

Office of Connected Care

Developments in Telehealth Technologies, Delivery, and Data Acquisition

Terry Newton, MD
Director, Clinical Analytics

Sara B. DeRycke, MHCA
National Lead, Asynchronous
Telehealth

Catherine Buck, RN,MS, GNP-BC
Director, Remote Patient Monitoring-
Home Telehealth

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VA



U.S. Department of Veterans Affairs
Veterans Health Administration
Office of Connected Care

Our Vision

Trusted Care: Anytime, Anywhere

VA will use connected technologies to enhance the **accessibility, capacity, quality, and experience** of VA care for Veterans, their families, and their caregivers **anywhere in the country.**

Connected Care will be **integrated** into the daily lives of both **VA staff members** and the **Veterans** they serve.



VA Virtual Care – Our Priorities



Bringing care to the Veteran

Accessibility

- Video care, secure email, telephone care – available in all ambulatory services for Veterans and caregivers to access from their preferred location
- Asynchronous modalities of care that can be used between or in place of scheduled visits (wound check, via MVAI)
- Enhanced Veteran communication channels with their care teams (e.g. clinical chat, secure messaging, text)



Matching clinical supply and demand

Capacity

- Resource hubs for primary care, mental health, and other high-volume specialty services, accessible as a shared telehealth service, delivered across VA facilities.
- Increased clinic efficiency, resulting from more efficient just-in-time resolution of simple health issues or transactions through virtual modalities.



Providing the right care at the right time

Quality

- Expert consultation & coordination of services that are difficult to find, expensive to manage, or low volume in any given market.
- Promote self-management of health and proactively engage patients using digital health tools that leverage analytics
- Reduce hospitalizations & emergency visits through remote monitoring

A Framework To Express Our Priorities

- There is increasing recognition that outcomes related to virtual care must be considered in a more comprehensive manner
 - Not just distal outcomes (e.g., health), but also outcomes more proximal to technology use
 - Across technologies and not tied to specific technologies
- Previous VHA research focused on connected care technologies has examined a multitude of outcomes; however, across studies, these outcomes have been conceptualized, defined, and measured differently

Framework Overview

The Framework includes three primary outcome categories: (1) Experiences of Care, (2) Population Health, and (3) Costs, each of which includes a series of outcome sub-categories

Realizing gains across all three of these primary categories through the use of VHA connected care technologies is the Framework's guiding principle

Additional dimensions that must be considered include:

- Outcome horizons – the temporality of each outcome

- Outcome levels – the organizational unit to which the outcome is relevant



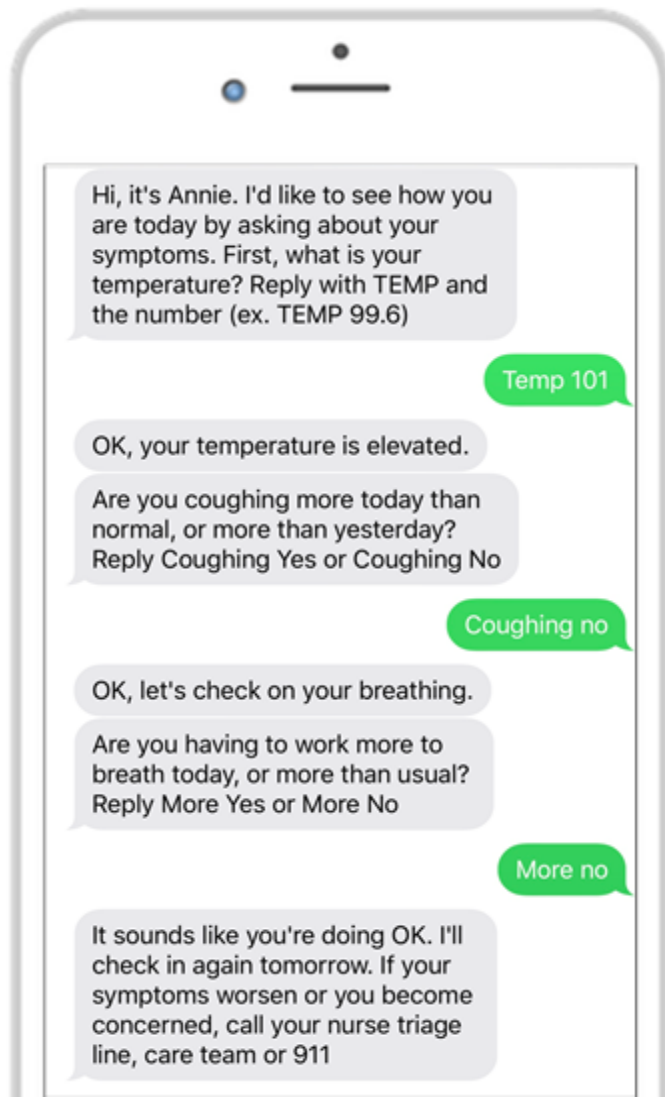
Virtual Care Applications (Apps)



<https://mobile.va.gov>

Virtual Care Manager	VA Video Connect	Annie	Rx Refill	My VA Images	Covid Coach	VA Health and Benefits	VA Online Scheduling	VetChange	Stay Quit Coach	VA Launchpad
MOVE! Coach	Patient Viewer	Image Viewing Solution	VA Health Chat	Mindfulness	Live Whole Health	Couples Coach	Insomnia Coach	Mental Health Checkup	Pressure Ulcer	
Concussion Coach	SyncMyHealthData	Airborne Hazards	Exposure Ed.	AIMS for Anger Mgt.	PTSD Coach	PTSD Family Coach	CPT Coach	CBT-i Coach	PE Coach	Beyond MST.

Annie App: Text Message Health Subscriptions



The **Annie app** sends automated text messages to Veterans, based on clinical health subscriptions, and receives and stores text messages from Veterans.

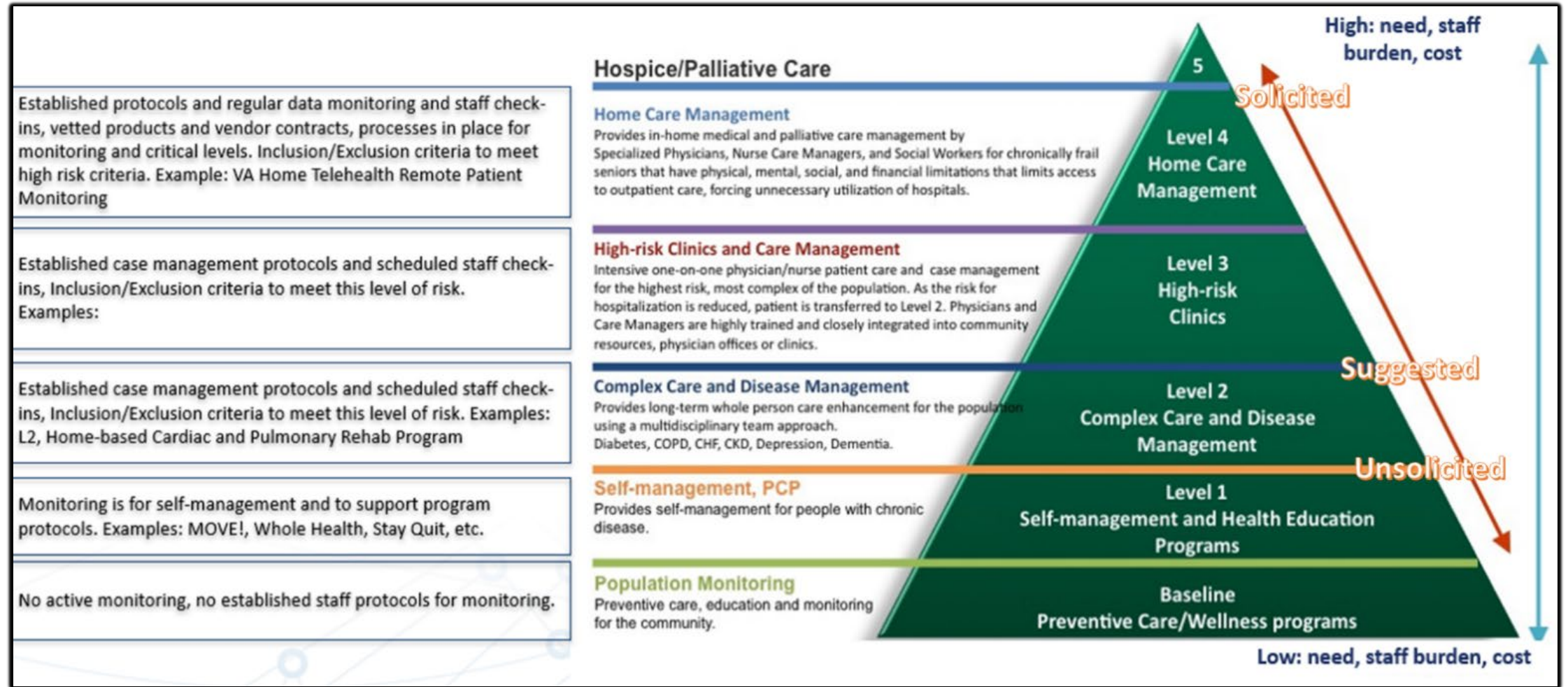
- Over 170 enabled protocols Veterans can subscribe to
- Top protocols:
 - BP, Glucose, Med reminders, Colonoscopy Prep



Patient Generated Health Data

- *PGHD is health-related data created, recorded, or gathered by or for patients (or family members or other caregivers) to promote health and wellness or to help address a health concern*
- *PGHD may include remote device-generated consumer collected clinical data, health history, treatment history, biometric data, symptoms and other types of patient reported outcomes, perceived quality of life data, and patient goals, values and lifestyle choices*
- *Health-related PGHD are distinct from data generated in clinical settings. Patients are primarily responsible for capturing and/or recording these data, and patients explicitly decide to share these data through some form of authorization or consent process, or by voluntarily sending or transmitting their data.*

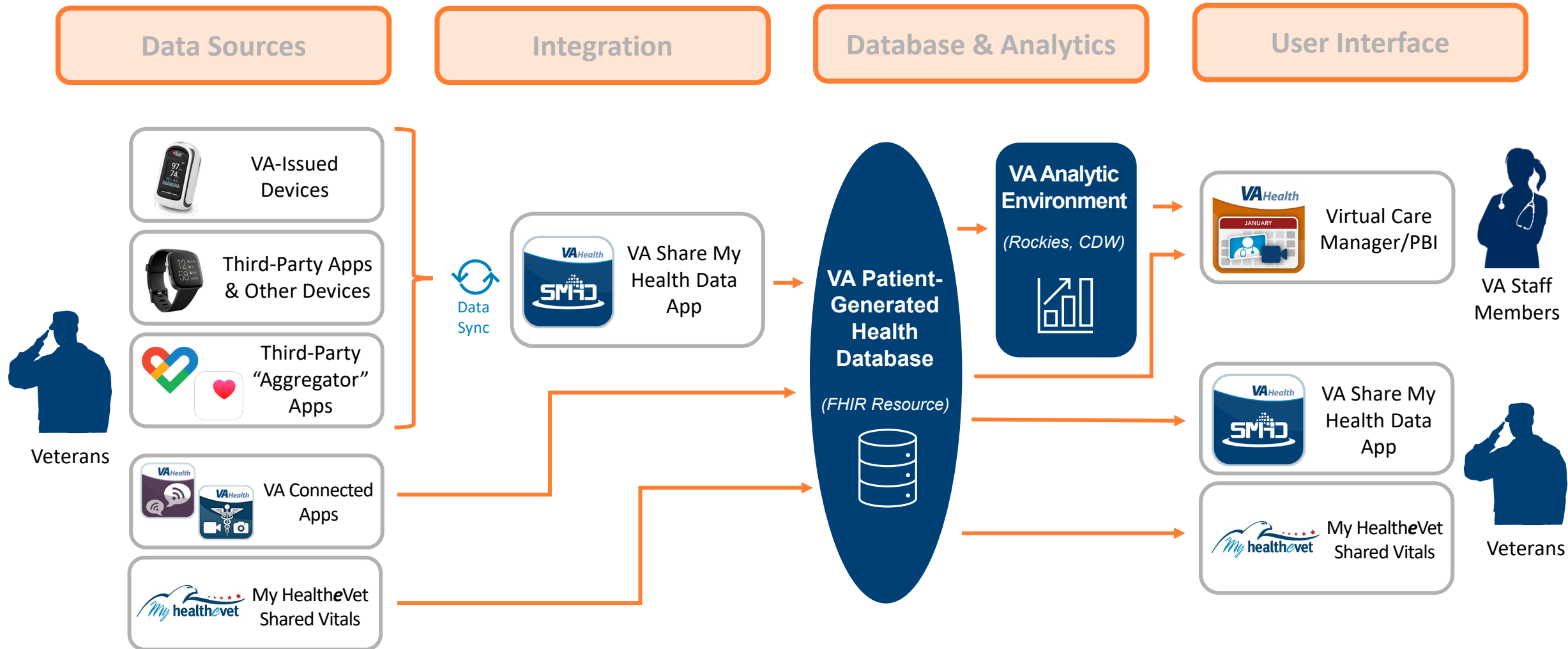
PGHD Level of Care Pyramid



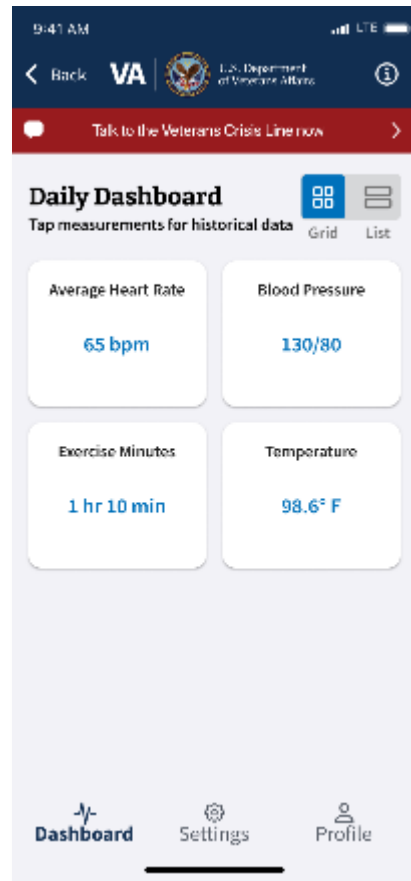
PGHD Use Case Logic Table

PGHD Category	Definition and Collection Process	Source/Type	Guidance
Unsolicited PGHD <i>Baseline-Level 1</i>	<ul style="list-style-type: none"> • Provided by a Veteran without a request from the VA provider • Veteran independently submits his/her data to a VA approved PGHD database without VA provider subscribing • Unsolicited PGHD is provided solely at the discretion of the Veteran 	<ul style="list-style-type: none"> • Self-entered • VA/FDA endorsed/ authorized digital • Patient owned digital • Validated/ unvalidated PRO 	<p>Guidance is minimally prescriptive. Provider action is largely determined by patient/provider shared decision-making understanding. Data destination may impact the degree of provider responsibility.</p>
Suggested PGHD <i>Baseline-Level 2</i>	<ul style="list-style-type: none"> • VA provider suggests Veteran engage in self-monitoring • No explicit Veteran agreement/consent required 	<ul style="list-style-type: none"> • Self-entered • VA/FDA endorsed/ authorized digital • Patient owned digital • Validated/ unvalidated PRO 	<p>Guidance is less prescriptive. Provider action is largely determined by patient/provider shared decision-making understanding. Data destination may impact the degree of responsibility. Clinical community use-case specific supplementary guidance may be more prescriptive.</p>
Solicited PGHD <i>Levels 2-5</i>	<ul style="list-style-type: none"> • Provider requests from the Veteran • VA provider subscribes to Veteran data in a defined process • Veteran provides explicit agreement/consent to provider/VA to collect and share PGHD for a defined purpose (written or verbal) 	<ul style="list-style-type: none"> • Self-entered • VA/FDA authorized digital • Validated/ unvalidated PRO 	<p>Guidance on solicitation, review, documentation, workload is determined by use-case by program office &/or clinical community facilitation.</p>

PGHD Data Flow – Sources, Databases, and Interfaces



Patient-Generated, Patient Facing



Remote Patient Monitoring- Patient Generated (RPM-PG)

- RPM-PG is a newer front of remote patient monitoring of patient generated health data which is specialty or device specific. This data and care is not managed by VA Home Telehealth Care coordinators. This is often a part of an active treatment plan and can also be for preventative care.
- Patients are enrolled when they meet at risk criteria and providers screen then for inclusion in this solicited Patient Generated Health Data (PGHD) remote monitoring.

Goals:

- Improve clinical outcomes and access to care
- Reduce complications, hospitalizations, and clinic or emergency room visits
- Serve high-risk Veterans with chronic disease
- Provides passive monitoring for health care professionals alerting them only when escalations are needed.
- Can be vendor monitoring

Telehealth Approach: From Anywhere to Anywhere

Where VA Connected Care Occurs



Home/Community

- Portal / Secure Messaging
- Home Telehealth / Remote Monitoring
- VA Video Connect
- mHealth - Apps, Annie
- Telephone Care
- Tele-Urgent Care
- And more...



Clinic

- Video Telehealth
- -Primary Care
- -Mental Health
- -50+ specialties
- Store and Forward Telehealth
- Provider Connect



Hospital

- TeleICU
- TeleStroke
- TeleNephrology
- More ...

How VA Implements Connected Care



Local

Goal: Connected Care Integration into all routine operations



Regional

- Clinical Resource Hubs
- TeleMental Health
 - TelePrimary Care
 - TeleDermatology
 - TeleRehabilitation
 - TeleSleep



National

- Expert TeleConsultation
 - TeleGenomics
 - Specialty Mental Health
- TeleEmergencyManagement
- TeleICU, TeleStroke, etc.

Telehealth Modalities



Clinical Video Telehealth

- In the Home
- In the ER
- In the Clinic
- In the ICU



Store and Forward Telehealth

- Dermatology
- Eye Care
- Spirometry
- Sleep Medicine
- From Home



Remote Patient Monitoring *Home Telehealth*

- Care and Case Management
- Education
- Independence

Where Are We Now?

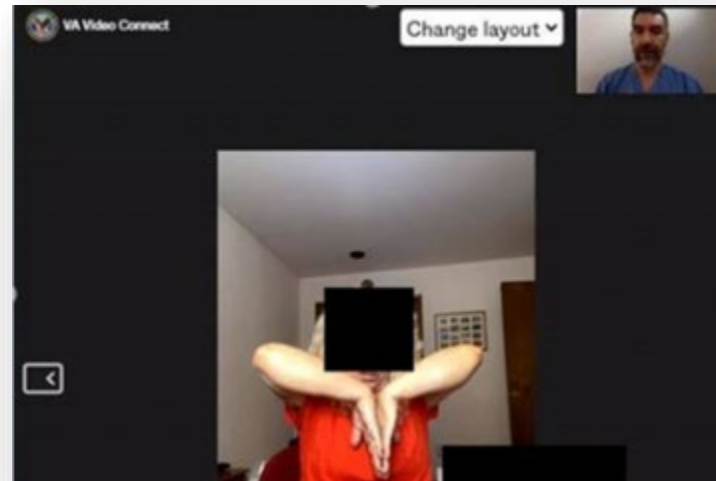
VVC Strong Practices



Colorectal Surgery

“From the 3 way visit with the faceplate off, we were able to tell that there was no serious problem going on. We were able to give her the reassurance, education and support she needed, without needing to travel into our clinic.”

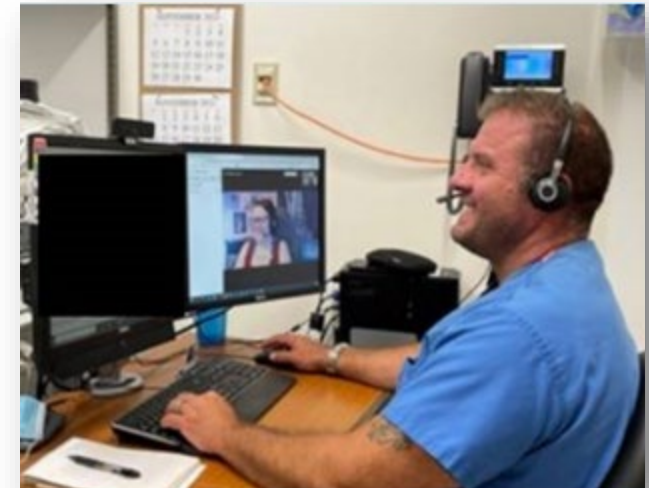
-Eric Marderstein, MD, MPH, Section Chief of General Surgery, Louis Stokes Cleveland VAMC



Orthopedic Surgery

“VVC minimizes the patient’s burden of traveling to clinic, It also allows a physical examination that is almost as comprehensive as one done in person, and the exam is critical for proper diagnosis and management. Probably just as important, it promotes the establishment of meaningful rapport between provider and patient.”

-Timothy Schweitzer, MD, Orthopedic Surgery, VA Puget Sound HCS – Seattle



Pre-Op Anesthesia

“I think that VVC visits are particularly useful for follow-up appointments after procedures and imaging to review the findings or to discuss the effects of a trial of a medication.”

-Alex McFarlane, NP-C

Making Health Care More Immersive, Comprehensive and Whole-Service



Digital Divide Consultation

Connected Devices



Accessing and teaching digital skills

Coffee and Conversations



Digital Front Door and Self-Scheduling

VAOS



Synched data

PGHD

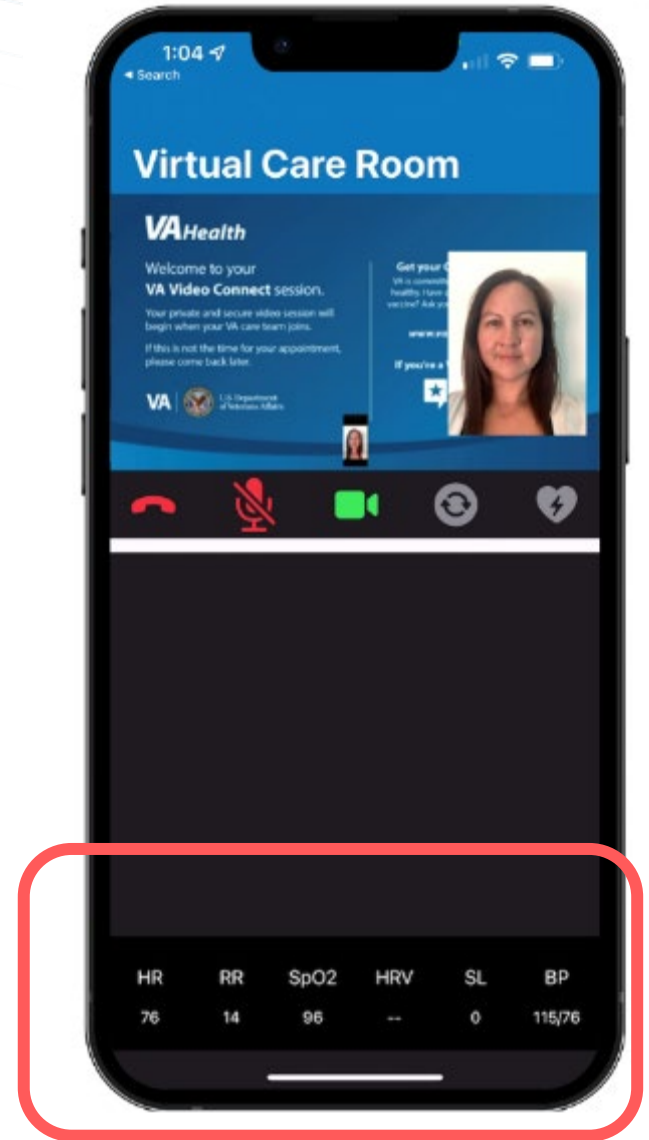


Use of apps and telehealth modalities

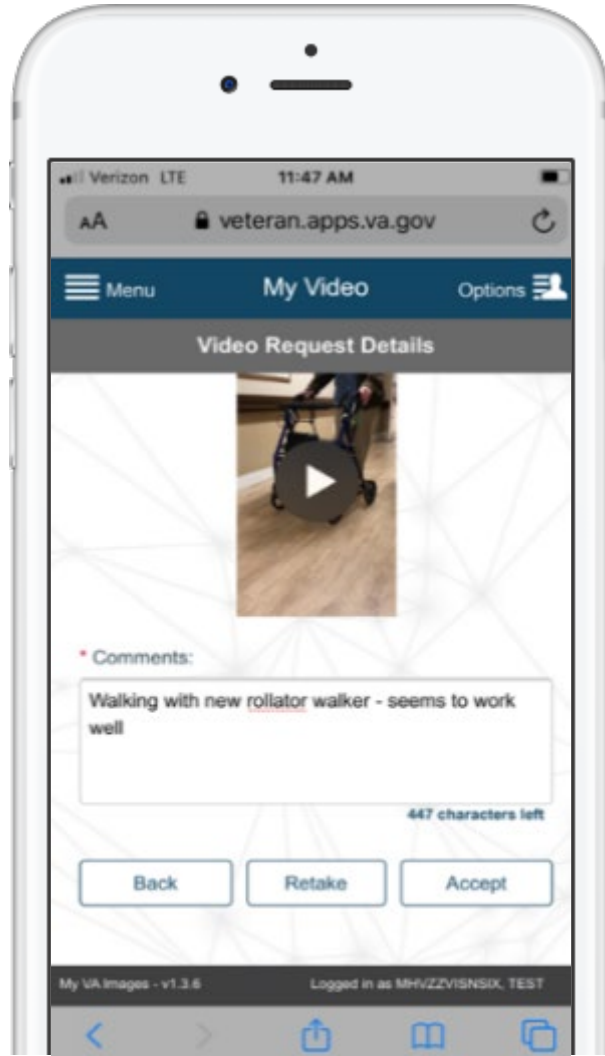
*Video Visits
SFT to Home
Mobile Apps*

Remote Exams and Contactless Monitoring

- Peripheral devices
 - Personalized home kit
 - Integrated with VVC



Applications of My VA Images – Video/Photo Store and Forward Telehealth from Home



Video/Photo

Clinicians can use My VA Images for applications, such as:

- Discharge planning
- Review of equipment use
- Review of medical device use
- Other store-and-forward image needs
- Transmission and storage of images are secure and HIPAA compliant.
- The size limit for uploaded files is 100 megabytes, which is the equivalent of several photos or a video clip that's around two minutes long.

RPM-PG Highlight – Remote Temperature Monitoring

The use of once-daily thermometry, known as Remote Temperature Monitoring (RTM), as part of an active treatment for the prevention of diabetic foot ulcers (DFU), has demonstrated the potential to reduce the risk of amputations and limb loss. Preventing these wounds and ulcers is essential for preventing amputation in this vulnerable patient population. There has been a significant increase in VAMC and Veteran engagement over the past 2 years as demonstrated below:

	FY21	FY22	% Change
Participating VAMC's	76	110	+44%
# Veterans using RTM device	2,833	4,119	+45%

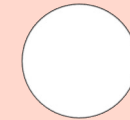
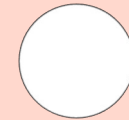
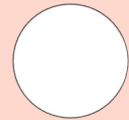
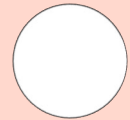
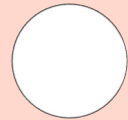


How It Works

At-risk PAVE 3 Veteran* is identified, and provider creates enrollment note/order for smart mat.

Veteran utilizes device at the frequency determined by the vendor. Data sent to cloud.

First indication of abnormality is addressed by vendor, called the "Initial Response". (68% of all inflammation detected was resolved without clinical intervention**)



Veteran is shipped a device to measure foot temperature. Vendor provides training.

Vendor provides daily monitoring, ensures Veteran is using the device, and provides patient outreach.



A second abnormality is sent to the facility to address, review, medical decision making (in clinic or virtually).

* PAVE 3 patients are defined as those with a history of ulceration, amputation or Charcot foot

**Rothenberg GM, Page J, Stuck R, Spencer C, Kaplan L, Gordon I. Remote Temperature Monitoring of the Diabetic Foot: From Research to Practice. *Fed Pract.* 2020;37(3):114-124.

The Solution and Future RPM-PG

Remote Temperature Monitoring (RTM) of DFU has the following Clinical Benefits:

- 97% identification of **DFU 5 weeks earlier** than without monitoring
- 40% reduction in Emergency Room (ER) visits
- 52% reduction in all-cause hospital admissions
- 27% reduction in all-cause outpatient visits
 - 73% of Veterans utilize monitoring 4 times a week or more
 - 70% of Veterans sustained engagement at 1 year
- Significant reduction of diabetic foot ulcers
- Reduction of diabetic amputations.



*Currently evaluating future RPM-PG programs that are a fit and endorsed for National Implementation.

Remote Patient Monitoring- Home Telehealth (RPM-HT)

- RPM-HT is a program into which Veterans are enrolled that applies care and case management principles to coordinate care using health informatics, disease management and technologies such as in-home and mobile monitoring, messaging and/or video technologies.

Goals:

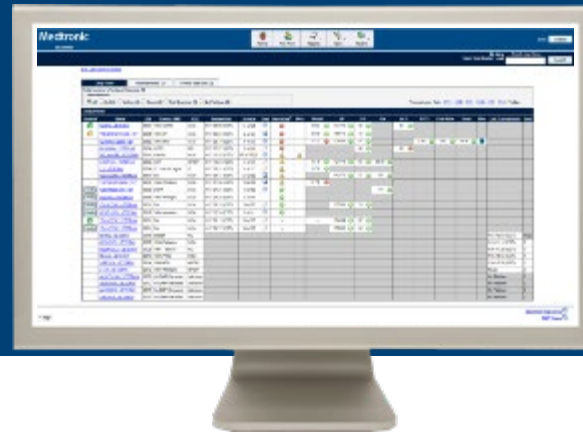
- Improve clinical outcomes and access to care
- Reduce complications, hospitalizations, and clinic or emergency room visits
- Serve high-risk Veterans with chronic disease or Veterans at risk for placement in long-term care

RPM-HT History

- Established in July 2003 as a national pilot program in five Veteran Integrated Service Networks (VISNs)
- Expanded to all VISNs and VHA facilities in 2005
- ~ 2,000 Care Coordinators VA nationwide.
- Care Coordinators are primarily RNs, but also include MSW, RD, Psychologist
- Growth: Veterans served 2003 - 1,500 2022 - 131,535
- Average Daily Census: 60,000
- Clinical Outcomes
 - 53% reduction for Bed Days of Care
 - 33% reduction Admissions
 - 89% Satisfaction

Medtronic Care Management Services (MCMs)

MCMS' Expanded VA Solution



COMMANDER FLEX®
320 HUB PLATFORM



TELERESPONSE®
IVR PLATFORM



NETRESPONSE® WEB



NETRESPONSE® TABLET
MOBILE DEVICE PLATFORM





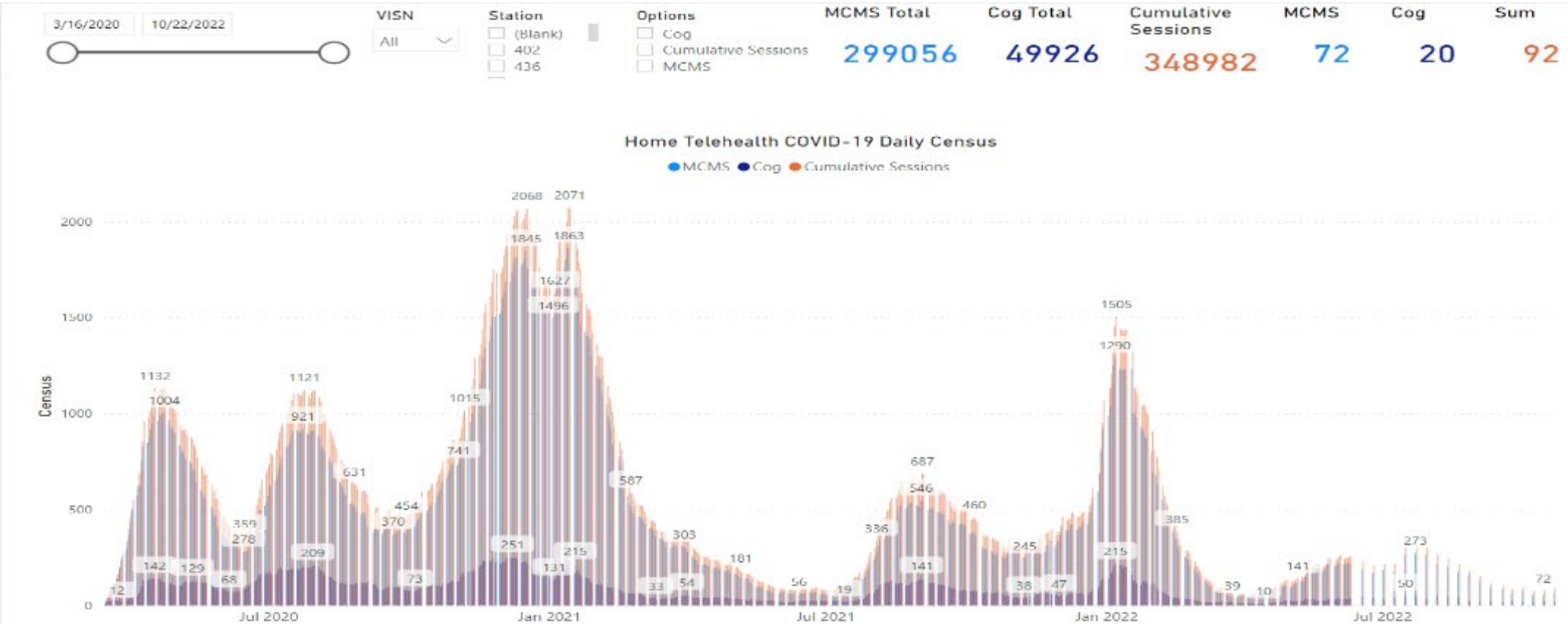
VA



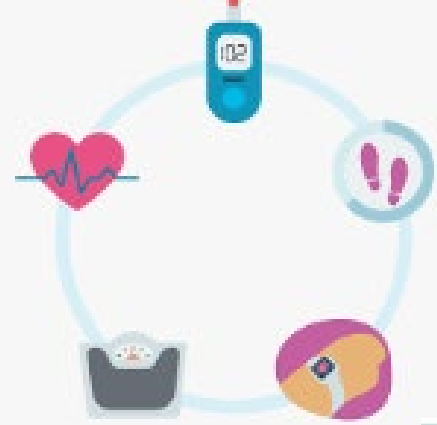
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RPM-HT COVID-19 Monitoring

- Census 10/25/22 – 92
- 3/1/20 – 10/25/22
 - Total Unique Veterans monitored: **36,844**
 - Total daily sessions (clinical touchpoints): **348.982**



In Planning and Future RPM-PG

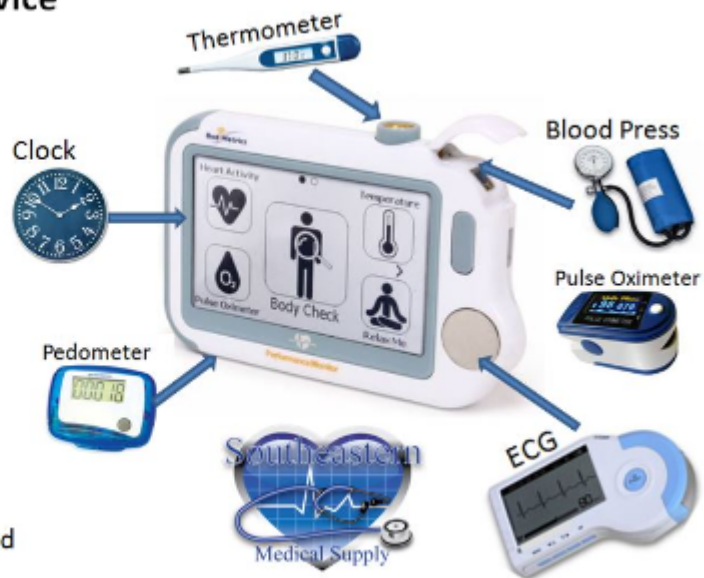


Your All-in-one Device

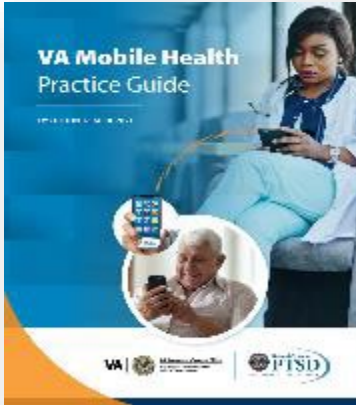
- ECG heart recorder
- Pulse Oximeter
- Thermometer
- Systolic Blood Pressure
- Pedometer
- Clock

- Rate Pressure Product*
- Relaxation Function
- Reminders

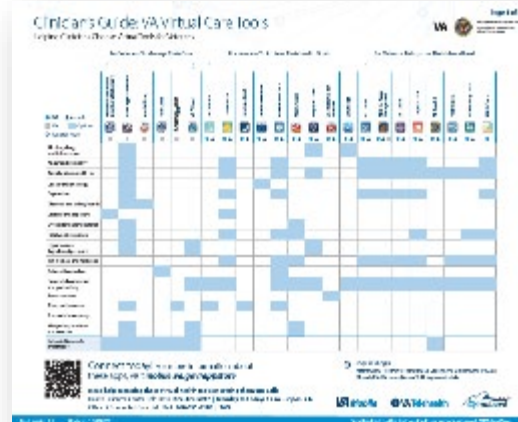
*measures heart workload



OCC Virtual Health Guides for VA Providers



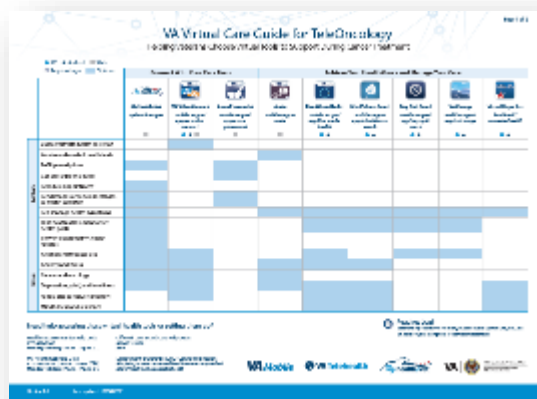
VA Mobile Health Practice Guide



Clinician's Guide for VA Virtual Care Tools



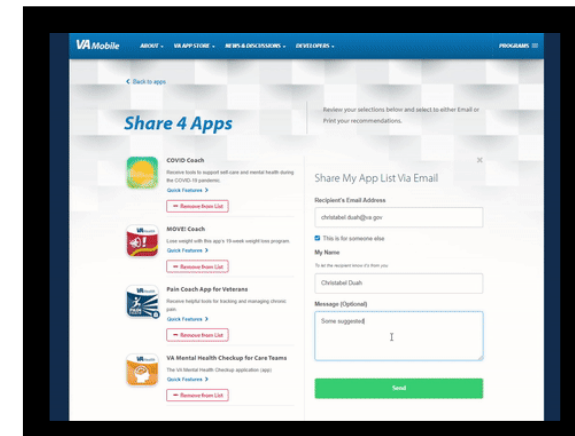
Prescription Pad for VA Virtual Care Tools



VA Virtual Care in TeleOncology Guide



VA Virtual Pain Care Guide



Prescription Pad for VA Virtual Care Tools Online

Questions?

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