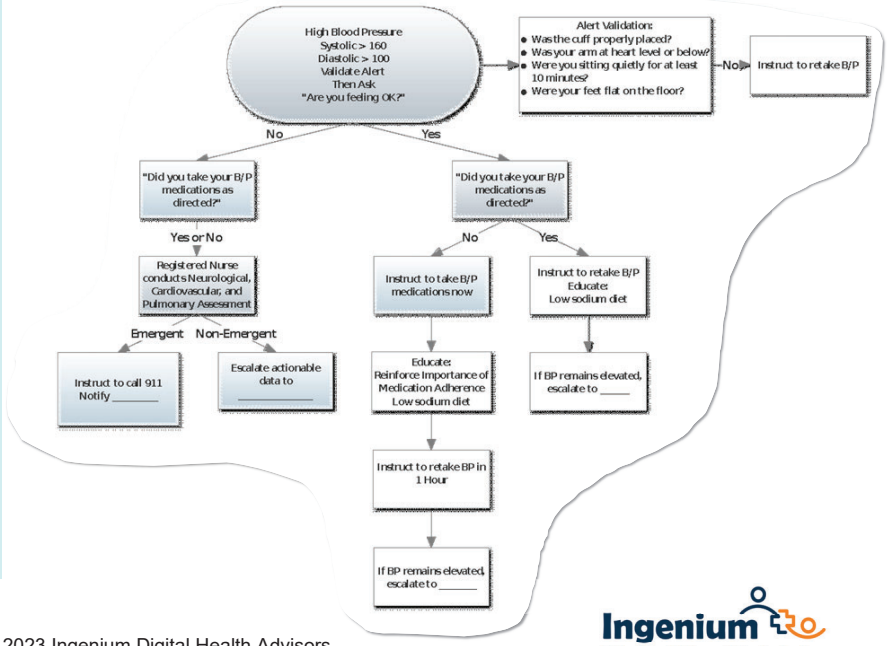
[4] Monitoring

4

- Daily Monitoring Protocol
- Workflows for Alerts
  - No data collection
  - Vital Sign too high/low
    - Alert Validation
    - Medication Protocol
    - Escalation Protocol



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[5] Recovery
[6] Refurbishing

5 6

- Recovery
  - De-Enrollment
  - Equipment Recovery
- Refurbishing
  - Cleaning
  - Calibration

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[7] Post-Monitoring

7

- Periodic Patient Follow-Up
- Post monitoring Tracking

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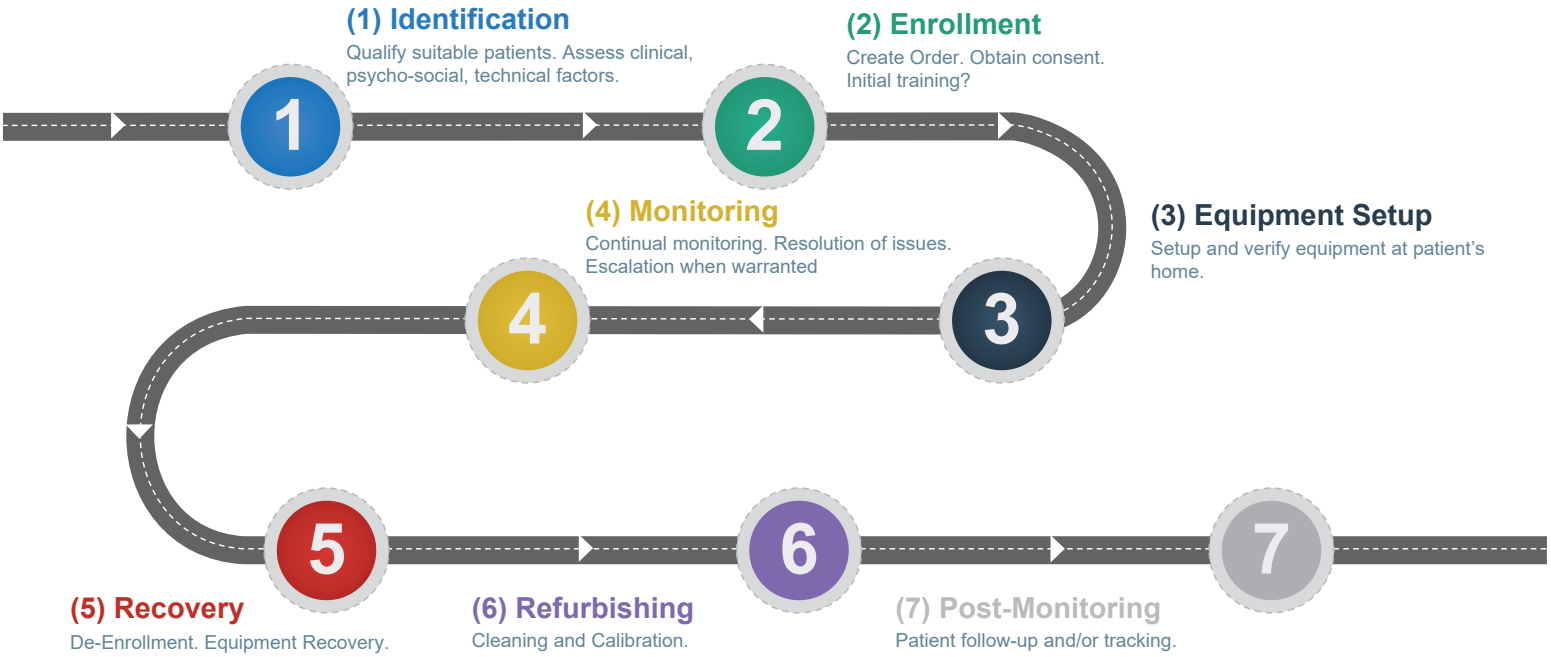
RPM Workflow Roadmap



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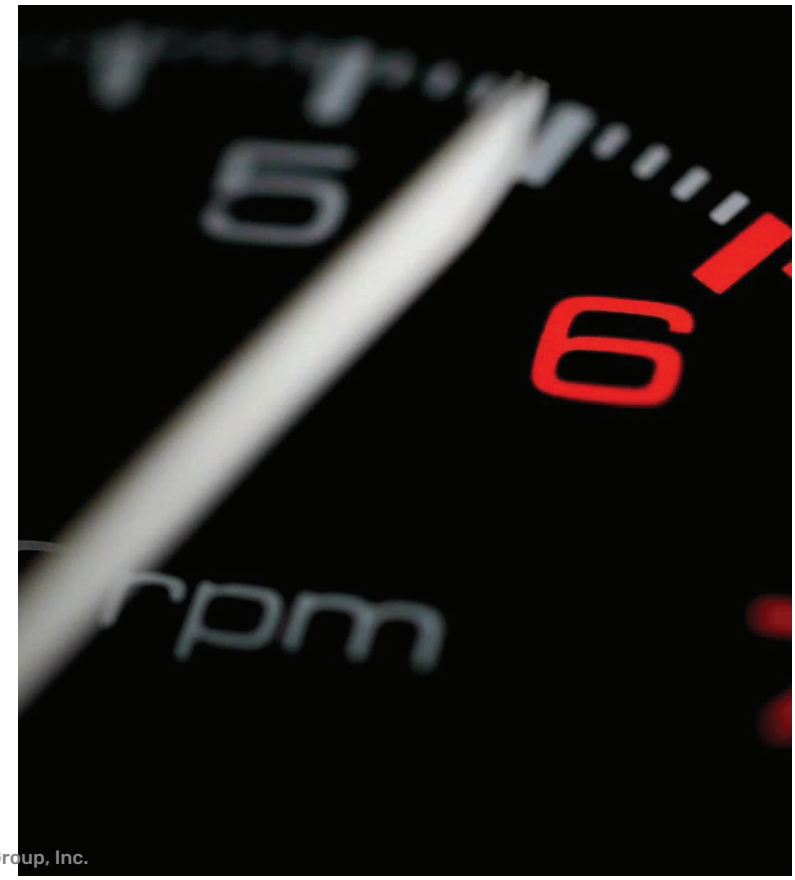
RPM Technology Options



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Vendor Options

People
- process design & training
- monitoring staff
- patient training
- delivery
- home setup
- retrieval
- cleaning

Technology: Hardware
- vital sign devices
- transmission hub

Technology: Software
- patient dashboard, tracking and analysis
- EHR integration
- patient user interface
- patient communication (messages, video)

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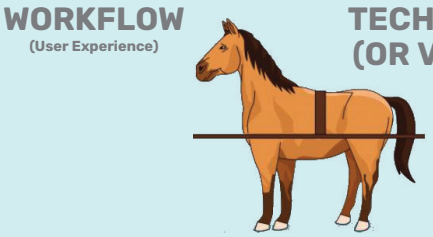
Let Workflow drive Technology!

☑ Don't put the horse behind the cart



Everybody Practices on Top of their License!
"Do only the things that only they can do."

☑ First, design your clinical, operational, and financial workflows

☑ Then select the technology or service that best fits your needs

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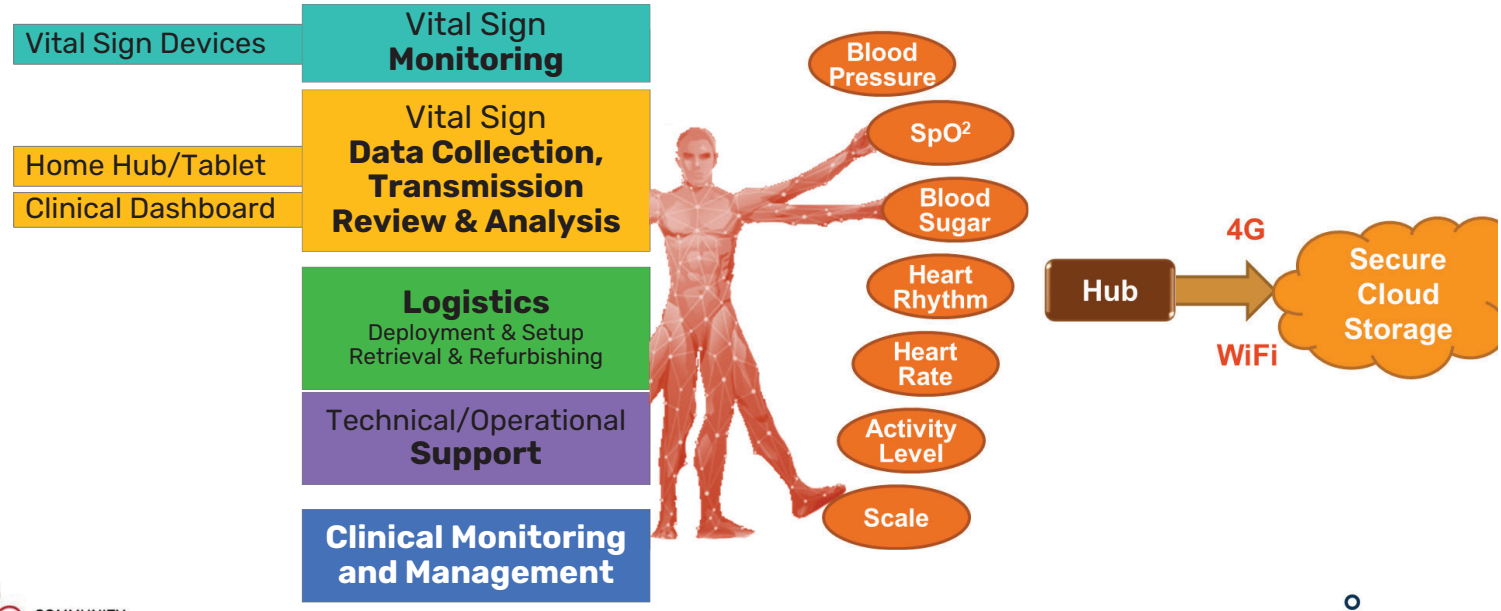
RPM System elements



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We'd Like Your Input!

…for an "RPM Optimization Toolkit"

Poll

1) What is the status of your RPM Program?

(select one)

- We never launched, we have no equipment
- We never launched, but we do have equipment
- We launched but it is no longer used
- We launched and utilization is very low
- We launched, utilization is good

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Poll

2) Which areas of RPM do you find most challenging?

(select all that apply)

- Identification of Patients
- Enrollment/Setup of Patients
- Patient Engagement/Compliance
- Technology - Support & Troubleshooting
- Technology - Selecting/Using Monitoring Devices
- Technology - Selecting/Using RPM Dashboard
- Graduating Patients
- Financial Sustainability
- Clinical Efficacy
- Strategic Relevance

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Please respond to the Poll

1) What is the status of your RPM Program?

2) Which areas of RPM do you find most challenging?

In the Chat, please add any additional comments or specific challenges that don't fit into these categories.

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Vital Sign **Monitoring**

Vital Sign Monitors

- Connectivity Options
  - Direct – 3G/4G, "Internet of Things" (IOT)
  - Bluetooth – "auto"-paired to hub
  - Bluetooth – manually paired to smartphone

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Vital Sign Monitors

Vital Sign **Monitoring**

Weight Scale (250 kg)	Body Composition Scale (180 kg)	BP Monitor
2-in-1 Monitor (BP & BG)	**Multimeter** (BG, Uric Acid, Cholesterol, Beta-Ketone)	**ECG**

Weight Scale	BG Monitor	BP Monitor
Pulse Oximeter	**Thermometer**	**Gateway**

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Bluetooth vs. Cellular Vital Sign Devices

Vital Sign **Monitoring**

Bluetooth

- initially cheaper
- connects to Hub
- hub uploads via Internet or Cellular
- connection problems are common

Cellular

- more expensive
- data plan charges
- no hassle uploads w/ cellular coverage
- could result in greatly reduced support cost

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A FEW
Vital Sign Monitor Vendors

Vital Sign **Monitoring**

A&D Medical

Medisanté

ChoiceMMed

Biofourmis

iHealth

WelchAllyn

OMRON

Sensing tomorrow™

Withings

Inspire health

HealthSnap

medisana

NONIN

glooko

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RPM Home Kits

Vital Sign **Monitoring**

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Portable Exam Cases

Vital Sign
Monitoring

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RPM Monitoring Platform Features

Vital Sign
Data Collection, Transmission Review & Analysis

- ❖ Patient Dashboard w/ Status
- ❖ Data Presentation, Data Review
- ❖ Care Management Time Tracking
- ❖ Clinical Pathways
- ❖ Inventory Management
- ❖ Patient Education
- ❖ Predictive Analytics / “AI”
- ❖ etc.

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Some RPM/CCM Vendors

Vital Sign
Data Collection, Transmission Review & Analysis

vivifyhealth
optimize.health
ONETOUCH
CareSimple
Life365.health
BLUESTAR TELEHEALTH
HRS Health Recovery Solutions
welldoc
biobeat
Eko
physIQ
CADENCE
mmHg
Reconnect 4 Health
accuhealth.
VALIDIC
caregility Connecting Care Everywhere
ONE HEALTHCARE SOLUTION™
CLOUD DX
ViTelNet SCALABLE CONNECTED CARE
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Athelas
wellbox™
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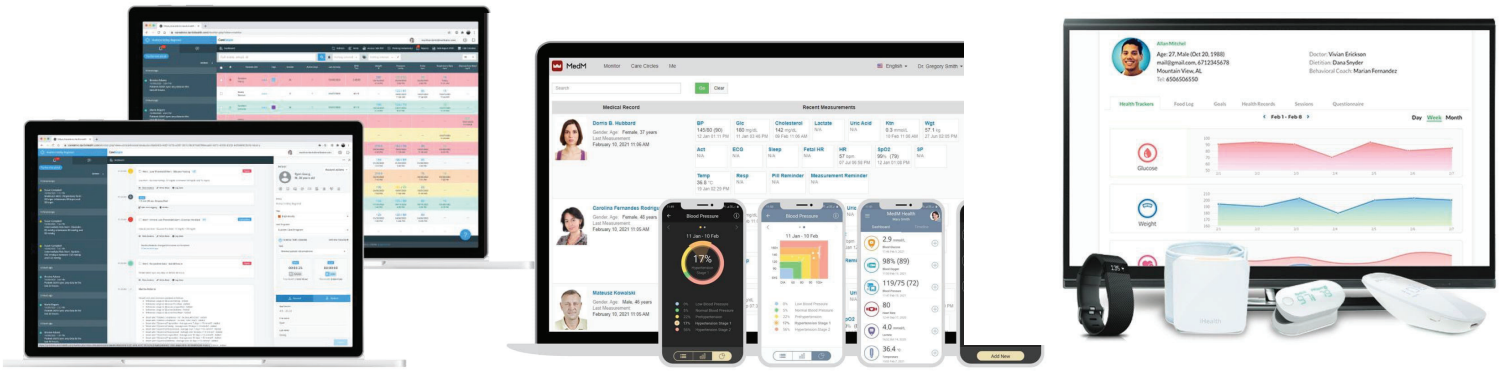
Clinician Dashboards

Vital Sign
Data Collection, Transmission Review & Analysis



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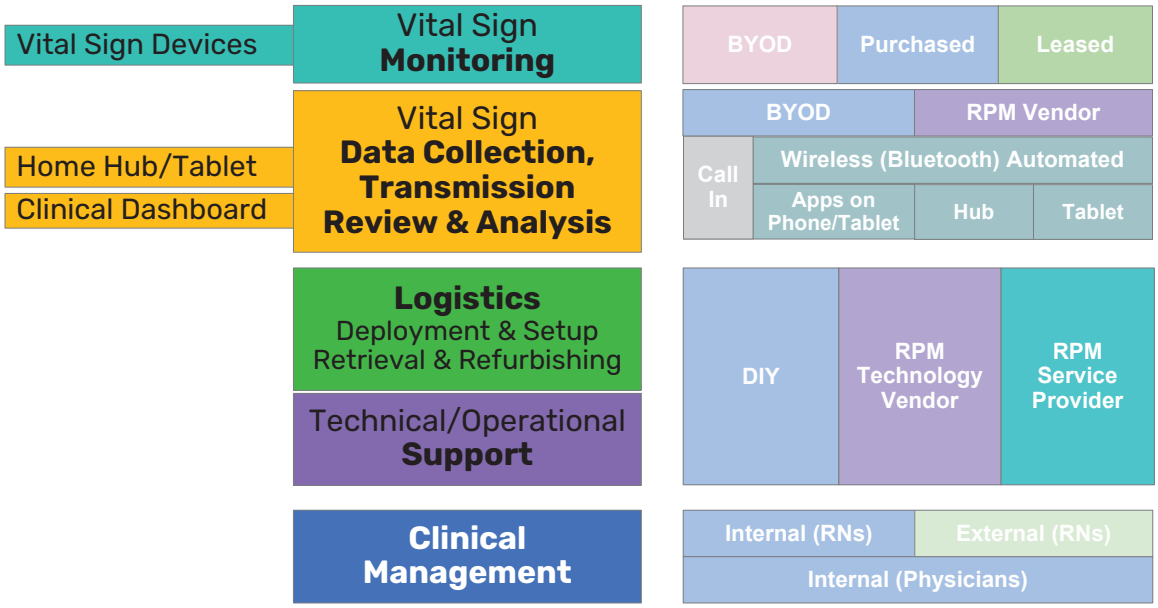
RPM System Options



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RPM Monitoring Staff Options

	Clinical Activities	Logistics
Option A	Your RNs	Your Staff
Option B	Your RNs	Outsourced
Option C	Outsourced	
Option D	Your RN/Staff + Outsourced Backup	

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Monitoring Nurse Considerations

- 1 FTE for approx. 150-200 patients (but 0.2 FTE for ~25 pts.)
- Various vendors to outsource your monitoring staff – escalating care to provider only when needed
  - Many vendors are tied to their own RPM solution *(e.g., Cadence Health, Optimize Health, etc.)*
  - Some vendors are technology-agnostic *(e.g., Reconnect4Health)*

PRO TIP
Prior to outsourcing, launch your program in house, but with outside expertise.

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Making the Case

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STRATEGIC CASE

Strategic Case

Defines the alignment with "external" strategic objectives

- Organizational Strategy
- Telehealth / Digital Health Strategy
- Grant Goals (e.g., HTN Management)

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STRATEGIC CASE for RPM

Strategic Case

How does your RPM Service align with your organization's Strategic Objectives?

- Services – e.g., expansion
- Quality – e.g., pt. outcomes
- People – e.g., pt. satisfaction
- Finance – e.g., revenue
- Growth – e.g., expansion
- Community – e.g., stewards of health

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BUSINESS CASE

Business Case

Describes the business model:

- What is the **value** of delivering the service?
  - Financial – but also Strategic & Clinical
  - What is the revenue?
- What is the **cost** of delivering the service?
  - Hardware, Software Infrastructure
  - Staff, Legal, Advisory/Consultative
  - Launch vs. Operations
  - Capital Expenses vs. Operating Expenses

What is the **Return on Investment (ROI)?**

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BUSINESS CASE for RPM

Business Case

Financial Value

- RPM Revenue
- Incremental Visits Revenue
- Any Penalties avoided or Shared Savings?
- Any indirect savings (avoided readmissions)

Non-Financial Value

- Patient Outcomes
- Patient Loyalty
- Other?

Cost

- Monitoring Equipment (pp)
- Monitoring Software Licensing Fee (pp/pm)
- Operational and Clinical Support Staff Time (pp/pm)

Return on Investment (ROI): Calculate for 3 years.

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CLINICAL CASE

Clinical Case

Looks at the solution through a Clinical Lens
(because clinical acceptance is key to success!)

- What is the **clinical efficacy** of the service?
  - Is this validated by research?
  - How will this improve health outcomes for patients?
  - How can this help with clinical acceptance?
- What is the clinical acceptance of the service?
  - How will this help clinicians to do their job better?

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The Permanente Journal

Benefits and Challenges of Remote Patient Monitoring as Perceived by Health Care Practitioners: A Systematic Review (Sep 2023)

Conclusion: Health care practitioners generally believe that RPM is feasible for application. Additionally, there is a consensus that telemonitoring strategies will become increasingly relevant. However, there are still drawbacks to the technology that need to be considered.

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npj | digital medicine

A systematic review of the impacts of remote patient monitoring (RPM) interventions on safety, adherence, quality-of-life and cost-related outcomes (July 2024)

Overall, RPM interventions have **positively impacted patient safety**, evidenced by **reduced major complications and adverse events**.

Outcomes on **adherence** are rather encouraging as well, with RPM interventions showing an overall **upward trend in patient adherence to medication and lifestyle prescription** as well as the odds of self-monitoring.

For **cost-related outcomes,** reduced risks of hospital admission/readmission, length of stay, number of subsequent follow-ups and non-hospitalisation costs are clearly observed.“

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CLINICAL CASE for RPM

Clinical Case

Patient Outcomes

- Better managed Chronic Diseases Hypertension, Diabetes, etc.
- Fewer ER visits, hospitalizations
- Fewer Readmissions(
- Increased Patient Activation – more visits, prescriptions filled

Research Studies

- RPM is proven to “work”
- In my observation outcomes are greatly improved
  - when clinicians actively “enroll” the patient and remain engaged
  - when patients are actively engaged in the care

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