Health at Home: New Era of Healthcare

Virtual Care: State of the Market

This whitepaper examines the state of the virtual care market, particularly the shift from facility-centric care to healthcare at home, including hospital-to-home, chronic care, post-discharge care, and remote diagnostic care. As more and more healthcare activities take place from home, passive continuous monitoring solutions and new technology such as artificial intelligence will be critical to communications between providers and patients. In addition, new solutions that offer overnight monitoring will play a critical role in helping to fill the gaps, particularly in assessing patient deterioration or changes in health conditions.
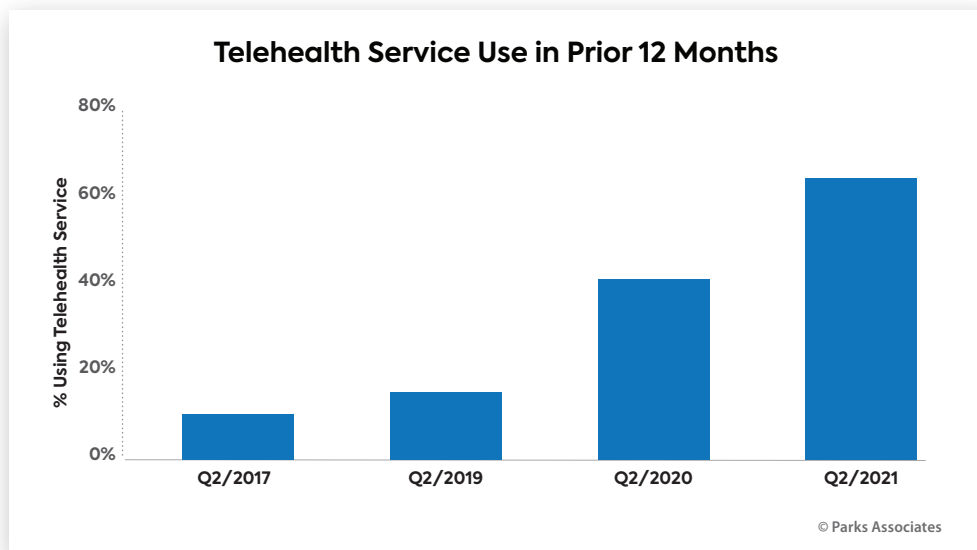
The pandemic has forever changed the trajectory of healthcare and specifically virtual care. Before the pandemic, forward-thinking care providers and health systems were trialing virtual care solutions that could bridge the facility to the home, seeking connected care models that work for their systems and patients. Yet, prior to 2020 — connected health to the home or in the home was at the periphery of healthcare.

COVID-19 created a sea change in connected healthcare. A new perspective is taking hold among providers, payers, vendors and consumers that the home is a viable and valid location for health management and healthcare delivery. Demand for and deployment of virtual health services grew exponentially as social distancing measures and staff capacity issues limited patient visits to healthcare providers' physical facilities.

Out of necessity, the market for remote health technology products and services has accelerated 5-10 years ahead of its prior pace of development.

As of April 2021, 66% of US broadband households are familiar with telehealth services compared to 50% in May of 2020. The use of telehealth services has more than quadrupled, increasing from 15% in 2019 to 64% in 2021.

© Parks Associates

EarlySense   PARKS ASSOCIATES

Telehealth Service Use in Prior 12 Months

Chart: % Using Telehealth Service

- Q2/2017: ~9%
- Q2/2019: ~14%
- Q2/2020: ~40%
- Q2/2021: ~63%

© Parks Associates

Top Six Drivers of Remote Care

A confluence of factors is driving the expansion of healthcare into the home.

1. Reimbursement changes: Over the past two years, CMS has made substantial changes to support virtual care reimbursement, including expanded reimbursement of telephonic evaluation and management visits as well as behavioral health services. Physicians now receive reimbursement for remote patient monitoring services provided via a third-party vendor under a physician's general supervision. CMS also instituted payment parity to pay practitioners at the same rate as similar in-person services.

2. Regulatory changes: CMS waived limitations on the types of clinical practitioners able to offer telehealth services to Medicare patients and suspended requirements around originating sites (i.e., the location from which a telehealth patient can receive care), so that Medicare beneficiaries can now receive telehealth services inside their own homes. It added 135 additional allowable services that could be delivered via telehealth, which more than doubled its service list.

3. New funding: The CARES Act of 2020 allocated $200M of funding for telehealth to support the expanded use of these tools. Funding in the private sector is also at an all-time high. Digital health incubator Rock Health reports that the first half of 2021 surpassed all of 2020's funding, which was itself a blockbuster year for digital health funding.[1] In addition, the bipartisan Choose Home Care Act of 2021 would allow for Medicare beneficiaries to recover at home following a hospitalization with extended at-home care, rather than a skilled nursing facility.
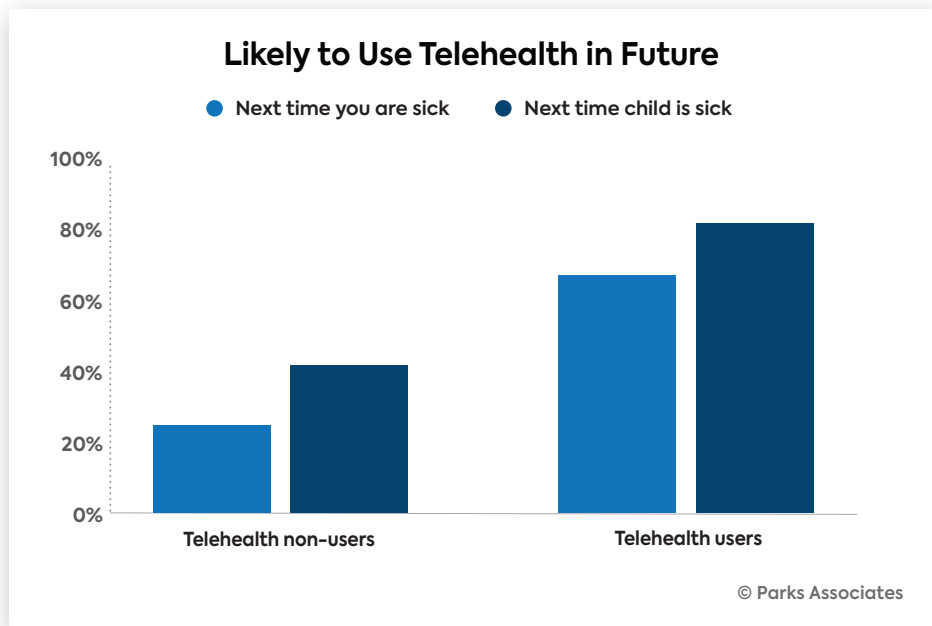
4. Staffing shortages: Despite vaccinations being widely available in the United States, vaccination rates have slowed. As a result of COVID-19 variants, a new surge of infections have occurred, further exacerbating staff shortages and hospital capacity issues. A desire to reduce infection spread continues to fuel the demand for virtual care.

5. Device innovation: Health devices — both medical-grade and consumer-oriented — are becoming more capable and accessible, expanding the possibility of virtual care models and empowering consumers with more insight into their own health status. While these technologies help advance applications and insights as a result of the ability to capture vital signs, it is still critical for devices to demonstrate alignment with accepted vital sign standards, like Polysomnography (PSG), the current gold standard for measuring sleep. In the future, it's expected that more and more manufacturers will look to clinically test health devices against these set standards.

EarlySense®   PARKS ASSOCIATES

6. Consumer demand: Consumer familiarity with telehealth services is increasing across all demographics. While the average telehealth user is 44 years old and likely to have children in the home, telehealth use has increased substantially across all demographic groups. Parks Associates Q2 2021 consumer data reveals the following changes in US broadband households:

- 54% of households with an annual income of less than $30,000 used a telehealth service in the past 12 months, compared with 12% in Q2 2019.

- 42% of those who self-identify as technology laggards (i.e., buying new technology only once traditional alternatives are no longer available) used a telehealth service, up from 6% in Q2 2019.

- 69% of Black/African-American consumers and 70% of Latino or Hispanic consumers used a telehealth service, up from 43% and 23%, respectively, in Q2 2019.

- 42% of consumers ages 65 and older reported using a telehealth service in Q2 2021, up from just 6% in Q2 2019.

Additionally, consumers are now gravitating towards telehealth as a preferred method of receiving care in the future. These are strong indications that consumers want and likely will expect telehealth to be available to them going forward.

Likely to Use Telehealth in Future

● Next time you are sick ● Next time child is sick

© Parks Associates

Beyond Virtual Visits: RPM and Hospital at Home

Including virtual visits, remote care models take five main forms:

- **Virtual visits –** typically for check-ups, primary care, or urgent-care type conditions; few visits incorporate vital sign or other data from health devices and sensors.

- **Remote diagnostics –** remote patient monitoring (RPM) using connected health sensors and devices to diagnose a specific condition, often cardiac issues or sleep disorders.

- **Chronic condition management –** ongoing remote patient monitoring programs for those with chronic conditions.

- **Post-discharge monitoring –** remote patient monitoring for a limited period of time after a patient is discharged from the hospital.

- **Hospital at home –** provides hospital-level care into a patient's home, including not only monitoring devices but staff to the home as well.

One of the key limiting factors for virtual visits today is the lack of vital sign and other critical health data to which clinicians would otherwise have access in a facility setting. This lack of data limits the types of conditions that can be treated in a standard virtual consultation model. Each of these additional remote care models incorporate medical sensors and devices and elevate the level of care that is possible at home.

|	**Remote Diagnostics**	**Chronic Condition Management**	**Post-Discharge Monitoring**	**Hospital at Home**
	Remote patient monitoring program that provides patients with a device or kit of devices that monitor key disease indicators and send data to a care provider or service to diagnose a potential health condition. Particularly useful for conditions that re difficult to detect or get accurate readings during intermittent in-person visits.	Remote patient monitoring program that provides patients with a device or kit of devices to provide the patient with more insight into their condition, provides care providers with a more holistic view of the patient's progress across time, and alerts care providers if intervention is needed before a scheduled check-in.	Remote patient monitoring program that provides patients with a device or kit of devices that track key vital signs and send data to a care provider or service for monitoring of their health status for a set period of time after the patient is discharged from the hospital. Monitoring commonly occurs for 30, 60, or 90 day periods to help reduce fines associated with high hospital re-admission rates.	Hospital at home programs provide hospital-level care at a patient's home under specific conditions and require both ongoing monitoring from connected medical devices, in-home staff visits, and remote consultations from providers. CMS counted 187 hospitals in 83 health systems participating in its Acute Hospital at Home program as of November 2021.
Common Application	· Sleep disorders diagnosis · Arrhythmia detection	· Diabetes · COPD · Hypertension · Congestive Heart Failure	· Post-discharge monitoring · COVID-19 at-home recovery · Rehab-related educational materials	· Alternative to ER admission for 60 conditions, including pneumonia, heart failure, COPD, asthma
Technology Use	· Diagnosis sensors/devices, mostly provider-facing data · Often required continuous monitoring with wearable sensors or devices	· Monitoring devices, with patient-facing apps · Daily or weekly vital sign checks may be sufficient; provider intervention as needed	· Monitoring devices, with patient-facing apps · Reading daily or multiple times per day; provider intervention as needed	· Monitoring sensors/devices, mostly provider-facing data · On-demand audio connection required · Daily in-person and remote consultations required

EarlySense® PARKS ASSOCIATES

Bridging Home to Provider: Connected Health Sensors and Devices

Connected health sensors and devices are critical to expanding the applications of care in the home. While remote patient monitoring platforms have not yet scaled to the same extent as virtual visit solutions, they are highly in demand by care professionals, and consumer experience with connected health devices and sensors in the home is growing rapidly.

Use of Connected Health Technology in the Home Grows

As of Q2 2021, 40% of adult heads-of-broadband households report participating in a remote patient monitoring (RPM) program at some point in time. No single use case dominates, though roughly the same percentage of respondents report using a physician-provided device at home for ongoing monitoring as to aid in diagnosis.
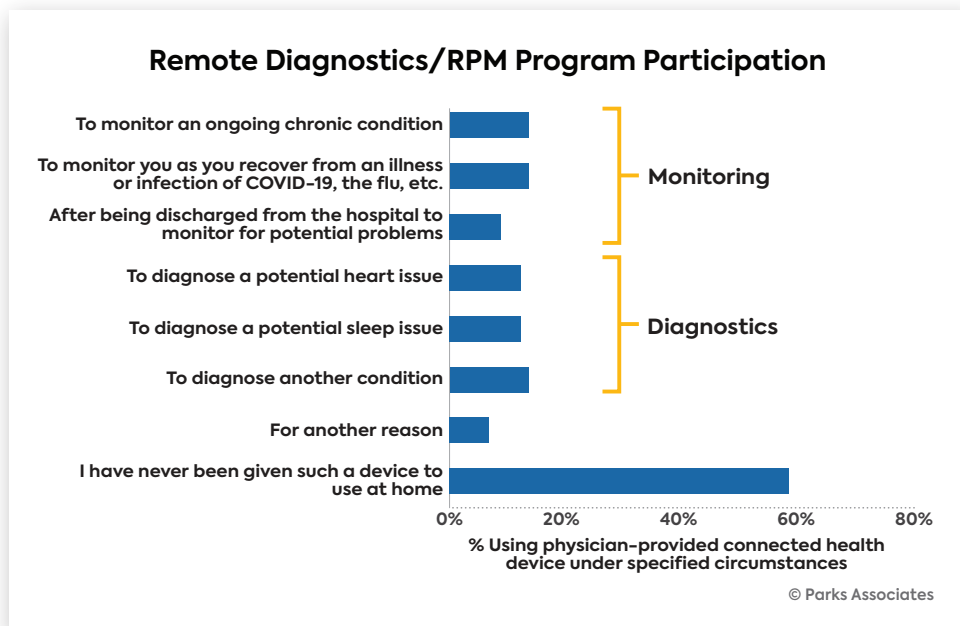

Consumers are increasingly seeking out their own health devices to own and use at home. Over one half of US broadband households now report owning at least one connected health device, a dramatic increase from 2020, and 30% own three or more. Adoption of smart watches, smart thermometers, connected pulse oximeters and blood pressure cuffs grew substantially. In addition, intentions to purchase connected health devices about doubled for all connected health device categories year over year.

Reimbursement for connected medical devices through remote patient monitoring or hospital at home programs currently constitutes a large potential revenue pool in the United States. This potential is further bolstered by consumer demand for virtual care technology — and the possibility of future direct-to-consumer sales.

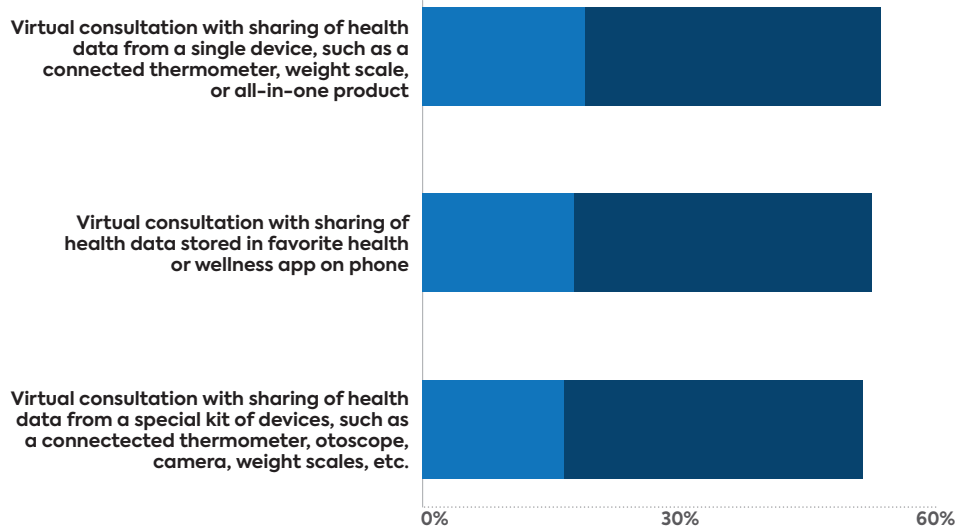## Consumers Value the Ability to Share Device Data with Providers

Consumers understand the value of health data for enriching virtual consultations. Current telehealth consultations for urgent and primary care visits typically lack any real time vital sign data, limiting the depth of insight and the potentially treatable conditions via virtual modalities. All of the tested ways in which data could be collected and shared with providers during a virtual consultation are appealing to one-half of all respondents. Enthusiasm with consumer technology in general strongly correlates with appeal — those enthusiastic about technology in general are more likely to find remote diagnostic services appealing.

Overall Adoption of Connected Health Devices

© Parks Associates
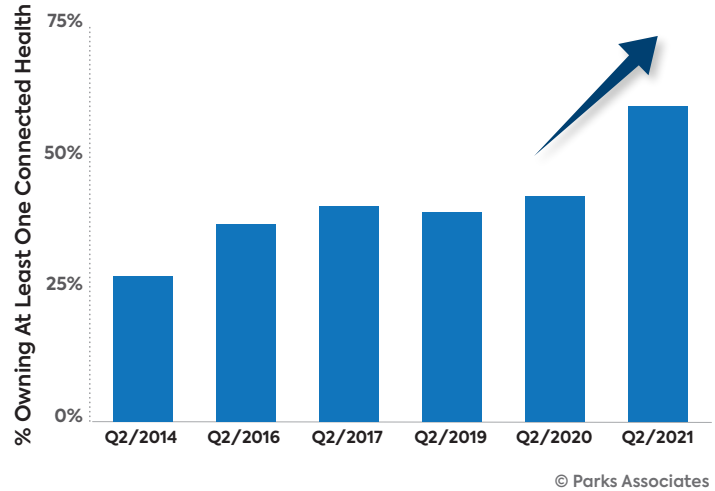
Appeal of Sharing Health Device/App Data During Virtual Consultations

● Appealing (Rating 5)   ● Very appealing (Rating 6-7)

Virtual consultation with sharing of health data from a single device, such as a connected thermometer, weight scale, or all-in-one product

Virtual consultation with sharing of health data stored in favorite health or wellness app on phone

Virtual consultation with sharing of health data from a special kit of devices, such as a connectected thermometer, otoscope, camera, weight scales, etc.

© Parks Associates
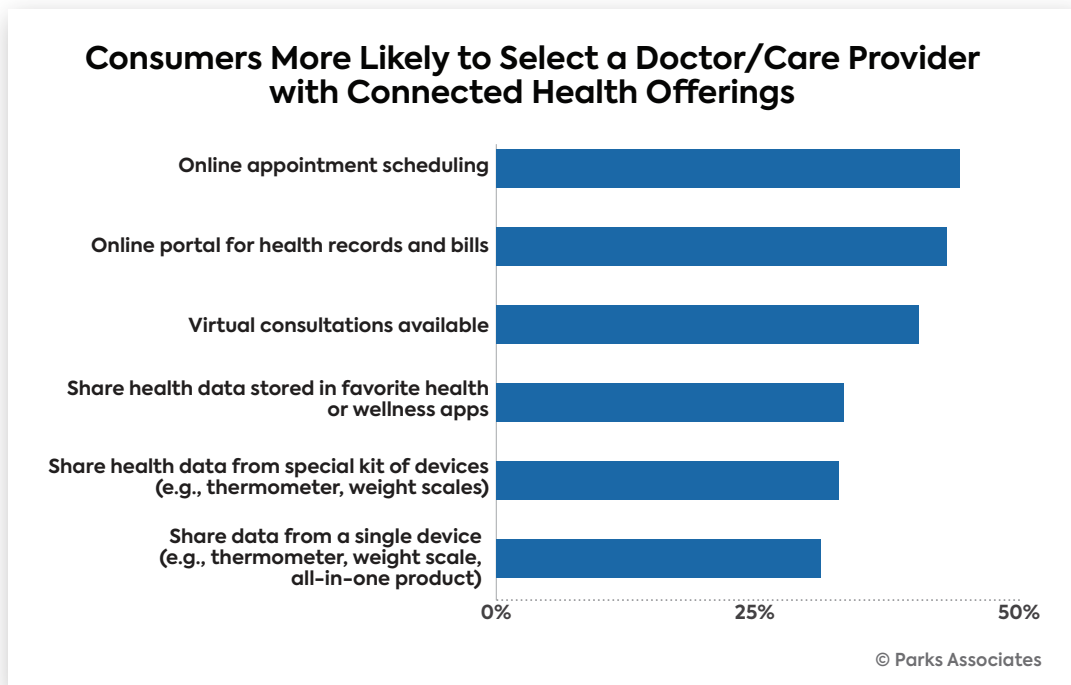
EarlySense®   PARKS ASSOCIATES

Though it's rare now, integrating health device data with virtual visit and other remote care services is on the horizon. RPM and hospital at home programs, like the Home Hospital program at Brigham And Women's Hospital or Johns Hopkins' Hospital at Home, are leading the way by provisioning devices, but there is an opportunity to provide similar integrations for primary and urgent care telehealth visits as well. Telehealth users want to share device data during virtual consultations. Those who have past experience using telehealth services are substantially more likely than those who have to find the ability to share data with a care provider during a virtual consultation highly appealing. The same holds for those who already own at least one connected health device at home.

Tech-enabled service features, like online patient portals and virtual care options, also influence a patient's choice of care provider. The first wave of consumer-facing digital health features, such as online scheduling and access to one's health records, are now table stakes for most provider practices and health systems. Consumers want to be able to perform these tasks online, and over 40% say these features influence their choice of provider. Nearly the same percentage of consumers now say that virtual consultation availability influences their choice of behavior as well. This is a strong call for providers to embrace virtual consultations as a normal course of business and invest in the new workflows necessary to make such offerings sustainable for the practice or system.

Also notable: more than a third say that the ability to share connected health device or app data also impacts their selection of a new care provider. Most health systems and practices are not yet comfortable incorporating consumer-generated data into their practice of care, but as health device adoption among consumers grows, demand for these features will only grow stronger.

Consumers More Likely to Select a Doctor/Care Provider with Connected Health Offerings

Feature	
Online appointment scheduling	
Online portal for health records and bills	
Virtual consultations available	
Share health data stored in favorite health or wellness apps	
Share health data from special kit of devices (e.g., thermometer, weight scales)	
Share data from a single device (e.g., thermometer, weight scale, all-in-one product)	

0%   25%   50%

© Parks Associates

EarlySense   PARKS ASSOCIATES

Critical Issues in Remote Monitoring: Data Capture and Quality

At present, many virtual care solutions have a weakness: they are remote visit only and lack the means to gather important vital sign and clinical testing data. This significantly limits the use cases of telehealth — limiting use of virtual solutions in tracking chronic conditions, in monitoring those patients who are at an elevated risk of complications due to a disease state, those who are pre- or post-surgery, and others who may benefit from tracking data.

While remote patient monitoring programs integrate data capture and monitoring capabilities, a number suffer from user experience flaws, resulting in low compliance rates. In August 2021, the Mayo Clinic released results of a study of more than 7,000 patients across 41 states who had participated in RPM programs for COVID-19 treatment. The study found the remote treatment to be safe and effective, but even this well-designed program from a national leader does not achieve full compliance. Overall, 79% of respondents engaged with the RPM technology, meaning they engaged and received at least one day of monitoring. And, on average, patients complied with 60–70% of the self-reporting of vital signs or symptoms tasks that were scheduled or assigned.[2]

Several critical issues have the potential to impact the effectiveness of remote care programs in the home:

- **Device pairing:** Depending on the solution and care plan design, sensors and devices may connect to a patient's smartphone via Bluetooth or Wi-Fi, or may have cellular connectivity (embedded or via a hub device). Device set-up and connectivity is the first step in ensuring a patient can engage in an RPM program, and also a first line of potential failure. While cellular solutions are typically more costly, they do not require the end-user to take on the job of managing basic solution functionality.

- **User reporting errors:** Any solutions that require an end-user to self-report data, rather than detect and collect that data automatically, potentially introduces human bias, error, and simple forgetfulness and disengagement. Depending on the complexity of their health needs or the requirements of the virtual care solution, patients may be limited in their ability to participate in their own care management. Automated data collection, where possible, will typically result in higher quality data.

- **User discomfort:** Solutions that require consumers to wear a sensor or device may prove to be too uncomfortable for continuous or long-term use. One-quarter of consumers who do not currently own or intend to buy a smart watch or fitness tracker report that because they are not likely to wear bands or watches on their wrist, they don't own one. This is a top five barrier to purchase. Discomfort may be particularly onerous for seniors and those with sensitive skin. Users may also feel uncomfortable with the idea of continuous body-warn sensors and devices, out of health privacy concerns.

- **Intermittent data:** "Spot check" monitoring has the potential to miss important changes in a patient's health status. For high acuity cases, the ability to have a continuous monitoring feed that flags potential patient deterioration is critical. CMS' Acute Hospital at Home program requires the ability for care providers to intervene within 30 minutes in an emergency. Intermittent data will not be sufficient for care providers to detect, escalate, and respond in emergency scenarios.

- **Overnight monitoring:** In a hospital setting, nighttime vital signs are taken and monitored, yet most RPM solutions rely solely on daytime metrics requiring end-user consciousness. However, health declines may happen overnight, and can be a critical blind spot in current RPM programs.

Ultimately, care providers must make decisions based on the data in front of them. In an RPM or Hospital at Home scenario, providers will seek platforms that instill trust by practicing quality user design, adhering to quality regulations, and demonstrating the validity of the data their platform collects. The data must also be accessible and relevant for those managing care, so that they can quickly identify and respond to the data that matters most.

EarlySense®   PARKS ASSOCIATES

New Tech Solutions Driving New Outcomes

As more and more healthcare activities take place from home, continuous monitoring solutions — including those that can track a patient's status overnight — and new technology like artificial intelligence will be critical to support communications between providers and patients. Solutions that offer continuous and passive monitoring will play a critical role in helping to fill the gaps, particularly in assessing patient deterioration or important changes in health conditions.

Passive Monitoring Solutions: Next Era of Sensor-based Care

The development of smart sensors and the decreasing costs of devices have made it possible to offer chronic disease management, aging-in-place, and post-acute care services in the home. Truly continuous patient monitoring at home typically occurs in one of two approaches: wireless wearable monitoring sensors, patches, and devices or via environmental sensors. Companies taking the first approach use patches and wearable holsters to monitor cardiac and other vital sign information continuously.

Environmental sensors can detect health status passively and are an alternative or complimentary source of continuous monitoring, used both in healthcare and in the active aging market. Some systems use a combination of smart home sensors and peripheral devices to track users' activities of daily living and identify anomalies that may indicate abnormal, unhealthy, or emergency situations. These exception-based alerts may involve unexpected activities (entries and exits, bathroom visits, kitchen visits) or wellness notifications (prolonged inactivity, higher or lower than expected activity).

Other environmental sensors are embedded in products with the goal of passively detecting specific vital signs.

New innovative technologies include medical-grade under-the-mattress sensors that can detect the user's heart rate, respiratory condition and movement.

These passive monitoring approaches offer several benefits. Discomfort and a need for frequent charging are significant barriers to use of wearable technologies for continuous monitoring. One in four consumers who do not currently own a smart watch or fitness tracker report that they do not like to wear bands or watches on their wrist. Passive monitoring systems do not need to be worn, and so sidestep user concerns about discomfort or a need to remove the device for recharging. Furthermore, once they are set up, passive monitoring systems require little to no user interaction, meaning compliance is largely removed as a patient-shouldered burden.

As sensors are able to capture new data throughout the day, they are able to establish typical routines and normal activities by individuals. For instance, if someone does not open the refrigerator door in the morning, an alert could be set to help alert someone of this unusual/out of the norm activity.

EarlySense   PARKS ASSOCIATES

As of 2021, almost a quarter of heads of US broadband households report either currently caring for a loved one or expecting to provide care in the next five years. A majority of the cared-for population resides in their own home or a relative's home. Consumers have a strong desire to live independently, and sensor-based technology will enable seniors and caregivers to have relevant notifications that are meaningful.

Market Size of Caregivers

● Q2/2019   ● Q2/2020   ● Q2/2021

© Parks Associates
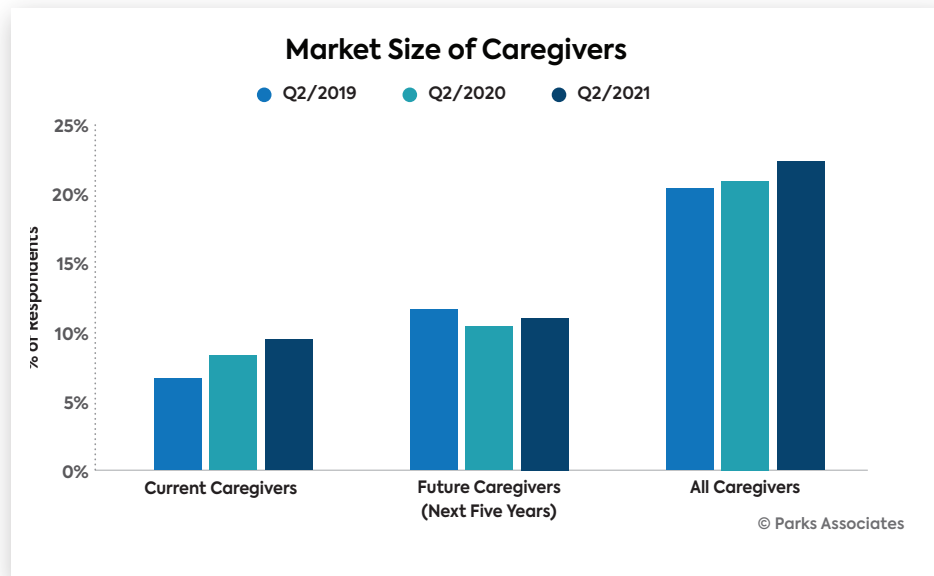
Addressing the Overnight Insights Gap: Sleep as a Vital Sign

A patient's sleep patterns, and overall health status overnight, remains a blind spot in many remote patient monitoring programs. Interestingly, studies show that patients get particularly poor sleep in a hospital setting, given the frequent disruptions for nighttime vital sign monitoring.[3] Part of the push to at-home recovery and care is the benefit patients receive from sleeping more comfortably. Still, this means a potential risk of missing patient deterioration, without the right monitoring tools.

Additionally, there is growing recognition among healthcare providers and clinical researchers that sleep duration and quality is so fundamental to overall patient health, and potentially indicative of a variety of serious health conditions, that it should be treated as a core vital sign.[4] Poor sleeping habits can both cause and exacerbate a number of other health conditions as well, including congestive heart failure, COPD, asthma, heart disease, and obesity.

Overnight monitoring provides clinicians with increased insight and detail into the data related to vital signs. According to leading medical reports, the most critical health events are preceded by warning signs that are detectable hours prior to the event. The ability to provide insight to data related to vital signs during sleep provided a comprehensive look at chronic and high-risk conditions.

Continuous overnight monitoring delivers clinicians increased temporal insight and ability to pair data related to sleep quality with vital signs for a more comprehensive look at key clinical markers common in chronic and high-risk conditions. According to the American Academy of Sleep Medicine, "current data supports the importance of healthy sleep for cognitive and mood function, as well as cardiovascular, cerebrovascular and metabolic health. Chronic insufficient sleep was found to be associated with increased morbidity and mortality."

EarlySense®   PARKS ASSOCIATES

Consumers are showing growing awareness of the importance of sleep. Ten percent of US broadband households report owning a smart sleep product, such as smart mattresses and stand-alone sleep monitors. This is double the adoption rate from just two years prior. Consumers also show interest in features of smart products that can monitor or optimize their sleep:

- One in five seniors find a smart thermostat that detects their sleep patterns and optimizes their home's temperatures to ensure their best sleep "very appealing" — even higher among pre-seniors: 31% of those ages 50-59 are interested in this capability.

- 65% of those intending to purchase a smart watch in the next 6 months say they would pay more for a model that can track their sleep quality and patterns and give advice on how to improve their sleep.

Adoption of Smart Sleep Products

© Parks Associates
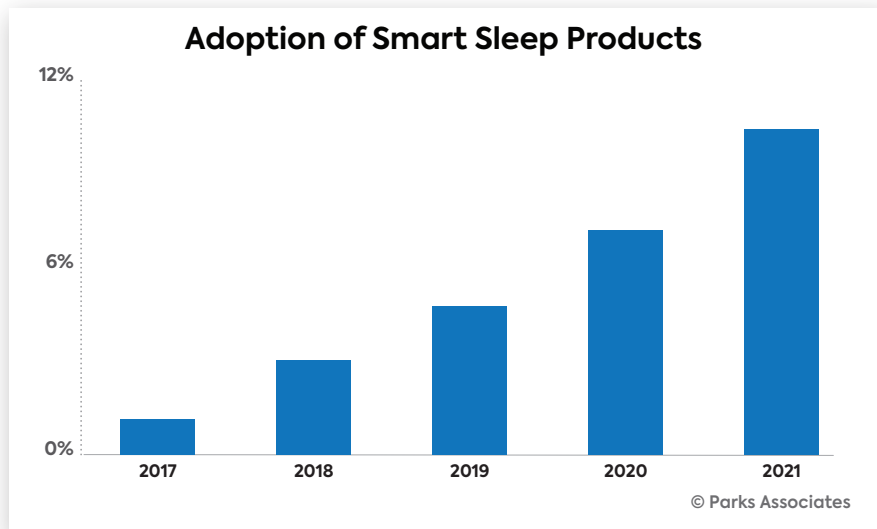
Making Sense of Data

Remote care in the home relies both on the quality of patient monitoring and on the insights provided to the care team. There is a real danger in data overload and alert fatigue to undermine otherwise well-designed RPM and Hospital at Home programs. The software platform and algorithms tasked with integrating and evaluating data must identify the data that matters, when it matters.

Increasingly, RPM platforms apply artificial intelligence to sort through the noise. The use of predictive analytics and machine learning algorithms in healthcare turn real-time data into actionable and potentially life-saving insights and diagnostic support. Examples of use cases powered by AI and algorithms include the ability to algorithmically compare patient trajectories, proactively identify and avoid health crises, triage at-risk patients, diagnose unidentified and undiagnosed medical conditions, and predict falls or mobility declines in the elderly, among many others.

Predictive analytics can proactively flag at-risk patients for an intervention prior to a health incident. These systems can integrate with EMRs via the HL7's Continuity of Care Document standard, Admit Discharge Transfer feeds, and custom field integrations. This lessens clinician reporting fatigue and allows event-based triggers to occur via the provider's own systems.

Just retrieving measurements is only scratching the surface of what connected health solutions can do. Artificial intelligence and machine learning, as well as highly tested and clinically proven algorithms, vastly increase the value proposition of connected health technologies and platforms. They enable a wide variety of new use cases, provide decision support tools for clinicians, and reduce administrative burden. They translate data into meaningful information and can even be shared back as insights or educational material for patients and family caregivers to understand their own health status.

Remote Healthcare is Evolving

Models of remote healthcare in the home are both scaling and evolving. Innovative players in this space are rolling out well-designed and user intuitive health IoT solutions, pulling in data from sensors and devices in consumers' homes, and building intelligent, integrated platforms that better serve their clients and patient populations. Changes in reimbursements have also helped accelerate the adoption of new approaches to monitoring that, in lieu of sending data straight to medical records and putting the burden of viewing and interpreting data on clinicians, call on intelligent platforms to interpret the data and escalate to clinicians if appropriate.

There remains a need for solutions that can remove the burden of compliance from the end-user and give providers insights into patient health status in-between readings and overnight. With continuous, connected passive sensors and devices supporting healthcare models in the home, there's a new opportunity to elevate the experience for both the provider and the patient.

The future of healthcare has a need for non-invasive solutions that enable providers to proactively understand and manage healthcare events for consumers. The right data at the right time can make all the difference in order to help manage care. Sensor-based technologies that provide passive monitoring will continue to play a huge role in healthcare in the future.

[1] Rock Health: https:/rockhealth.com/insights/h1-2021-digital-health-funding-another-blockbuster-year-in-six-months/

[2] Coffey, J.D., Christopherson, L.A., Glasgow, A.E. et al. Implementation of a multisite, interdisciplinary remote patient monitoring program for ambulatory management of patients with COVID-19. npj Digit. Med. 4, 123 (2021). https:/doi.org/10.1038/s41746-021-00490-9

[3] Tóth, V., Meytlis, M., Barnaby, D.P. et al. Let Sleeping Patients Lie, avoiding unnecessary overnight vitals monitoring using a clinically based deep-learning model. npj Digit. Med. 3, 149 (2020). https:/doi.org/10.1038/s41746-020-00355-7

[4] Grandner, M. A., & Malhotra, A. (2015). Sleep as a vital sign: why medical practitioners need to routinely ask their patients about sleep. Sleep health, 1(1), 11–12. https:/doi.org/10.1016/j.sleh.2014.12.011

EarlySense **PARKS ASSOCIATES**

About Parks Associates

Parks Associates, a woman-founded and certified business, is an internationally recognized market research and consulting company specializing in emerging consumer technology products and services. Founded in 1986, Parks Associates creates research capital for companies ranging from Fortune 500 to small start-ups through market reports, primary studies, consumer research, custom research, workshops, executive conferences, and annual service subscriptions.

The company's expertise includes new media, digital entertainment and gaming, home networks, internet and television services, digital health, mobile applications and services, consumer apps, advanced advertising, consumer electronics, energy management, and home control systems and security. **www.parksassociates.com**

For more information, visit **www.parksassociates.com** or contact us at **972.490.1113**, **info@parksassociates.com**.

About EarlySense

EarlySense® is the global leader in 100-percent contact-free, continuous monitoring solutions. Used worldwide in hospitals, post-acute care facilities and in the home, the company's technology and predictive data science applications empower providers, clinicians and patients with continuous multi-vital data and actionable insights that improve quality of life and patient outcomes across the care continuum. EarlySense is based in Ramat Gan, Israel and Woburn, Massachusetts. For more information, visit the company's website at **www.earlysense.com**.

About the Author

Jennifer Kent
Vice President, Research, **Parks Associates**

Jennifer manages the research department and Parks Associates' process for producing high-quality, relevant, and meaningful research. Jennifer also leads and advises on syndicated and custom research projects across all connected consumer verticals and guides questionnaire development for Parks Associates' extensive consumer analytics survey program. Jennifer is a certified focus group moderator, with training from the Burke Institute.

Jennifer earned her PhD in religion, politics, and society and an MA in church-state studies from Baylor University. She earned her BA in politics from the Catholic University of America in Washington, DC.

PARKS ASSOCIATES
International Research Firm

RESEARCH & ANALYSIS

for Emerging Consumer Technologies

With over 35 years of experience, Parks Associates is committed to helping our clients with reliable and insightful consumer and industry research.

Smart Home Devices and Platforms

Digital Media and Platforms

Home Networks

Digital Health

Support Services

Entertainment & Video Services

Consumer Electronics

Energy Management

Home Control Systems

Home Security