



# Remote Physiologic Monitoring: Implementation to Expand Care Outside of Office Visits

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## Disclosures

- None

## Objectives



Defining Remote Physiologic Monitoring (RPM)



RPM Use Case – Why Now?



Remote Physiologic Monitoring Implementation



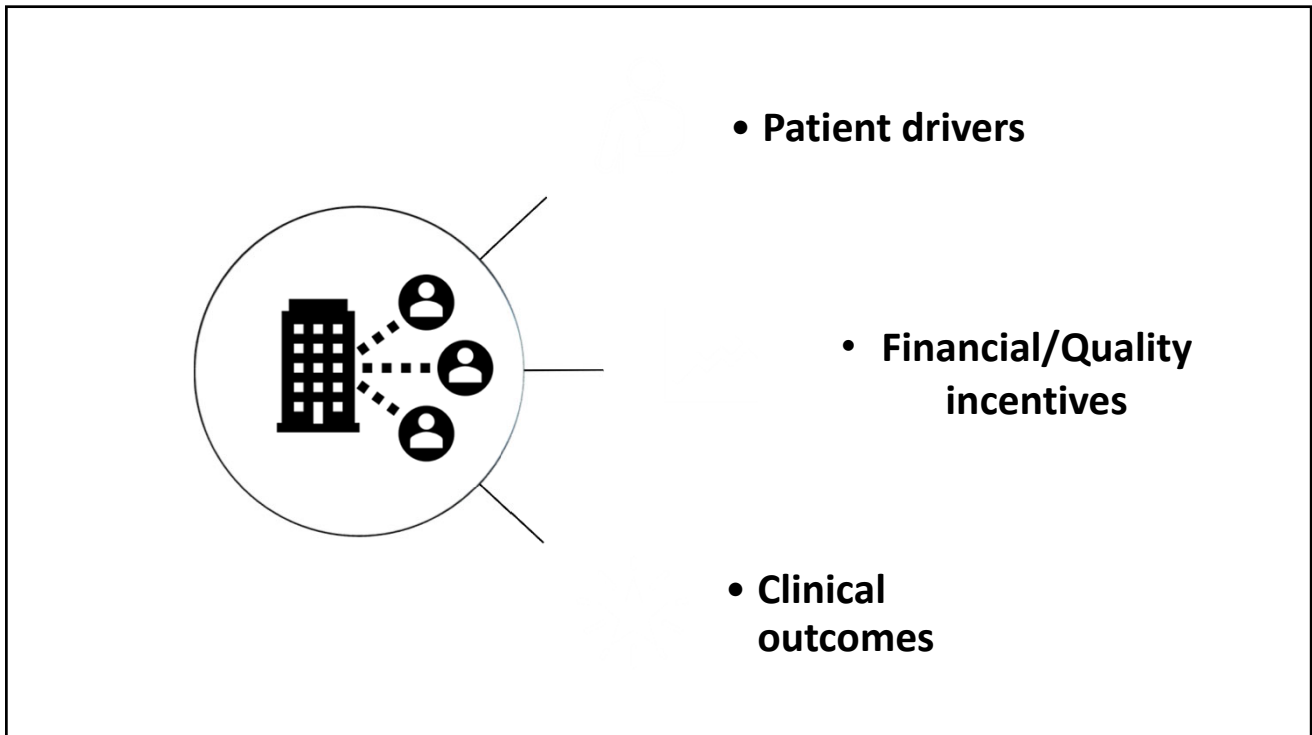
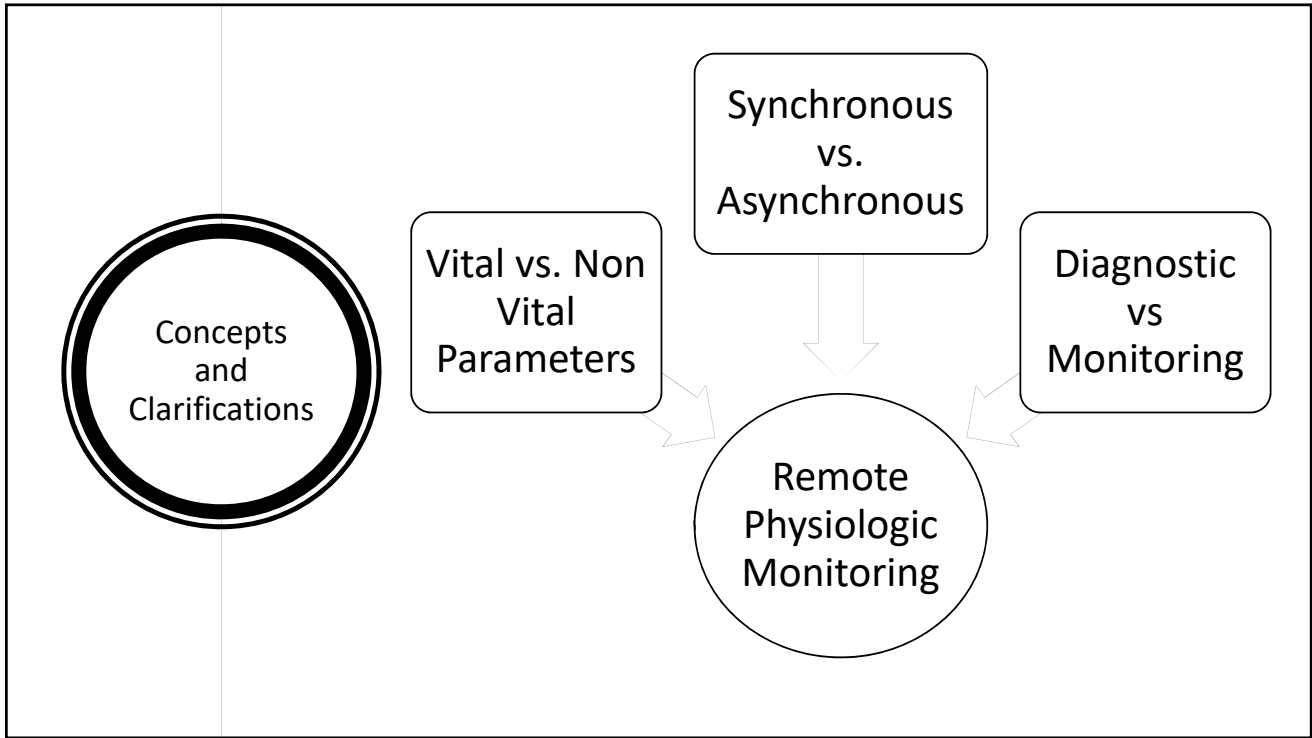
Challenges and lessons learned

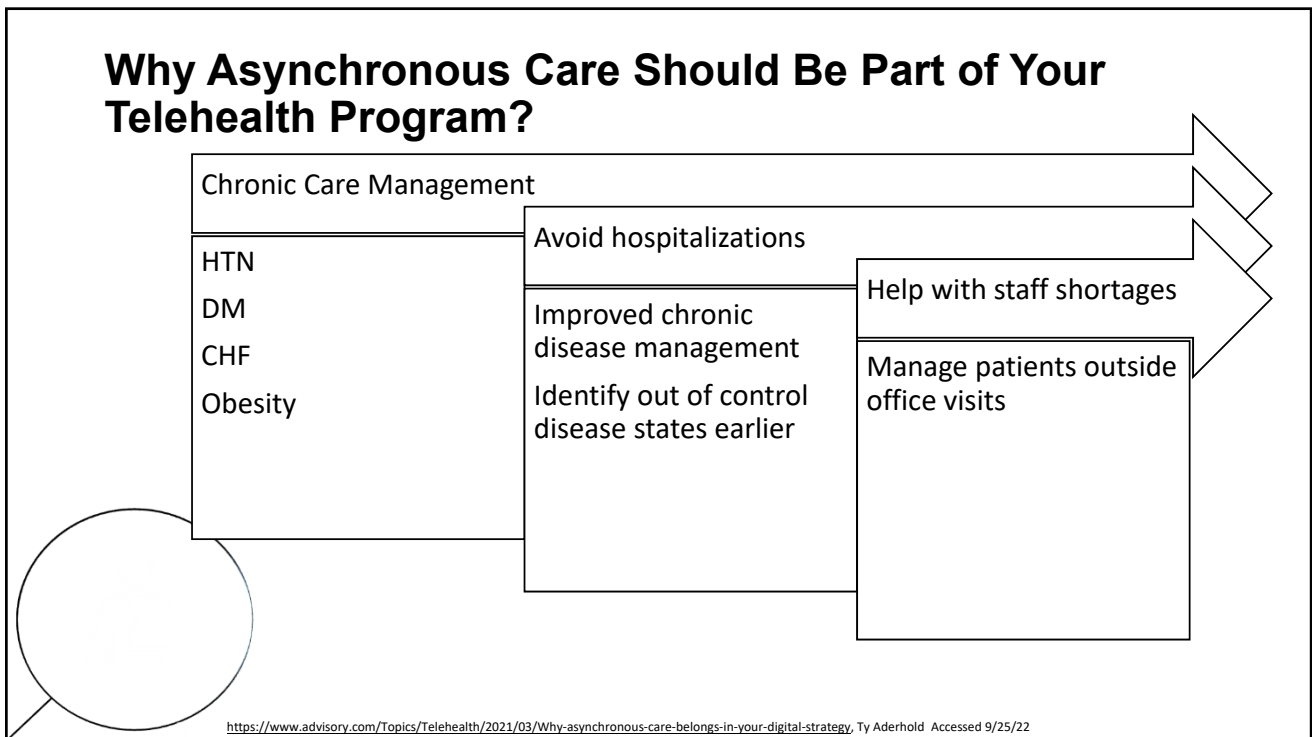
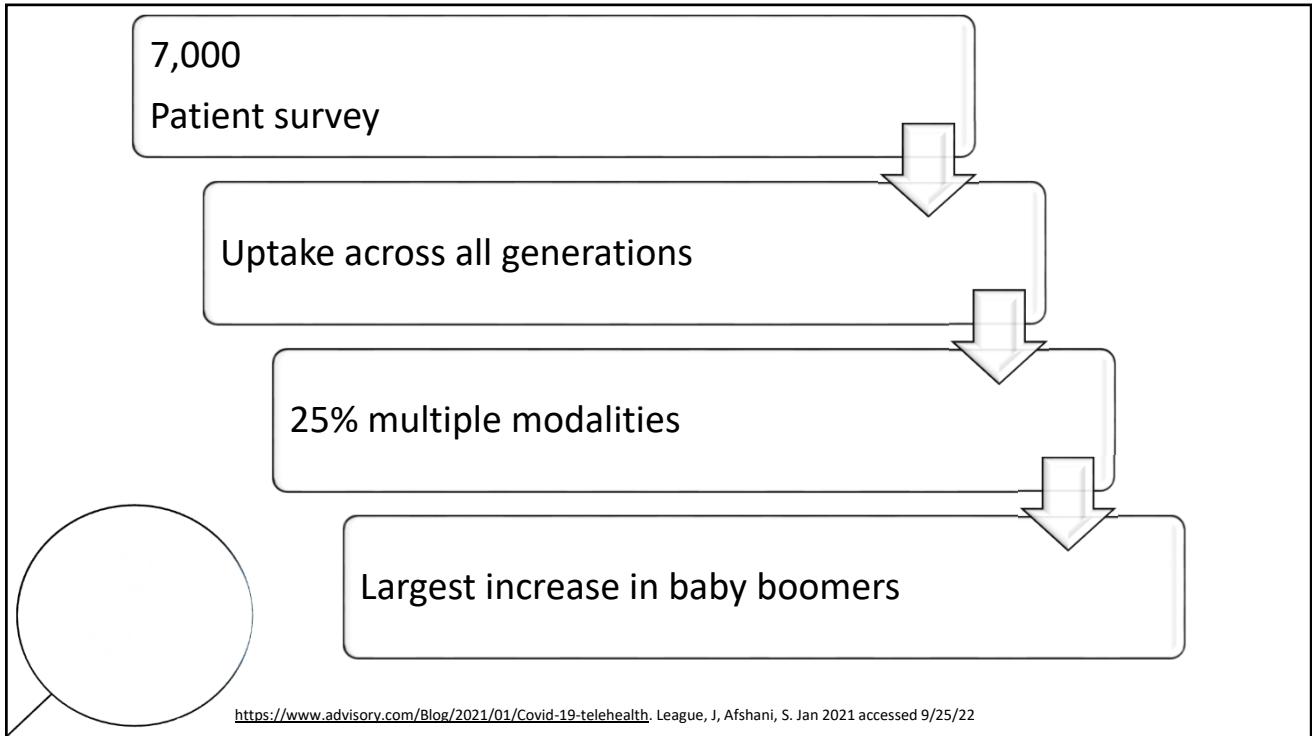


Clinical outcomes to date

## Remote Physiologic Monitoring

- Use of medical device to collect and analyze patient physiologic data
  - Medical device as defined by the FDA
  - Must digitally and automatically upload patient data
  - Must be medically necessary
- Used to develop and manage a treatment plan
- Can be used for chronic or acute conditions





**Value Based Contracting**

- Shared Savings/Total Cost of Care
- Pay for Performance
- Care Management Fees

**Themed Section: Remote Patient Monitoring**

**Economic Evaluations of Remote Patient Monitoring for Chronic Disease: A Systematic Review**

Keshia R. De Guzman, MEpi, BPharm, Centaine L. Snoswell, PhD, MPH, BPharm, Monica L. Taylor, MPH, BSc, Leonard C. Gray, PhD, MMed, MBBS, Liam J. Caffery, PhD, BInfoTech

VALUE HEALTH. 2022; 25(6):897-913

**Remote Physiologic Monitoring:  
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## RPM CPT Codes

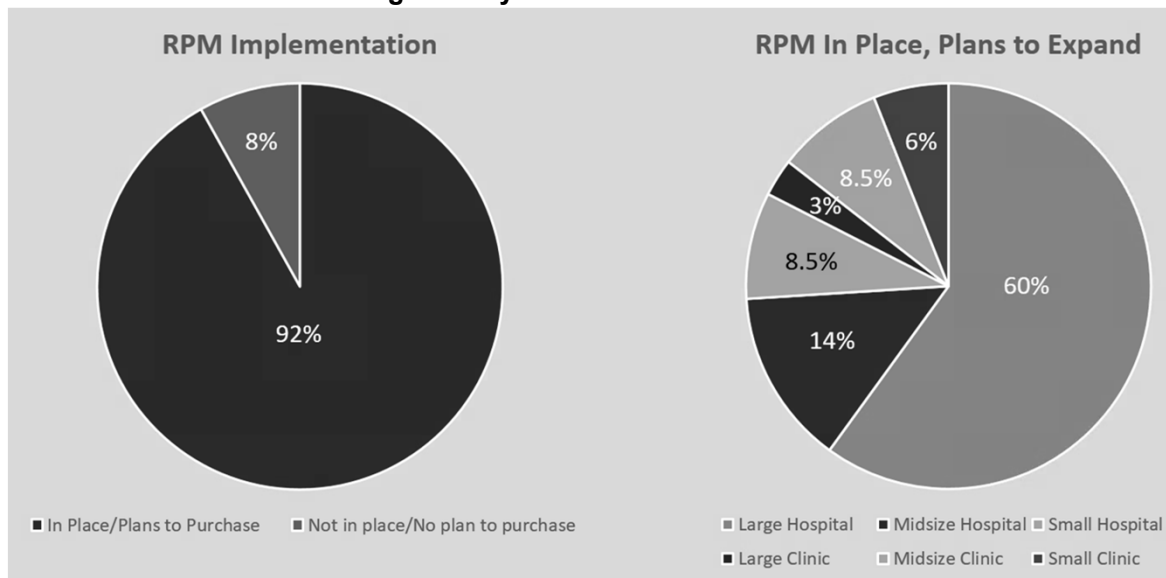
CPT Code	Description	Reimbursement
99453	Initial set up and patient education on use of equipment <sup>A,B</sup>	\$15-30 (once)
99454	Supply of device, collection, transmission, and report/summary services to the clinician <sup>A</sup>	\$50-99 (monthly) Average ~\$66
99457	Remote monitoring services by clinical staff, physician, QHCP First 20 minutes	\$40-80 (monthly)
99458	Remote monitoring services by clinical staff, physician, QHCP Each additional 20 minutes	\$40-65 (monthly)
99091	Collection and interpretation of physiologic data digitally stored and/or transmitted to physician or QHCP requiring a minimum of 30 minutes of time	TBD

A: Monitoring must occur ≥ 16 days of a 30-day period  
B: Billed only once per episode of care

QHCP: Qualified health care professional

## Current RPM Landscape

KLAS Performance Insight – July 2022



KLAS Performance Insight. RPM. July 2022

## Potential Benefits of Remote Physiologic Monitoring

- Detect clinical decompensation for intervention
- Enhance the provider-patient relationship
- Improve patient experience/satisfaction
- Facilitate ongoing connection with patients
- Improve patient education for self-management
- Improve quality performance and value-based payment models
- Generate revenue to sustain care team

Krukltis R, et al. Prim Care. 2022; 49(4): 543-55.

## Getting Started with Remote Patient Monitoring





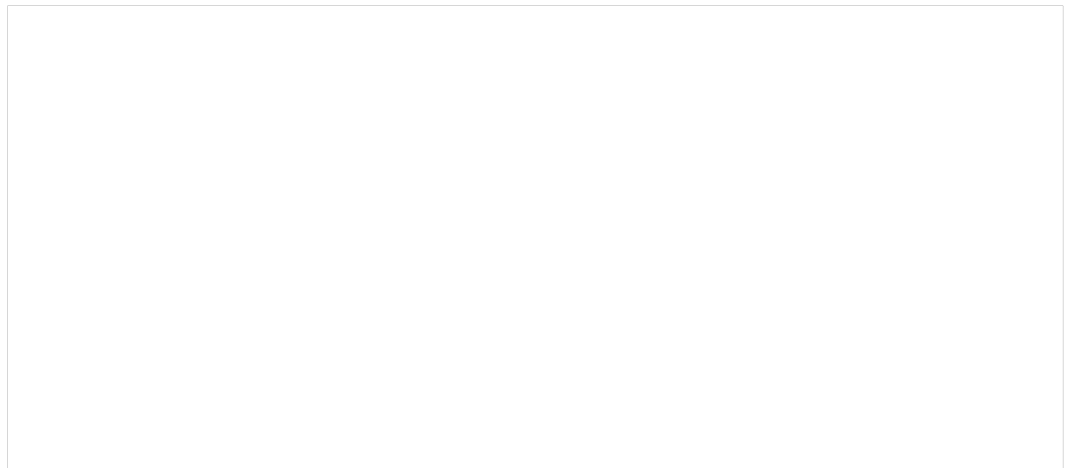
## RPM Implementation Team

- Clinical representatives (physician, care team members)
- IT and information security representatives
- Administrative representatives (practice manager, administrator)
- Project manager
- C-suite executives/practice owners
- Patient advisory board member
- Care team managers/leaders

## RPM Implementation



**IDENTIFY  
PURPOSE/  
NEED**





## Identify Need/Purpose

- Ways to Identify the Need
  - Solicit feedback from frontline clinicians
  - Review performance on quality metrics
  - Identify opportunities based on patient feedback/satisfaction
- Align with the quintuple aim
- Prioritize use cases that align with strategic goals
- Avoid flashy new technology that doesn't align with needs
- Consider prioritization in large organizations

AMA Remote Patient Monitoring Playbook. American Medical Association 2022.



## RPM Devices

- Any medical device as deemed by FDA
- Common device types
  - Blood pressure monitors
  - Glucose monitors
  - Pulse oximeters
  - Scales
  - Peak flow meters
  - Thermometers
  - Sleep Mats

## RPM Device Considerations



Clinical accuracy



Security and HIPAA compliance



Ease of use



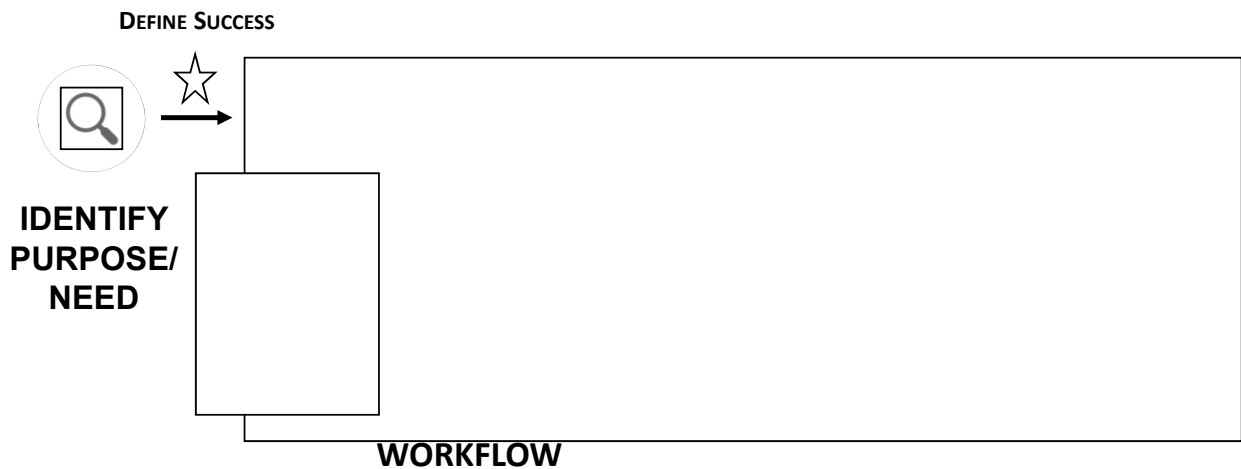
Cost



Stock and availability

Krukltis R, et al. Prim Care. 2022; 49(4): 543-55.

## RPM Implementation



## Defining Success

- Clinical outcomes, quality and safety
  - Utilization metrics
  - Access to Care
  - Patient/Caregiver experience
  - Clinician Experience
  - Financial and operational impact
- Establishes a common goal
  - Brings objectivity to measuring outcomes
  - Helps to identify need for/right vendor

AMA Remote Patient Monitoring Playbook. American Medical Association 2022.

## RPM Implementation



DE  
WORKFLOW

## Internal Management vs Outsourcing to Vendors

### Internal vs. Outsourcing

- Consider internal resources
- Consider goals
- Potential areas to consider
  - Device deployment and education
  - Monitoring/validating clinical data
  - Software for alerts/decision support
  - Patient interventions
  - Device return

### Vendors

- Emerging/evolving market
- Many vendors with diverse options
  - Broad, focused or middleware solutions
  - Fully vendor monitored with alert escalation vs. internal monitoring
  - Vendor or internal IT support
  - Variable pricing options
  - Variable reporting capabilities

Krukltis R, et al. Prim Care. 2022; 49(4): 543-55.

## Vendor Considerations

- Business model
- IT sophistication
- Usability
- Clinical validation
- HIPAA compliance/security
- Customer service
- Ask for case studies/referrals
- Ability to scale

AMA Remote Patient Monitoring Playbook. American Medical Association 2022.

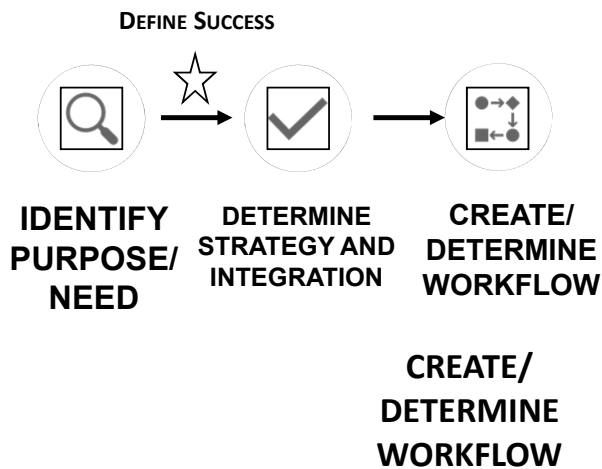
## Key Strategy and Integration Factors for all Models

- IT Integration Type
  - Blue-tooth
  - Cellular/mobile network devices
- Provider experience
- Care team availability
- Data visualization
- Patient prioritization



Kruklitis R, et al. Prim Care. 2022; 49(4): 543-55.

## RPM Implementation



## Care Teams

- Must use team to monitor and respond to data
  - Ensure care team members work at top of license
  - Train staff from the perspective of care team and patient
- Pharmacists are perfectly positioned to manage chronic disease
  - Collaborative practice agreements
- Consider other team members to manage adherence with program

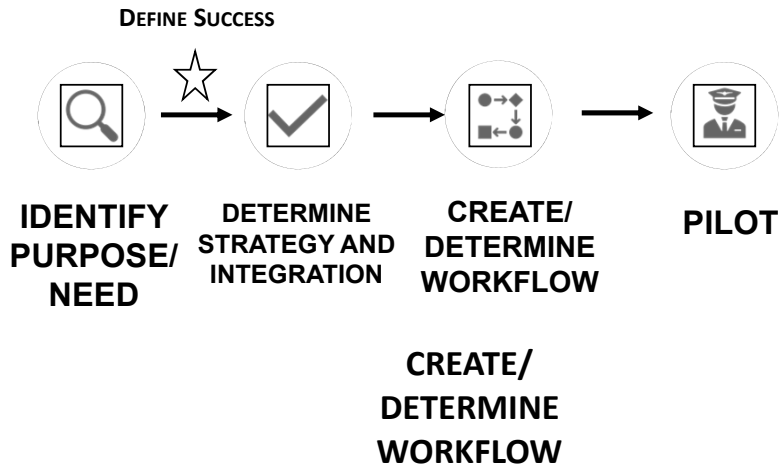


## Create Management Workflows



Patient Enrollment	Target population
	Consent
	Education
	Device deployment and trouble shooting
Patient engagement and management	Patient engagement/adherence
	Data monitoring/critical values
	Intervention to improve outcomes
	Patient discharge and device return
Administration	Automated billing workflow
	Device management

# RPM Implementation



## Pilot: RPM Kickstart Strategies



RPM CPT Code Billing

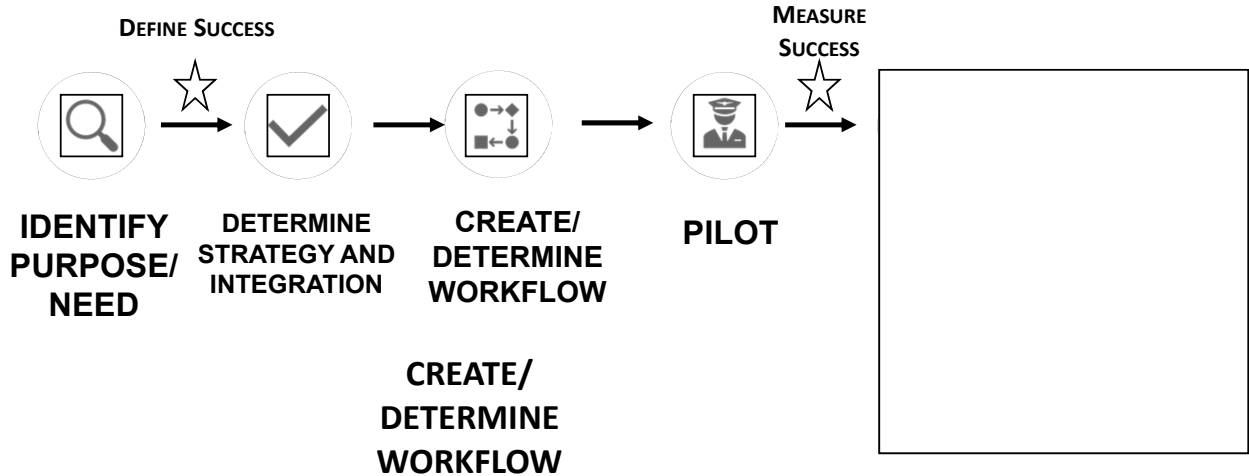


Downstream outcomes



Grants

# RPM Implementation



## Start with Defining Success Don't Forget to Measure Success

### Health outcomes

- Improve health outcomes and quality of life
- Improve population health efforts
- Reduce complications, mortality, or hospital/ED utilization

### Patient Experience

- Patient satisfaction
- Patient engagement and loyalty to organization
- Access to care

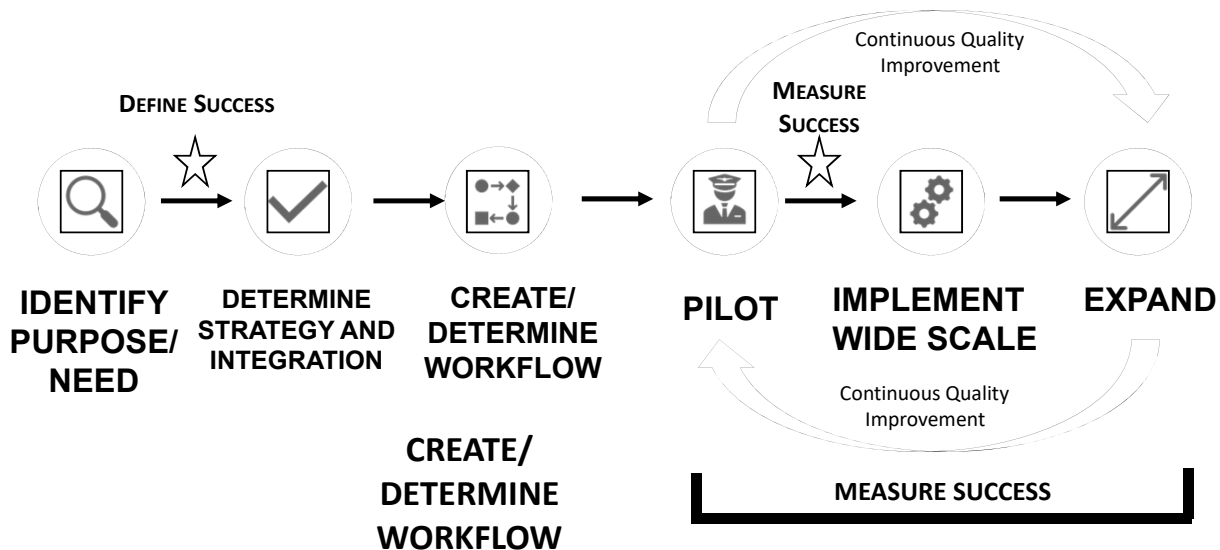
### Reduce Cost

- Reduce readmissions or non-reimbursable ED visits
- Reduce visit cancellations
- Reduce length of stay

### Provider Satisfaction



## RPM Implementation

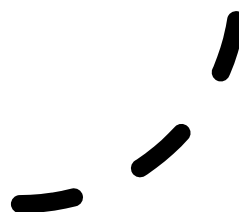


### Lessons Learned: Patient Experience

- Patient ease of use is imperative
- Password recall can be time consuming
- Seamless connectivity increases efficiency
  - Cellularly enable devices may improve connectivity
- Scheduled telephone visits can improve ability to reach patient
- Patient engagement is key to success

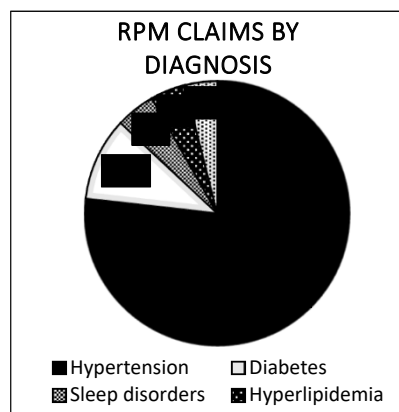
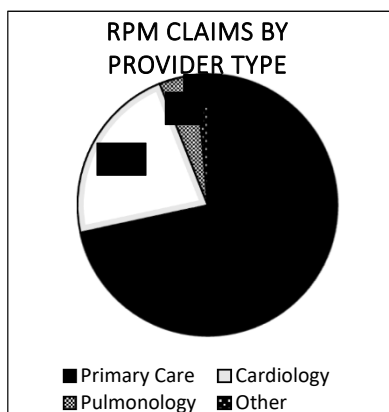
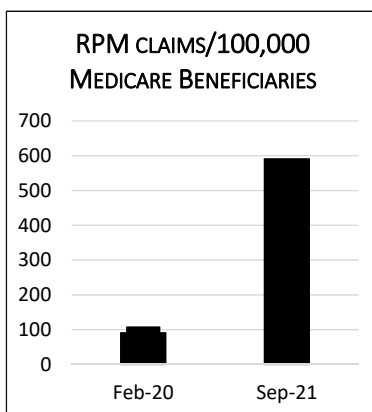
## Lessons Learned: Provider Experience

- Electronic health record integration is key
- Easily digestible, actionable data visualization required
- Sophisticated prioritization of patients is ideal
- Tracking time and billing CPT codes should be automated



## Trends in Remote Patient Monitoring

March 2020 – September 2021



Navathe AS, et al. JAMA Int Med 2022. 182(9); 1005-8.

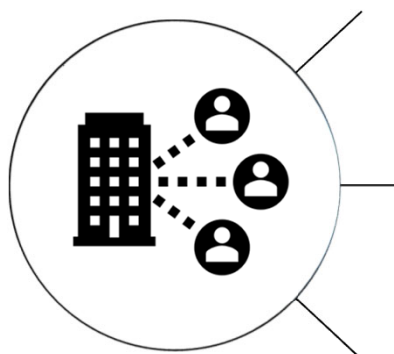


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- **Patient drivers**
- **Financial/Quality incentives**
- **Clinical outcomes**

**Review**


**Evidence and Recommendations on the Use of Telemedicine for the Management of Arterial Hypertension**

**An International Expert Position Paper**

Stefano Omboni<sup>©</sup>, Richard J. McManus, Hayden B. Bosworth, Lucy C. Chappell<sup>©</sup>, Beverly B. Green, Kazuomi Kario<sup>©</sup>, Alexander G. Logan, David J. Magid, Brian Mckinstry, Karen L. Margolis, Gianfranco Parati<sup>©</sup>, Bonnie J. Wakefield

**Hypertension**  
 Volume 76, Issue 5, November 2020; Pages 1368-1383  
<https://doi.org/10.1161/HYPERTENSIONAHA.120.15873>

Study	Size	Length	Intervention	Outcome
<i>TASMINH2</i>	480 pts, 24 practices 2014	12 mos	Self monitoring combined with telemonitoring and self titration of bp meds according to predefined protocol	Self monitoring with telemonitoring more effective than usual care for bp control at 12 months
<i>TASMINH4</i>	1182 pts, 142 practices 2018	12 mos	Self monitoring with or without telemonitoring vs. usual care	Lower blood pressure at 12 months with self monitoring with or without self monitoring, but quicker bp control with telemonitoring at 6 months. Both cost effective.
<i>HITS</i>	401 pts, 20 practices 2013	6 mos	BP measure with transmission to a website with automated feedback to patient by text/email	Improved bp control, but more expensive than usual care
<i>TELEBP CARE</i>	391 pts, 12 practices 2009	6 mos	Telemonitoring with case management by general practitioner	Bp control improved, less frequent change to meds, improved quality of life, decreased costs
<i>Canadian Study</i>	223 patients, 8 practices 2009	12 mos	Nurse led BP telemonitoring under physician supervision.	Lower blood pressure with more in target blood pressure, increased med adjustments and better adherence



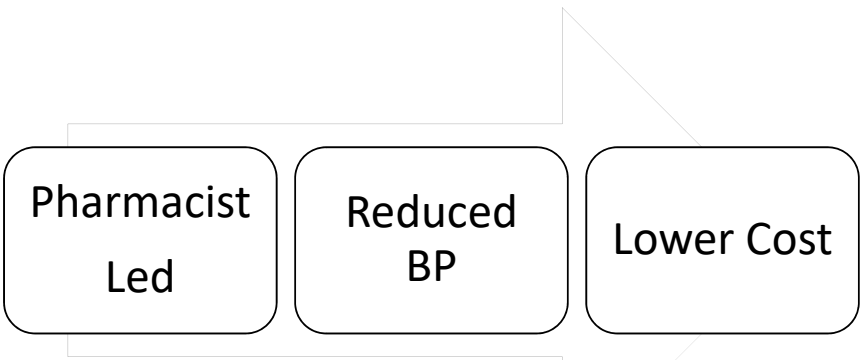
**Review**


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# International Consensus on Use of Continuous Glucose Monitoring

*Diabetes Care* 2017;40:1631–1640 | <https://doi.org/10.2337/dc17-1600>

Thomas Danne,<sup>1</sup> Revital Nimri,<sup>2</sup> Tadej Battelino,<sup>3</sup> Richard M. Bergenstal,<sup>4</sup> Kelly L. Close,<sup>5</sup> J. Hans DeVries,<sup>6</sup> Satish Garg,<sup>7</sup> Lutz Heinemann,<sup>8</sup> Irl Hirsch,<sup>9</sup> Stephanie A. Amiel,<sup>10</sup> Roy Beck,<sup>11</sup> Emanuele Bosi,<sup>12</sup> Bruce Buckingham,<sup>13</sup> Claudio Cobelli,<sup>14</sup> Eyal Dassau,<sup>15</sup> Francis J. Doyle III,<sup>15</sup> Simon Heller,<sup>16</sup> Roman Hovorka,<sup>17</sup> Weiping Jia,<sup>18</sup> Tim Jones,<sup>19</sup> Olga Kordonouri,<sup>1</sup> Boris Kovatchev,<sup>20</sup> Aaron Kowalski,<sup>21</sup> Lori Laffel,<sup>22</sup> David Maahs,<sup>13</sup> Helen R. Murphy,<sup>23</sup> Kirsten Nørgaard,<sup>24</sup> Christopher G. Parkin,<sup>25</sup> Eric Renard,<sup>26</sup> Banshi Saboo,<sup>27</sup> Mauro Scharf,<sup>28</sup> William V. Tamborlane,<sup>29</sup> Stuart A. Weinzimer,<sup>29</sup> and Moshe Phillip<sup>2</sup>

ORIGINAL ARTICLE

## Continuous Glucose Monitoring: A Review of Recent Studies Demonstrating Improved Glycemic Outcomes

David Rodbard, MD

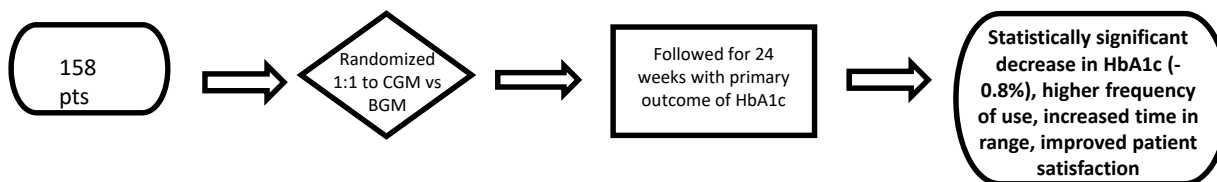
*Diabetes Technol Ther.* 2017 Jun;19(S3):S25-S37. doi: 10.1089/dia.2017.0035.

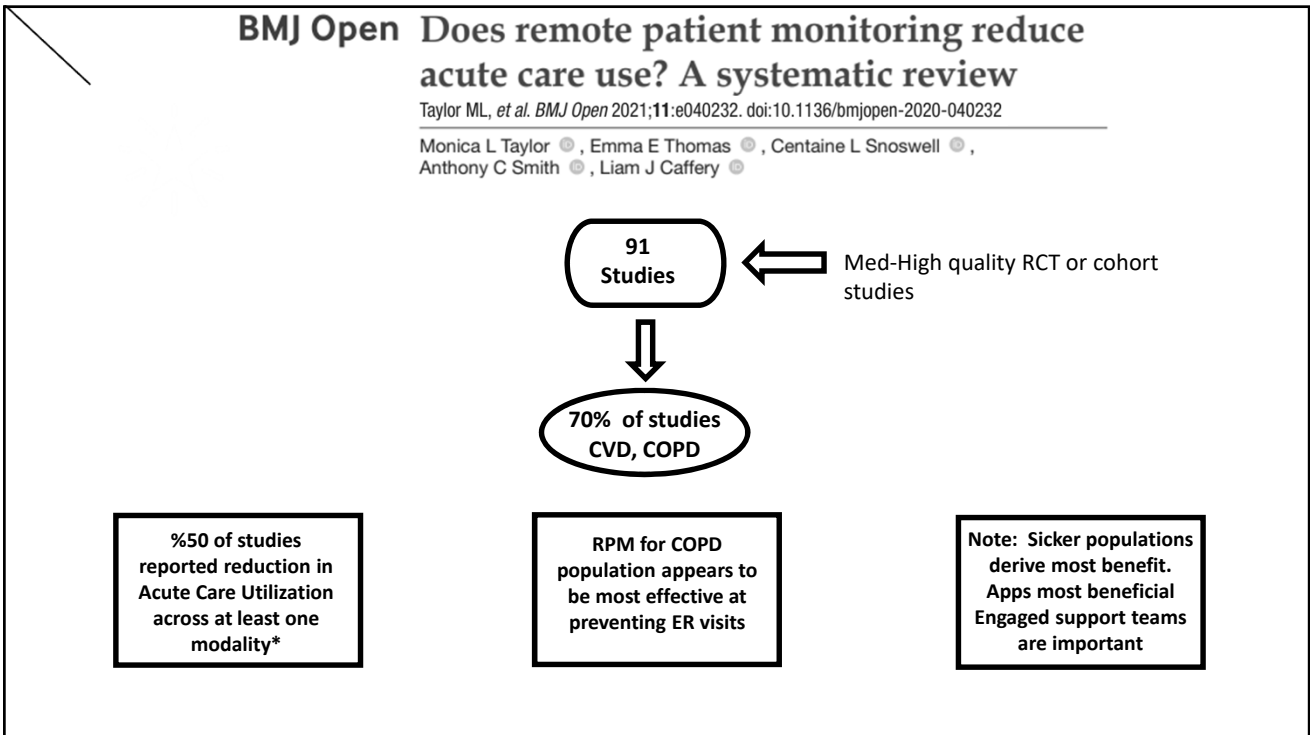
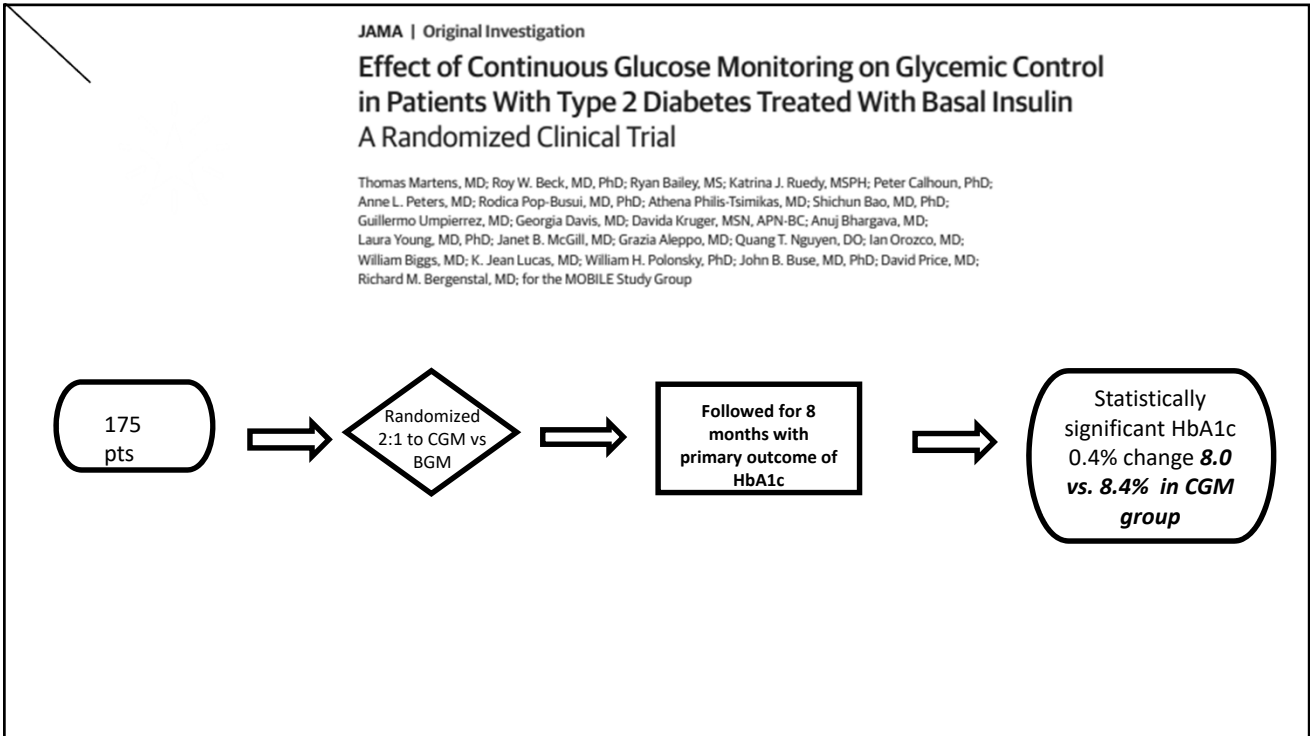
Annals of Internal Medicine

ORIGINAL RESEARCH

## Continuous Glucose Monitoring Versus Usual Care in Patients With Type 2 Diabetes Receiving Multiple Daily Insulin Injections A Randomized Trial

Roy W. Beck, MD, PhD; Tonya D. Riddlesworth, PhD; Katrina Ruedy, MSPH; Andrew Ahmann, MD; Stacie Haller, RD, LD, CDE; Davida Kruger, MSN, APN-BC; Janet B. McGill, MD; William Polonsky, PhD; David Price, MD; Stephen Aronoff, MD; Ronnie Aronson, MD; Elena Toschi, MD; Craig Kollman, PhD; and Richard Bergenstal, MD; for the DIAMOND Study Group\*





## RPM Wrap-Up

○ RPM can be used to engage patients in care outside the clinic

○ Patient, provider, and care team experience will likely dictate uptake and impact

○ The RPM market is rapidly evolving with diverse options

○ Financial sustainability should account for all aspects of reimbursement

○ Organization goals and resources may dictate best option

○ Health and cost outcomes will be integral to evaluating global impact