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Leveraging Patient Remote Monitoring to Improve Access and Reduce Diagnostic Disparities

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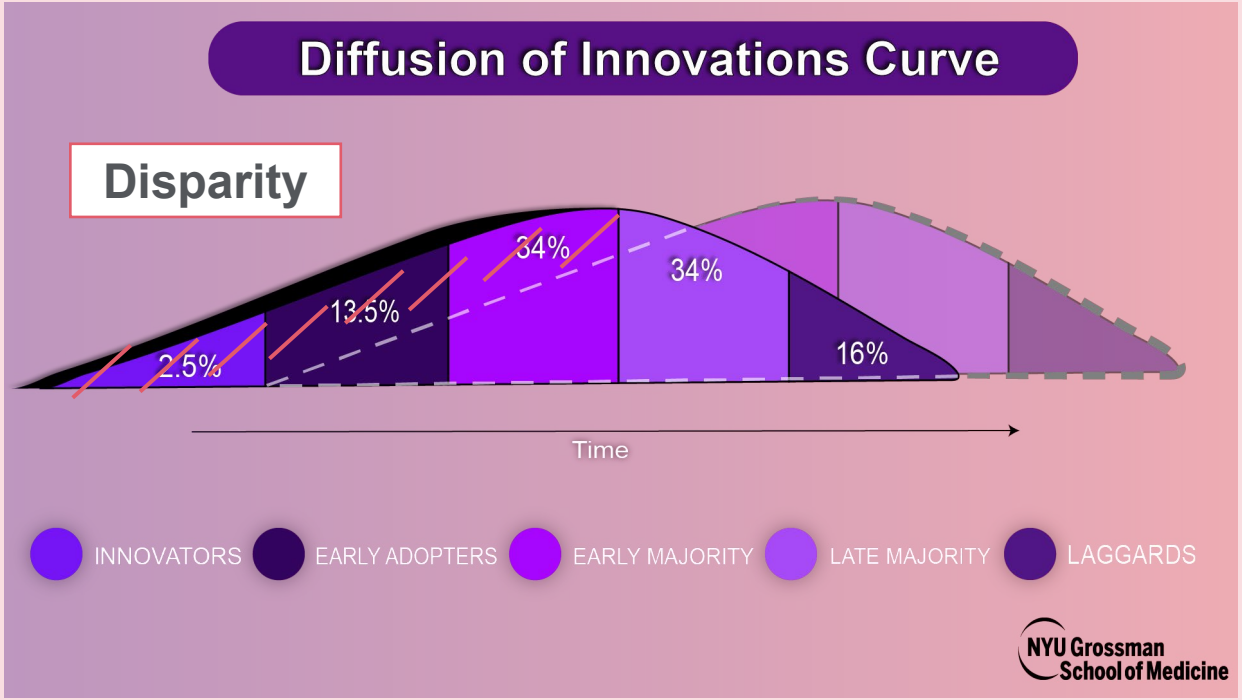
Diffusion of Innovations Theory

Tech adoption follows a predictable adoption curve…



…yet not everyone adopts new innovations at once

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- Credited to Everett Rogers in 1962 book *Diffusion of Innovations*

Remote Patient Monitoring

RPM uses technology to assess/track patient health in real-time outside traditional clinical settings

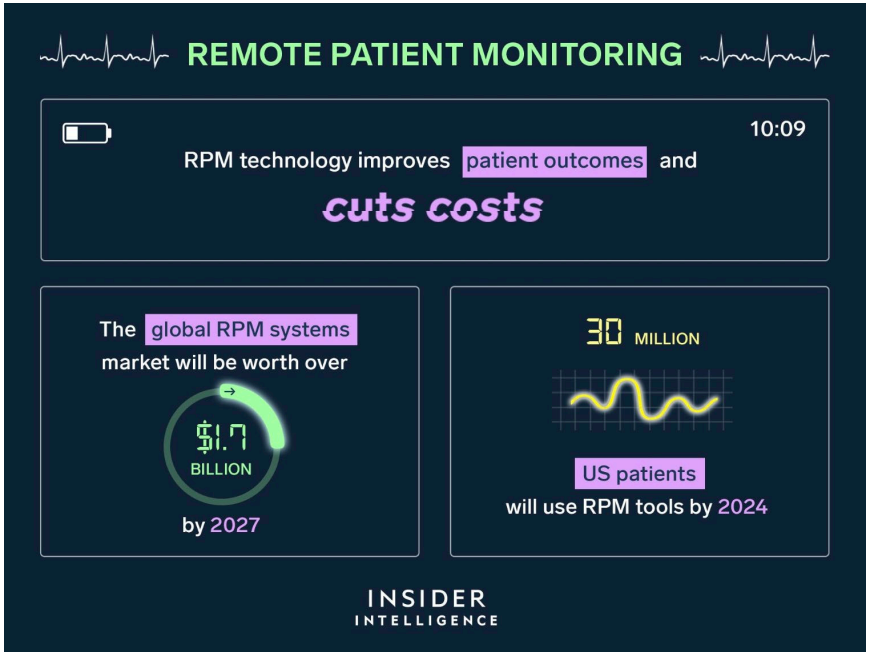
Patients use devices or apps to monitor vital signs and/or symptoms

Data is securely transmitted to healthcare providers (and electronic health record)

Healthcare providers receive and review patient data

Providers can make timely interventions based on real-time data

RPM is scaling, fast



Emarketer. Jan 2023

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There is constant innovation in the world of RPM diagnostics and monitoring.

Blood pressure monitoring toilet Casana lands $30M

The company plans to use the new funds to help fuel its FDA submission.

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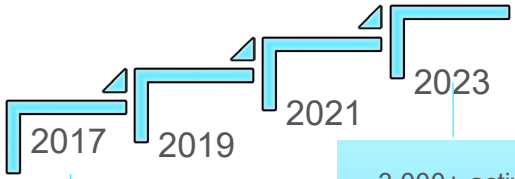
Remote Patient Monitoring (RPM) at NYU Langone

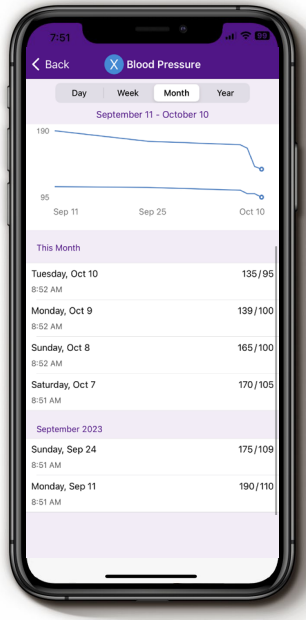
7,000+ patients with NYU providers



NYU RPM Program Began

3,000+ active enrollments

165,000+ days of data



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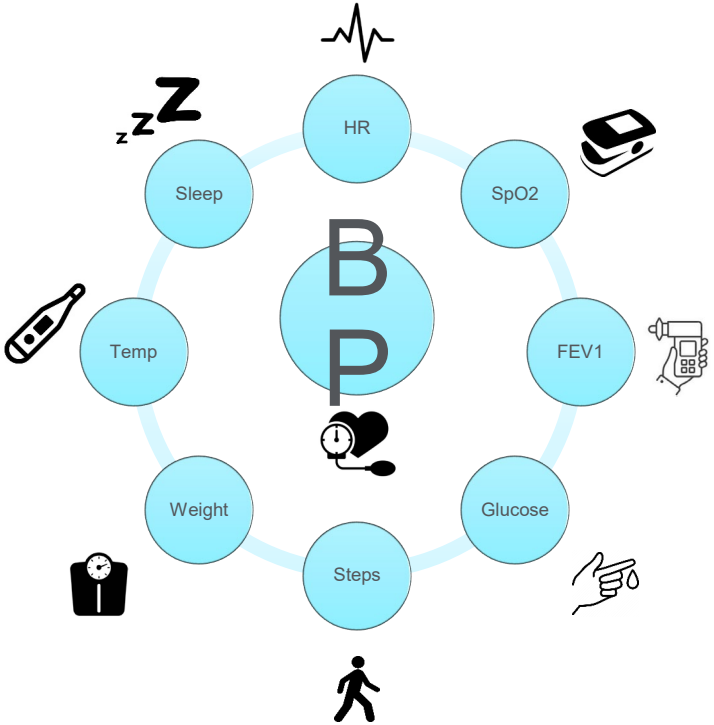

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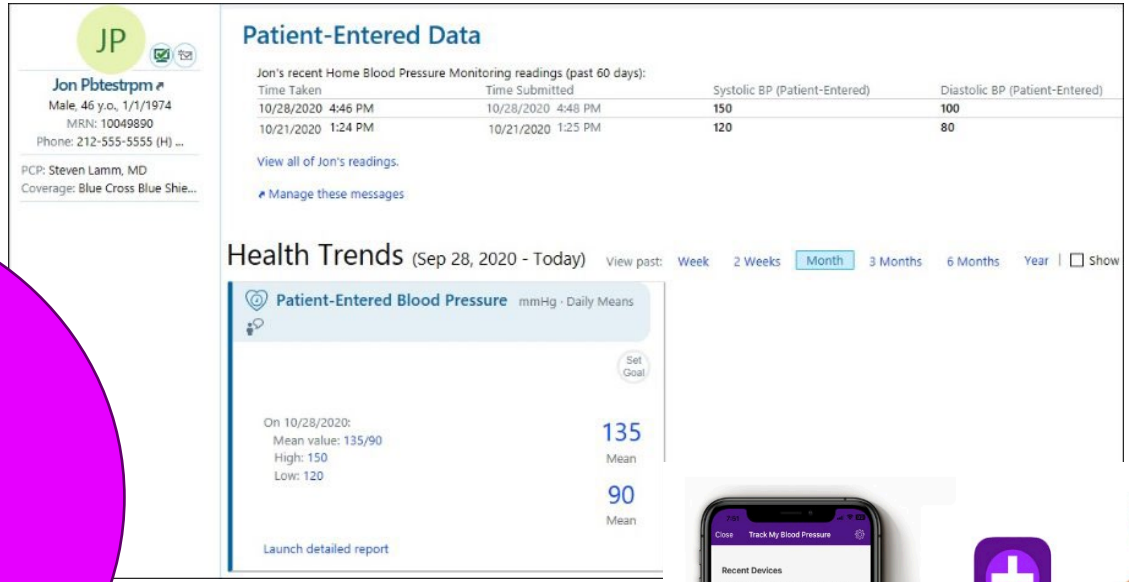
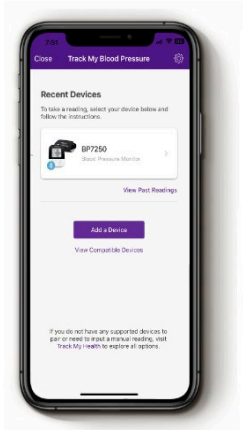
MyChart Remote Blood Pressure Monitoring

Of **8,000+ RPM patients** across various conditions, **55% are enrolled in hypertension.**





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Operational Implementation of Remote Patient Monitoring Within a Large Ambulatory Health System: Multimethod Qualitative Case Study

Objective: Evaluate the early implementation of operational RPM initiatives for chronic disease management within the ambulatory network of an academic medical center in NYC

Challenges

- Easy use for diverse patients (i.e., language, digital literacy)
- Implicit bias in patient selection
- Billing/insurance barriers

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JMIR Hum Factors. 2023

RPM for management of diabetes mellitus in pregnancy is associated with improved maternal and neonatal outcomes

TABLE 1
Maternal demographics for remote patient monitoring vs paper glucose log groups

Characteristics	Remote patient monitoring (n=360)	Paper glucose logs (n=173)	*P* value
Age (y)	33.4±4.8	34.3±4.65	.054
Pre-pregnancy BMI	30.2±6.8	29.9±6.8	.670
BMI on delivery admission	33.6±6.5	33.5±6.7	.909
Nulliparity	156 (43.3%)	79 (45.7%)	.648
Race and ethnicity:			
White, non-Hispanic	174 (48.3%)	78 (45.1%)	
African American	44 (12.2%)	17 (9.8%)	
Hispanic	44 (12.2%)	29 (16.8%)	.615
Asian, Indian, or Pacific Islander	79 (21.9%)	40 (23.1%)	
Other	19 (5.3%)	9 (5.2%)	
Primary language			
English	336 (93.3%)	154 (89.0%)	
Spanish	16 (4.4%)	16 (9.3%)	.095
Other	8 (2.2%)	3 (1.7%)	
Primary OB/GYN:			
Faculty	192 (53.3%)	93 (53.7%)	1.000
Private	168 (46.7%)	80 (46.2%)	
Insurance type:			
Medicaid	93 (25.8%)	45 (26.0%)	
Private	241 (66.9%)	107 (61.9%)	.163
Other or military	26 (7.2%)	21 (12.1%)	

RPM patients submitted **more glucose values**, were **more likely to achieve glycemic control** in target range and **achieved the target range sooner.**

Hypertensive disorders of pregnancy are:

- The leading cause of **maternal and perinatal morbidity and mortality**
- The main cause for **30-day readmissions after delivery**

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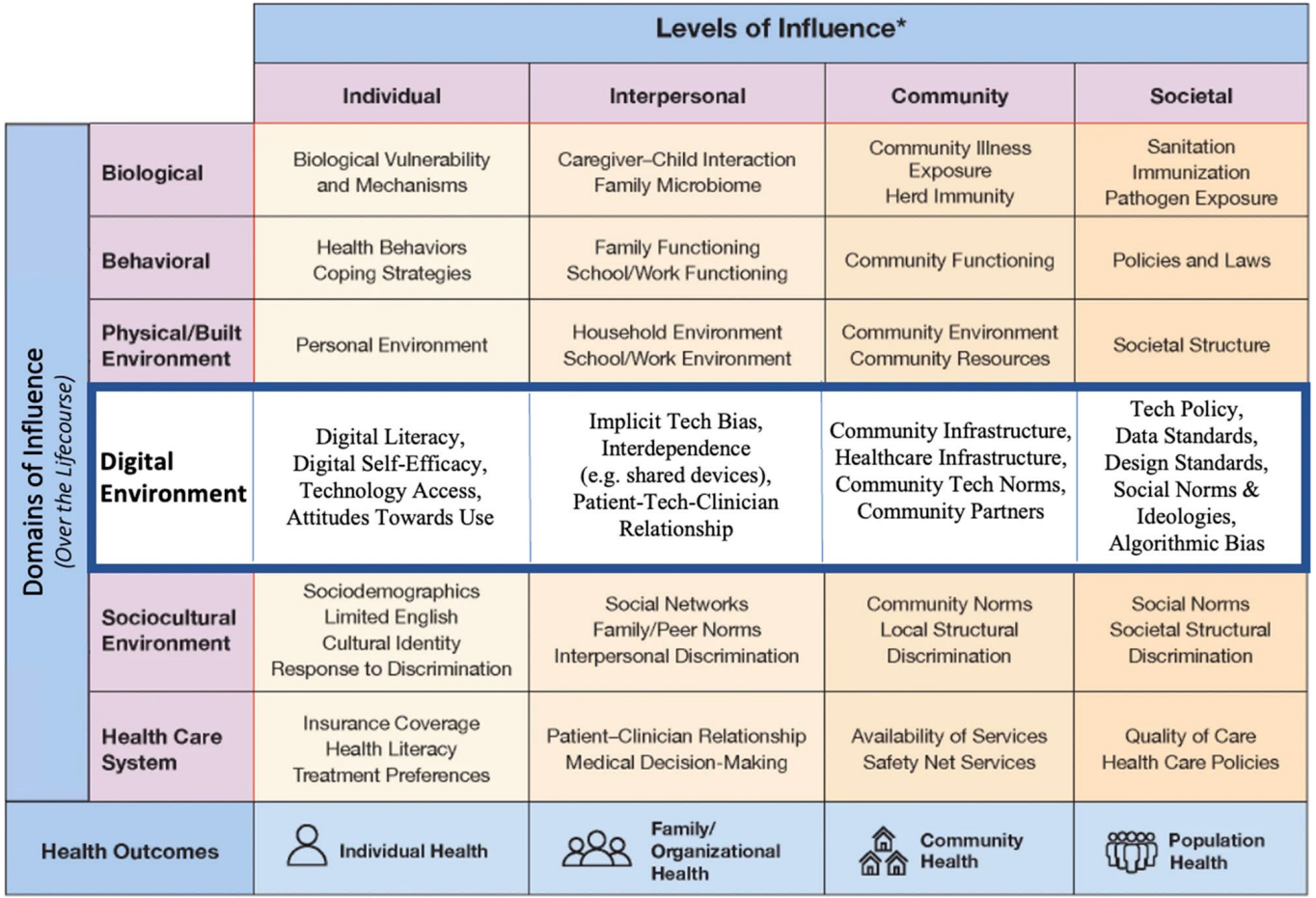
Am J Obstet Gynecol 2023



Domains of Influence (Over the Lifecourse)	Levels of Influence*			
	Individual	**Interpersonal**	**Community**	**Societal**
Biological	Biological Vulnerability and Mechanisms	Caregiver–Child Interaction Family Microbiome	Community Illness Exposure Herd Immunity	Sanitation Immunization Pathogen Exposure
Behavioral	Health Behaviors Coping Strategies	Family Functioning School/Work Functioning	Community Functioning	Policies and Laws
Physical/Built Environment	Personal Environment	Household Environment School/Work Environment	Community Environment Community Resources	Societal Structure
Digital Environment	Digital Literacy, Digital Self-Efficacy, Technology Access, Attitudes Towards Use	Implicit Tech Bias, Interdependence (e.g. shared devices), Patient-Tech-Clinician Relationship	Community Infrastructure, Healthcare Infrastructure, Community Tech Norms, Community Partners	Tech Policy, Data Standards, Design Standards, Social Norms & Ideologies, Algorithmic Bias
Sociocultural Environment	Sociodemographics Limited English Cultural Identity Response to Discrimination	Social Networks Family/Peer Norms Interpersonal Discrimination	Community Norms Local Structural Discrimination	Social Norms Societal Structural Discrimination
Health Care System	Insurance Coverage Health Literacy Treatment Preferences	Patient–Clinician Relationship Medical Decision-Making	Availability of Services Safety Net Services	Quality of Care Health Care Policies
Health Outcomes	**Individual Health**	**Family/ Organizational Health**	**Community Health**	**Population Health**

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NPJ Digit Med. 2022

Developing and Scaling Remote Patient Monitoring Capacity in Ambulatory Practice

Objective: Implement, at a scale, NYULH's RPM program and highlight the improvement of clinical outcomes, accessibility and equity, and operational sustainability.

Basic High-Level Workflow for Remote Patient Monitoring

Program Onboarding	Device Acquisition & Setup	Data Submission & Monitoring	Billing	Program Offboarding
Physician or APP Discusses RPM program with patient and places order.	Responds to severe value escalations	Responds to escalations. Titrates medications to get patient to goal.	Charges automatically entered at the end of each month based on total time for RPM encounters.	Provider can choose to resolve the flow sheet episode and stop receiving patient values.
RN or RPh	Distribute device	Monitors patient values. Escalates to physician or APP as necessary. Documents, logs time.	No out of pocket costs for patient	
Patient Receives enrollment notification for Care Companion. (MyChart)	Acquires devices and connects them to MyChart.	Syncs/enters data according to assigned Care Companion tasks. (MyChart)		Notified by provider that they no longer need to submit RPM values. If decided to transition off

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NEJM. 2024

Developing and Scaling Remote Patient Monitoring Capacity in Ambulatory Practice – *with Equity in Mind*

Take Home Points:

1. *Identify **diverse stakeholders** and **involve them early** and throughout RPM implementation – helps gauge needs, contexts, and resource constraints*
2. *When choosing **centralized v. decentralized** approach, consider organizational, practice, clinician, individual and community resource factors*
3. *Build an equitable, **end-to-end workflow** including program onboarding, device acquisition and setup, data submission and monitoring, billing, and program offboarding*
4. *Conduct **usability testing** with initial adopters and utilize context-specific feedback from individual practices, patient and community stakeholders to optimize patient experience*
5. *Consolidate best practices in a **playbook** and scale the program across the health system*

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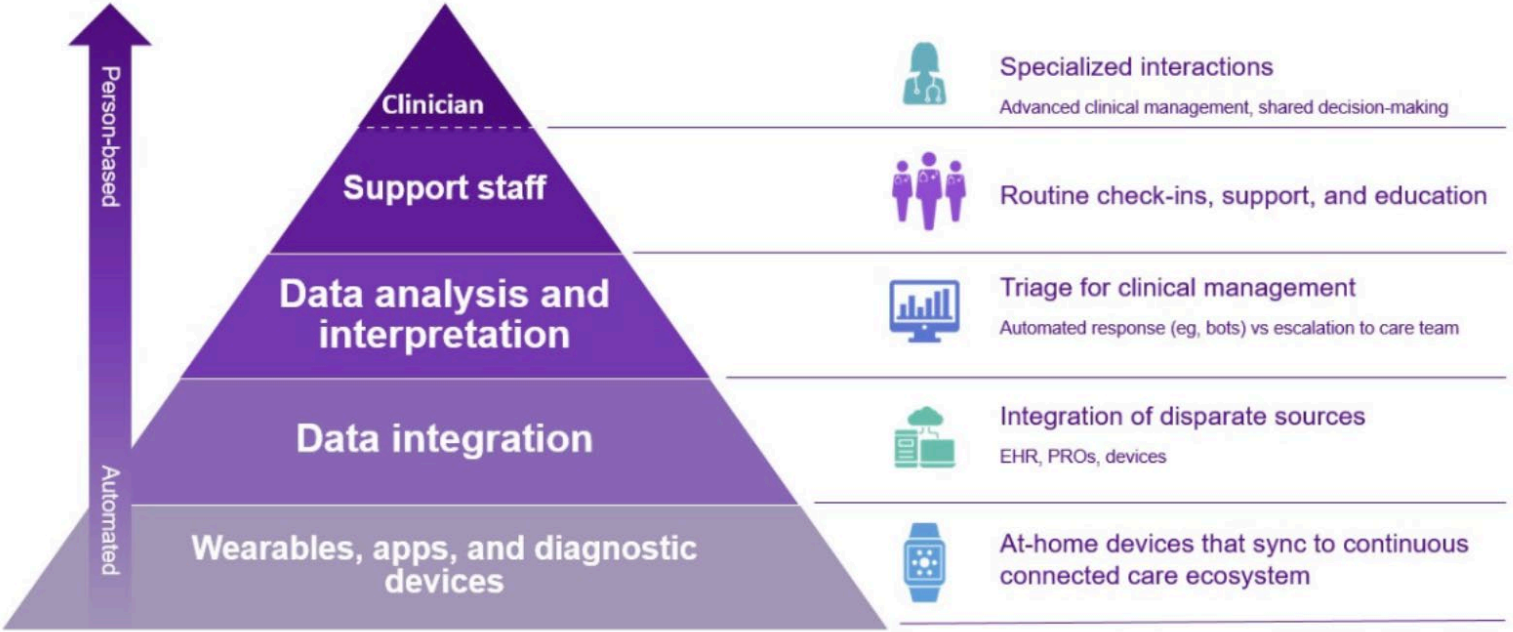
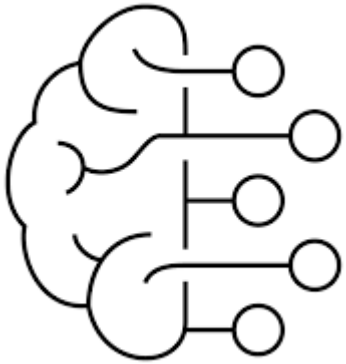
RPM is facilitating a rebalancing in care delivery

The care team of the future could include algorithms, automated responses and tools, interdisciplinary staff, and the patient's clinician.



GenAI *may* help close equity gaps in RPM (and elsewhere)



GenAI could advance digital inclusivity in healthcare technology

- Personalized support and educational content (language, literacy, etc.)
- Support engagement and adherence
- Patient facing clinical decision support
- Reduce burden on clinician monitoring and documentation

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Thank you

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