



Technology in Healthcare

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Dani FitzPatrick is a healthcare strategist with over a decade of experience solving the health system's toughest problems. As VP Clinical Transformation at Optum, she leads a team focused on transforming healthcare with strategic solutions best connecting clinicians with over 2M patients in their homes annually. Dani lives in Robbinsdale, MN with her husband, two-year-old son and two Labrador Retrievers.

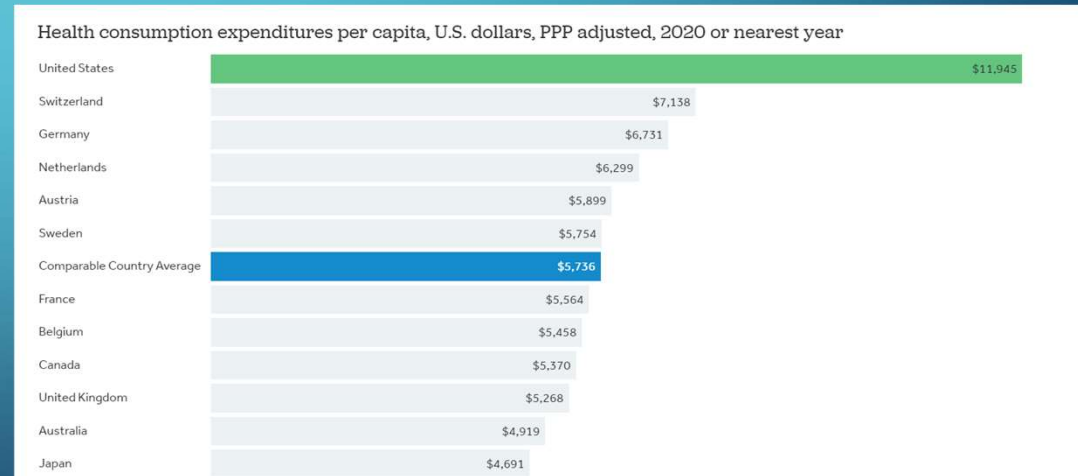
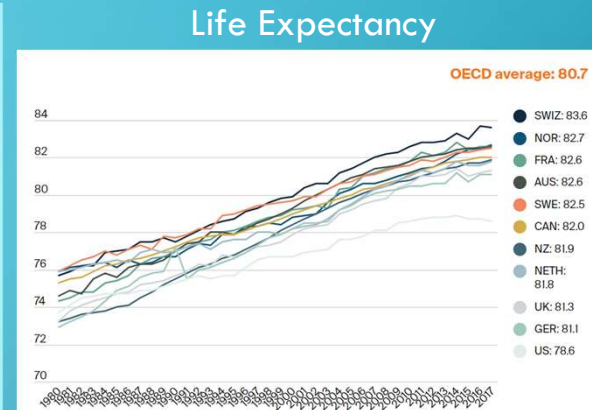
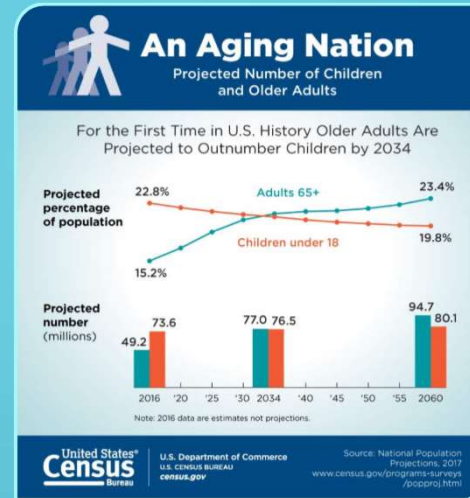


Vince Piersa brings 20+ years of leadership experience to Optum across several industries including retail, airline, government and healthcare. He has diverse leadership experience in finance, compliance, operations, technology and program management. He currently serves as VP Clinical Operations & Enablement where his team supports 8,000+ clinical staff across 50 states with technology strategy, operations and program management. Vince lives in Bloomington, MN with his wife and 2 girls (8 & 10).

Disclaimer statement: The views expressed within the materials and shared at the Reimagine Aging conference are solely those of your presenters and not endorsed or recommended by UnitedHealth Group or its affiliates.

HEALTHCARE IN THE US

- Aging population – more seniors than young people and more 65+ than ever before.¹
- The US spends twice as much as other developed nations per person on healthcare annually and nearly two times more share of GDP at 16.9%.²
- Life expectancy in the US is lower than any other developed country.²
- 28% of Americans are living with a chronic condition and 40% are obese.²
- 46M people (14% of Americans) living in rural areas facing a shortage of healthcare services.³



1. US Census
2. Commonwealth Fund - [US Healthcare From A Global Perspective](#)
3. Healthcare Dive – [Rural Hospitals Face 'Precarious' Outlook](#)

TREND TO AGE IN PLACE

- Most adults age 50–80 (88%) feel it is important to remain in their homes for as long as possible.¹
- Physician visits in the home used to make up 40% of all doctors' visit in the US. But by 1980, were less than 1%.²
- U.S. home health care spending is projected to grow to \$250 billion by 2026.²
- Aging in place is enabled by two key components:
 1. Advancements in digital and clinical technology
 2. Healthcare services delivered in the home



What happened to seeing providers in our homes?

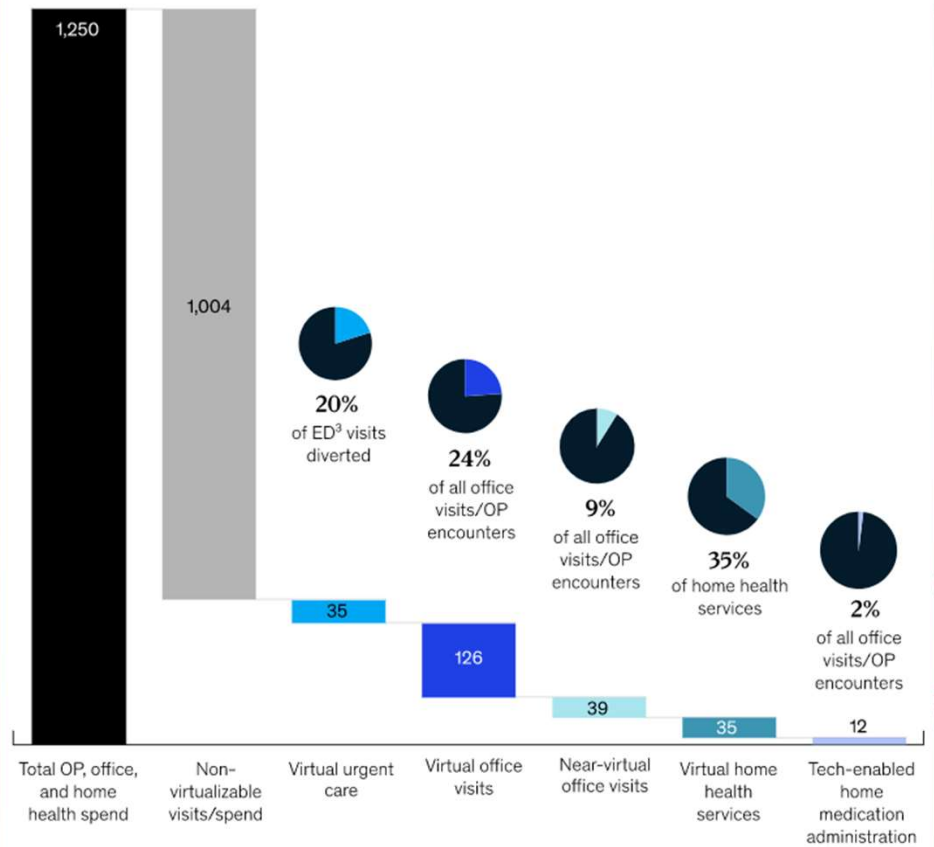


1. [National Poll on Healthy Aging](#) – University of Michigan – April 2022
2. New England Journal of Medicine – [The Future of Home and Community Care](#)

VIRTUAL CARE IN THE HOME

McKinsey & Company recently estimated that \$250B or 20% of all Healthcare (Medicare, Medicaid and Commercial) spend in the United States could potentially be virtualized by 2026; representing a 4x growth in spend over today

Current OP¹ and office visits that can be virtually enabled
Commercial, Medicare, and Medicaid 2020 estimated,² billions of dollars



Digital health technologies



ILLUSTRATION: SHUTTERSTOCK

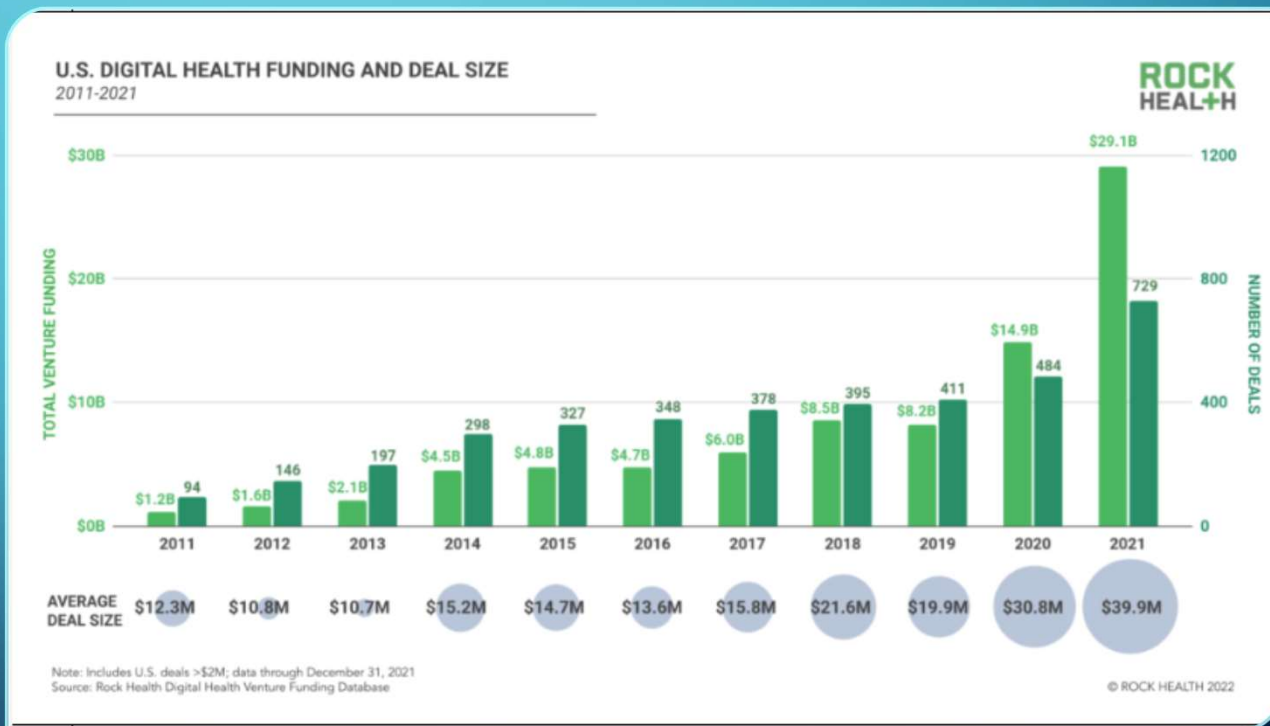
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Digital Health: Connects and empowers people and populations to manage health and wellness, augmented by accessible and supportive provider teams working within flexible, integrated, interoperable, and digitally-enabled care environments that strategically leverage digital tools, technologies and services to transform care delivery.

Source: HIMSS

DIGITAL HEALTH INVESTMENTS – YEAR OVER YEAR GROWTH

- 2021 saw the largest investment in digital health ever with over \$30B in venture funding.
- Deal volume and size also continues to grow, with over 729 deals and almost \$40M per deal average in 2021.



DIGITAL HEALTH – INVESTMENT THEMES

2021 TOP FUNDED VALUE PROPOSITIONS

2017-2021; numbers equate to funding rank

	2017	2018	2019	2020	2021
RESEARCH & DEVELOPMENT	\$0.8B 3	\$1.3B 2	\$0.8B 6	\$2.3B 2	\$5.8B 1
ON-DEMAND HEALTHCARE	\$0.6B 5	\$1.6B 1	\$1.4B 1	\$3.2B 1	\$4.5B 2
TREATMENT OF DISEASE	\$0.3B 12	\$0.9B 7	\$1.0B 3	\$1.7B 4	\$4.5B 3
FITNESS & WELLNESS	\$0.8B 2	\$1.2B 3	\$1.3B 2	\$1.8B 3	\$4.3B 4
HEALTHCARE MARKETPLACE	\$0.4B 10	\$0.5B 12	\$0.5B 12	\$1.0B 10	\$3.2B 5
NONCLINICAL WORKFLOW	\$0.4B 9	\$0.6B 9	\$0.7B 8	\$1.1B 9	\$2.8B 6

2021 TOP FUNDED CLINICAL INDICATIONS

2017-2021; numbers equate to funding rank



	2017	2018	2019	2020	2021
MENTAL HEALTH	\$0.5B 2	\$1.4B 1	\$1.0B 1	\$2.7B 1	\$5.1B 1
DIABETES	\$0.3B 4	\$0.4B 4	\$0.5B 4	\$0.8B 6	\$1.8B 2
CARDIO-VASCULAR	\$0.5B 1	\$0.6B 3	\$0.6B 3	\$1.1B 4	\$1.8B 3
PRIMARY CARE	\$0.1B 15	\$1.0B 2	\$0.5B 5	\$1.7B 2	\$1.6B 4
MUSCULO-SKELETAL	\$0.5B 3	\$0.2B 12	\$0.2B 14	\$0.2B 12	\$1.4B 5
ONCOLOGY	\$0.3B 6	\$0.4B 5	\$0.6B 2	\$1.3B 3	\$1.4B 6

Note: Companies can be tagged as multiple value propositions and clinical indications. Rock Health tracks 20 value propositions and 23 clinical indications. Box colors correspond to the funding rank of the value proposition and clinical indication each year. The light grey applies to any funding rank over 6.
Source: Rock Health Digital Health Venture Funding Database; includes U.S. deals >\$2M; data through December 31, 2021

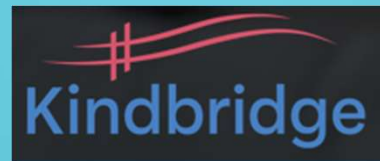
INNOVATIONS IN HEALTHCARE TECH APPLICATIONS



Amazon Alexa enabled application leveraging artificial intelligence to translate symptoms into medical advice personalized to your age, gender, medications and health history.



Calm, has an innovative care coordination app (Care Memo) to connect patients, caregivers and providers to ensure connectivity of vitals, assessments, and educational information.



Connecting mental health providers and patients through a personality matching algorithm; improving the Personal Emotional Connection before the session begins by choosing people who will connect naturally to drive quality outcomes.



Uses smartphone to track user's social interactions, physical movements and tone of voice to provide early diagnosis of depression.



Monitors heart rate and able to detect arrhythmias through smartphone.



Non-Emergency Medical Transportation (NEMT) SAFERIDE is a customized end-to-end transportation program around your specific needs, relieving the headache of transportation intake, coordinating, and scheduling.

WEARABLES TECHNOLOGY



Fitness tracker with heart rate, activity, SpO2, ECG, Irregular heart rhythms, skin temp variations, sleep tracking and more



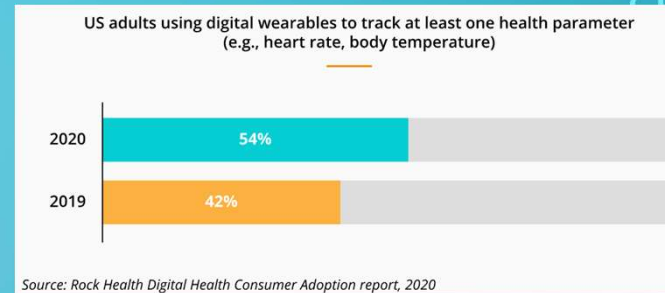
BioButton® Medical Grade Wearable Device for Continuous Remote Monitoring enabling personalized patient care, clinical workflow automation and proactive clinical interventions
20+ Vital Signs and Biometrics (skin temp, heart rate, body position, step cadence & strength, sleep, activity level, respiratory rate and more)



Future of health wrapped around your finger. Monitoring your sleep heart rate, activity, and temperature



WEARABLE ECG/EKG
Track your complete heart health on your smartphone
Get a clinically validated electrocardiograph trace for deeper heart health insights
Enjoy your lifestyle with an innovative and easy to wear design



VIDEO – HOSPITAL AT HOME

<https://www.today.com/health/mayo-clinic-offers-advanced-health-care-patients-home-t228876>

Hospital-level care at home? Mayo Clinic offers new model for patients

The innovative program offers hospital-level care for acute patients right in their own homes.



COVID – THE GREAT DISRUPTOR

COVID has **expedited use** and **acceptance** of digital tools and services with our senior population including Virtual Visits/Telehealth & Remote Patient Monitoring (RPM)

Pre COVID



Today



TELEHEALTH ADOPTION

View of Telehealth Post COVID

1 Consumer

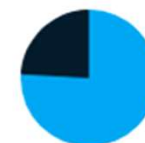
Shift from:



11%

use of telehealth in 2019

To:



76%

now interested in using telehealth going forward

While the surge in telehealth has been driven by the immediate goal to avoid exposure to COVID-19, with more than 70 percent of in-person visits cancelled,¹ 76 percent of survey respondents indicated they were highly or moderately likely to use telehealth going forward,² and 74 percent of telehealth users reported high satisfaction.³

2 Provider

Health systems, independent practices, behavioral health providers, and others rapidly scaled telehealth offerings to fill the gap between need and cancelled in-person care, and are reporting

50–175x

the number of telehealth visits pre-COVID.⁴



In addition, **57%**

of providers view telehealth more favorably than they did before COVID-19 and

64%

are more comfortable using it.⁵

3 Regulatory

Types of services available for telehealth have greatly expanded, with the Centers for Medicare & Medicaid Services (CMS) temporarily approving more than

80 new services

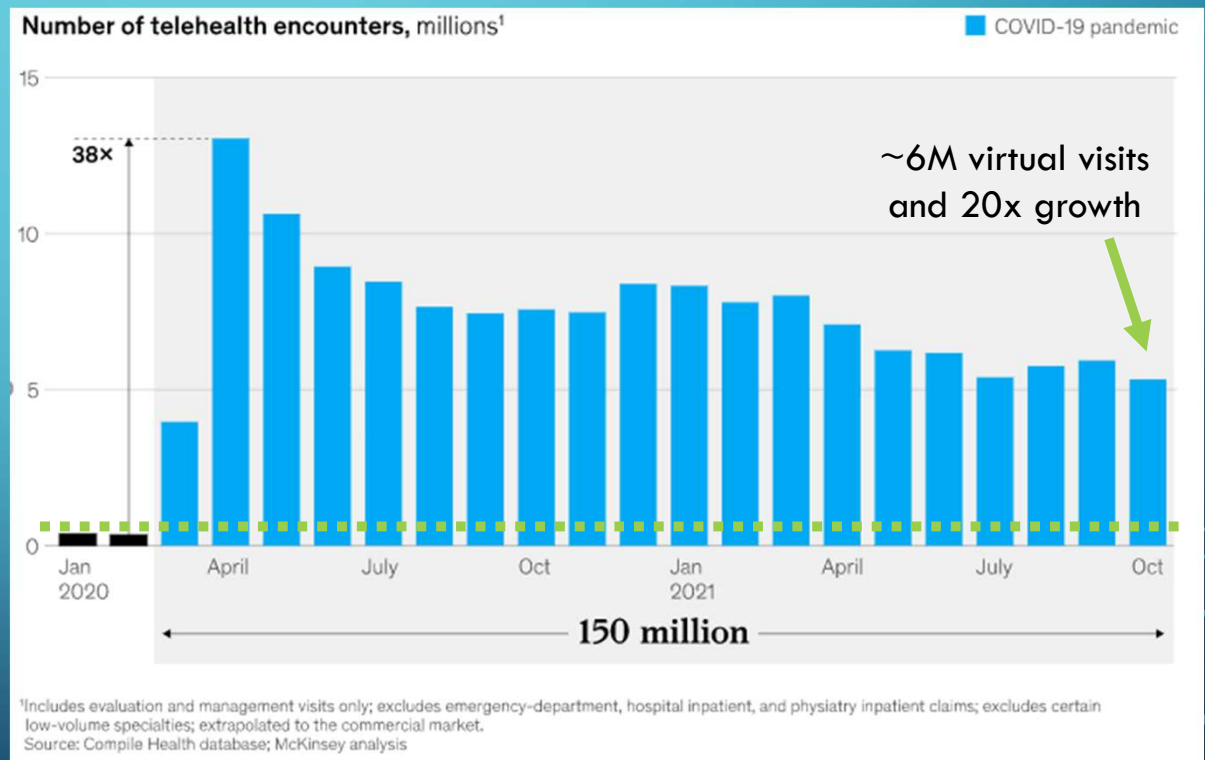
and lifting restrictions on originating site, allowing Medicare Advantage plans to conduct risk assessments via telehealth, and adding other regulatory flexibilities to increase access to virtual care.⁶



VIRTUAL VISIT UTILIZATION

Virtual health visits grew by 38x at the onset of COVID. While there was an initial drop off when society began to reopen, we are still seeing strong demand and 20x growth from pre COVID.

Here to stay.....



KEY CAPABILITIES OF VIRTUAL CARE OR TELEHEALTH



Virtual Visits

- Direct link access via text/email
- No App, Web-RTC



Screen Share

- Allow provider to share care plan and educational materials in real time



Multi-Party Integration

- Include your family and your entire care team



Interpretation Services

- 130+ languages including ASL



Recording

- Record visits for review after-the-fact



Image Scan & Capture

- Manage and track your medications with your care team



Remote Monitoring

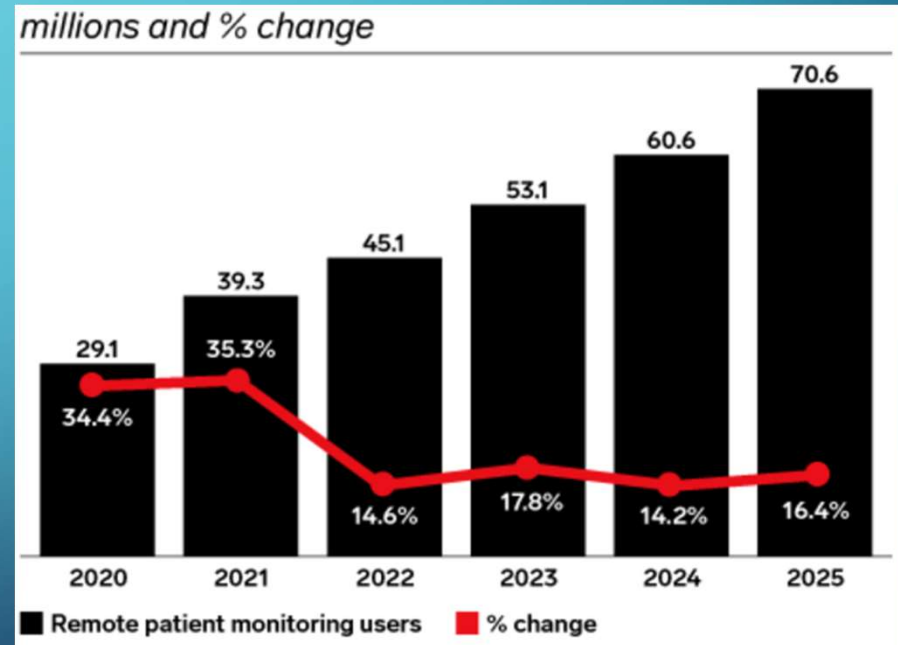
- Well-being wearables
- Chronic disease monitors

REMOTE PATIENT MONITORING (RPM)

“We must enable technology to allow health systems to have a continual relationship with their patients; the care journey doesn’t simply end when they leave the hospital. For many, they require constant treatment, which is where the advent of remote patient monitoring becomes a useful asset.”

Rock continues, “If telehealth was getting technology’s foot in the door as it relates to patient care, RPM extends the leg and then the entire body into the home. We can be even better stewards of our patients’ health if we supply them with the right tools to remain connected.”

Eric Rock – Founder of Vivify Health



Source: Insider Intelligence, Aug 2021

WHY REMOTE PATIENT MONITORING NOW?

Provider Shortages



Shortage of practitioners in the United States is driving RPM utilization. The Association of American Medical Colleges (AAMC) predicts that the shortage of primary care physicians could be as high as 55,000 by 2023, largely due to the aging population.

While the overall population will increase by over 10% during this period, the number of people over the age of 65 will increase by more than 45%.

Practitioner shortages are therefore inevitable, making RPM an essential element in treating more patients while maintaining the quality of care.

Access to Care



1) Transportation is not a barrier in RPM. In addition, as patients receive feedback remotely, they do not need to set aside lengthy chunks of time, often using sick days or vacation days, to drive to the doctor, wait, and have the appointment before driving back to work.

2) Provides access to rural populations where seeing a provider may not be feasible in a timely fashion.

46M or 14% of Americans are living in rural areas

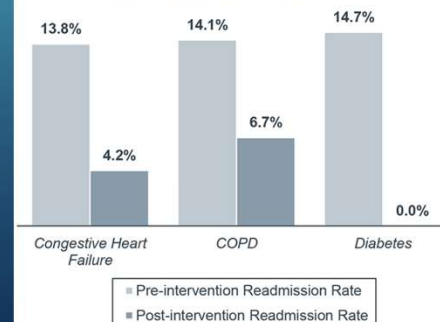
Ongoing Engagement



Addressing concerns earlier, such as noticing a patient's blood pressure increasing and discussing the importance of medication adherence and physical activity.

This allows the care team to engage with the patient before they presents with a stroke or other complication of uncontrolled high blood pressure.

Centura Pilot Program Shows Dramatic Readmission Reduction¹



62%

Reduction in 30-day readmissions related to congestive heart failure, COPD, diabetes

KEY CAPABILITIES OF RPM – VIVIFY HEALTH PRODUCT



What is Vivify?

- End-to-End Software Platform
- Wellness + Coordination + Monitoring
- Evidence-Based Patient Pathways
- Commercially Available Devices
- Bluetooth Biometric Sensors
- API for 3rd Party Apps and Devices
- EMR Integration

What does Vivify do?

- Engage → Educate → Motivate
- Remote Monitoring → Virtual Visits
- Clinical Call Center Automation
- Helps to reduce Overall Costs of Care
- Improves Satisfaction



DEMO – VIVIFY REMOTE PATIENT MONITORING

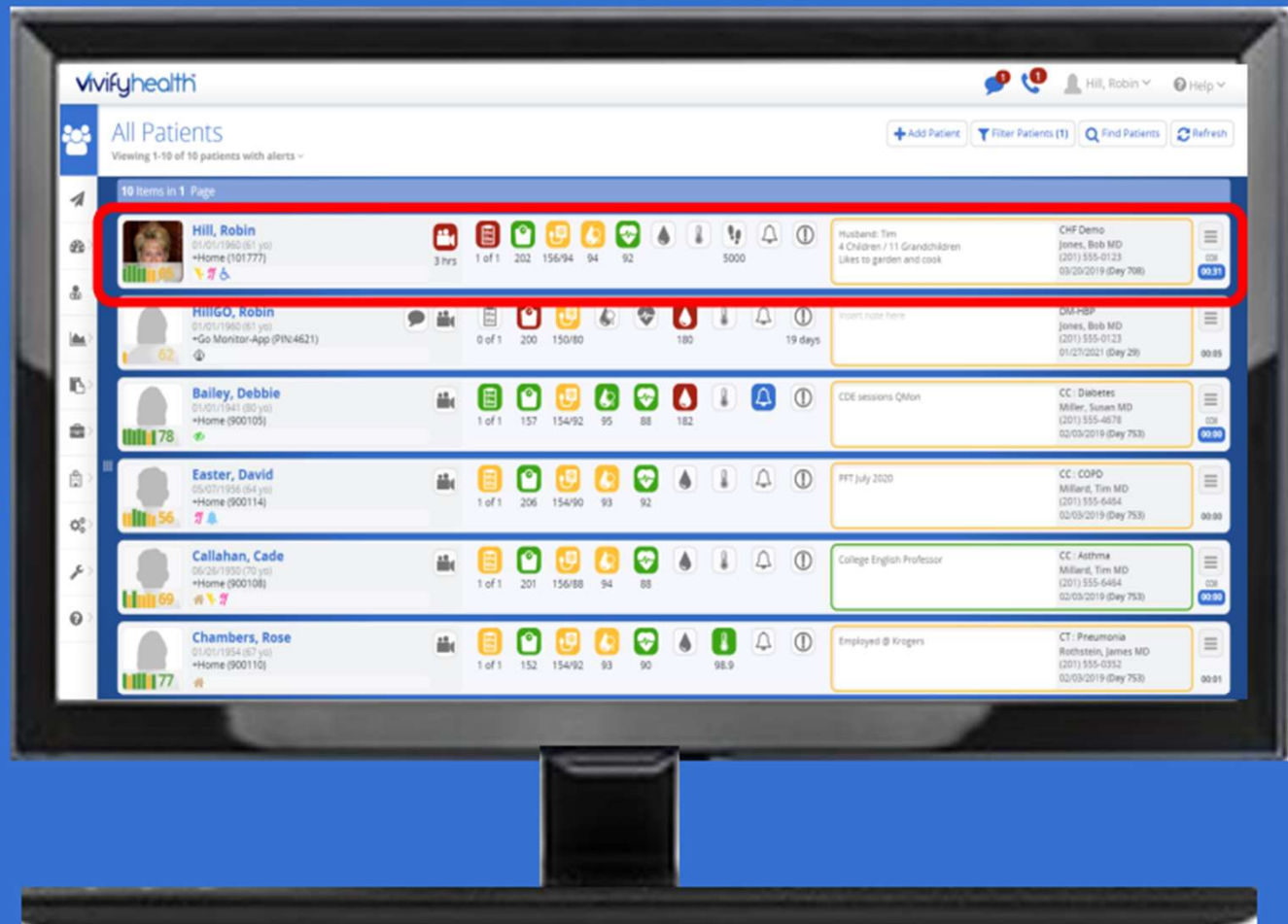
- [Pathways Home Overview - YouTube](#)

Pathway intelligence guides care teams to respond to the right patients at the right time, intervening as needed to prevent unplanned, high-cost care.

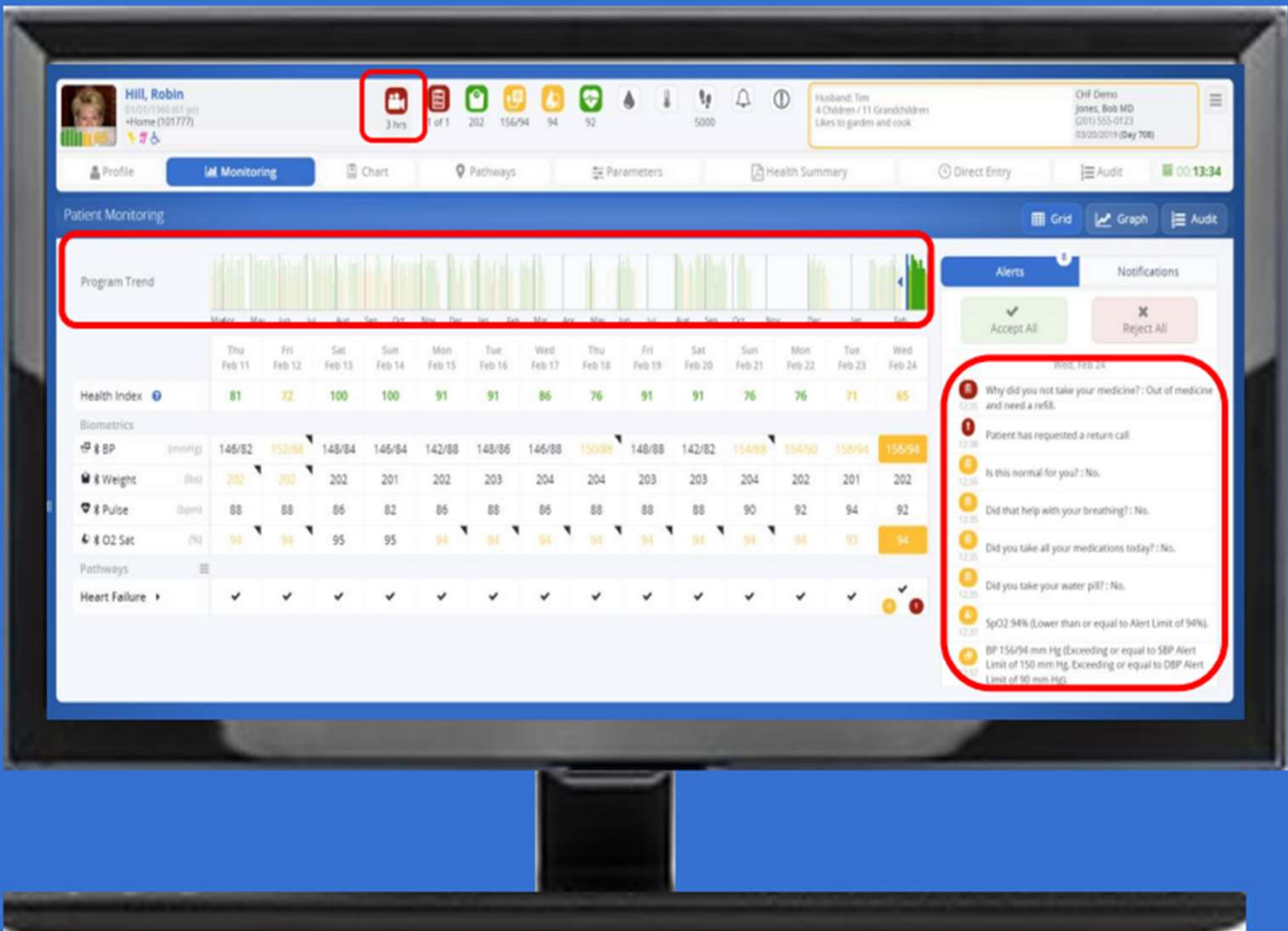




- Role-Based Access and Views
- Patients Prioritized by Health Score
- Filters by Category of Care
- Condition Based Pathways
- Biometric Device Management
- Patient-Specific Alert Thresholds
- Integration with EMR Workflows



- Track Health Score
- Review, React, Record
- Communicate Care
- Coordinate Care





QUESTIONS ?



18-29

ON-DEMAND PRIMARY CARE

Cost-Conscious

A free visit ranked #1 out of 56 clinic attributes.

Access Preference



54% prefer after-hours access over weekend access

PRIMARY CARE PHYSICIAN (PCP) LOYALTY

Option Seekers

Likelihood to Switch PCPs in Next Year Scale: 0 (not at all likely) to 10 (extremely likely)



This group is the least loyal—they were the most likely to switch PCPs and the most likely to be enticed to leave for a new competitor's offering.

SPECIALTY CARE

Referral Rebels + Online Shoppers

Likelihood to Break a Referral

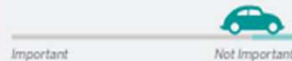


33.9% of self-referrers in this group said they broke a referral to see a specialist of their choosing. They were also the most likely to find a provider online.

SURGICAL CARE

Most Likely to Travel for Quality

15.9% of decision determined by travel time



This age group is the least concerned about traveling for surgery. Perceived surgeon quality, hospital affiliation, and a referral determine more of their surgical decisions than other groups'.

VIRTUAL VISITS

Ready for Virtual

67% would consider a virtual visit if in-person care is unavailable that day

20% would consider a virtual visit if it was less expensive than in-person care

Ranking of Virtual Channels



THE BOTTOM LINE

This digitally fluent group is the most socially connected generation—they're the most likely to read reviews and compare prices to find providers offering maximum convenience at the lowest cost.

They're also the most likely to shop for providers and write reviews online.



30-49

Cost-Conscious

A free visit topped this group's list of priorities.

Access Preference



51% prefer after-hours access over weekend access

Price Beats Quality



This group was more likely to leave their PCP because of a \$250/year care cost increase than experiencing a medical error.

Willing to Break a Referral

Likelihood to Break a Referral



17.9% of self-referrers in this age group received a specialist referral but shopped for care instead of following it.

Local Over Top Quality

17.3% of decision determined by travel time



Travel is not make-or-break for this group—it factored less in their decisions than costs, but was still nearly 3x more important than perceived surgeon quality.

Prime Virtual Visit Targets

73% would consider a virtual visit if in-person care is unavailable that day

47% would consider a virtual visit if it was less expensive than in-person care

Ranking of Virtual Channels



These are the health care decision influencers—they often direct not only their own care, but also that of their partners, children, and aging parents. They want care to fit into their busy lives—during nontraditional hours and through virtual options.



50-64

Access Seekers

This group might pay more for access and convenience: time to first available appointment and ancillaries on site outranked a free visit.

Access Preference



57% prefer weekend access over after-hours access

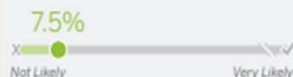
Quality Over Price



Experiencing a medical error was more likely to make this group leave their PCP than a \$250/year care cost increase.

Unlikely Referral Breakers

Likelihood to Break a Referral



7.5% of self-referrers in this age group did not follow their doctor's referral for a specialist but instead shopped for a specialist of their choice.

Cost Sensitive

18.9% of decision determined by travel time



This group is disinterested in traveling for care and was the most cost-sensitive of the age cohorts when it comes to surgical care.

Receptive to Virtual Visits

62% would consider a virtual visit if in-person care is unavailable that day

32% would consider a virtual visit if it was less expensive than in-person care

Ranking of Virtual Channels



Increasingly delaying retirement, this group is staying active and engaged in personal wellness longer than before.

Often managing multiple chronic care conditions, these consumers expect timely access to in-person care.



65+

Physician-Centric

Provider continuity and credentials were more important than a free visit.

Access Preference



61% prefer weekend access over after-hours access

Most Loyal

Likelihood to Switch PCPs in Next Year Scale: 0 (not at all likely) to 10 (extremely likely)



The 65+ cohort is the most loyal—they were the least likely to leave their PCPs and also the most likely to recommend their providers.

Affiliation Influences Choice

Likelihood to Break a Referral



Only 7% of these self-referrers reported breaking a referral to see a provider of their choosing. Hospital affiliation was most important in this cohort's specialist selection.

Travel Avoiders

20.3% of decision determined by travel time



This age group doesn't want to travel for care—travel time was more than twice as important as following a referral or hospital affiliation to this group.

Most Resistant to Virtual

58% would consider a virtual visit if in-person care is unavailable that day

20% would consider a virtual visit if it was less expensive than in-person care

Ranking of Virtual Channels



These are health care's traditionalists: they are the most loyal age group, least likely to break a referral, and disinterested in traveling for care.

However, as the Baby Boomers age into Medicare, they will alter the profile of the 65+ consumer group.