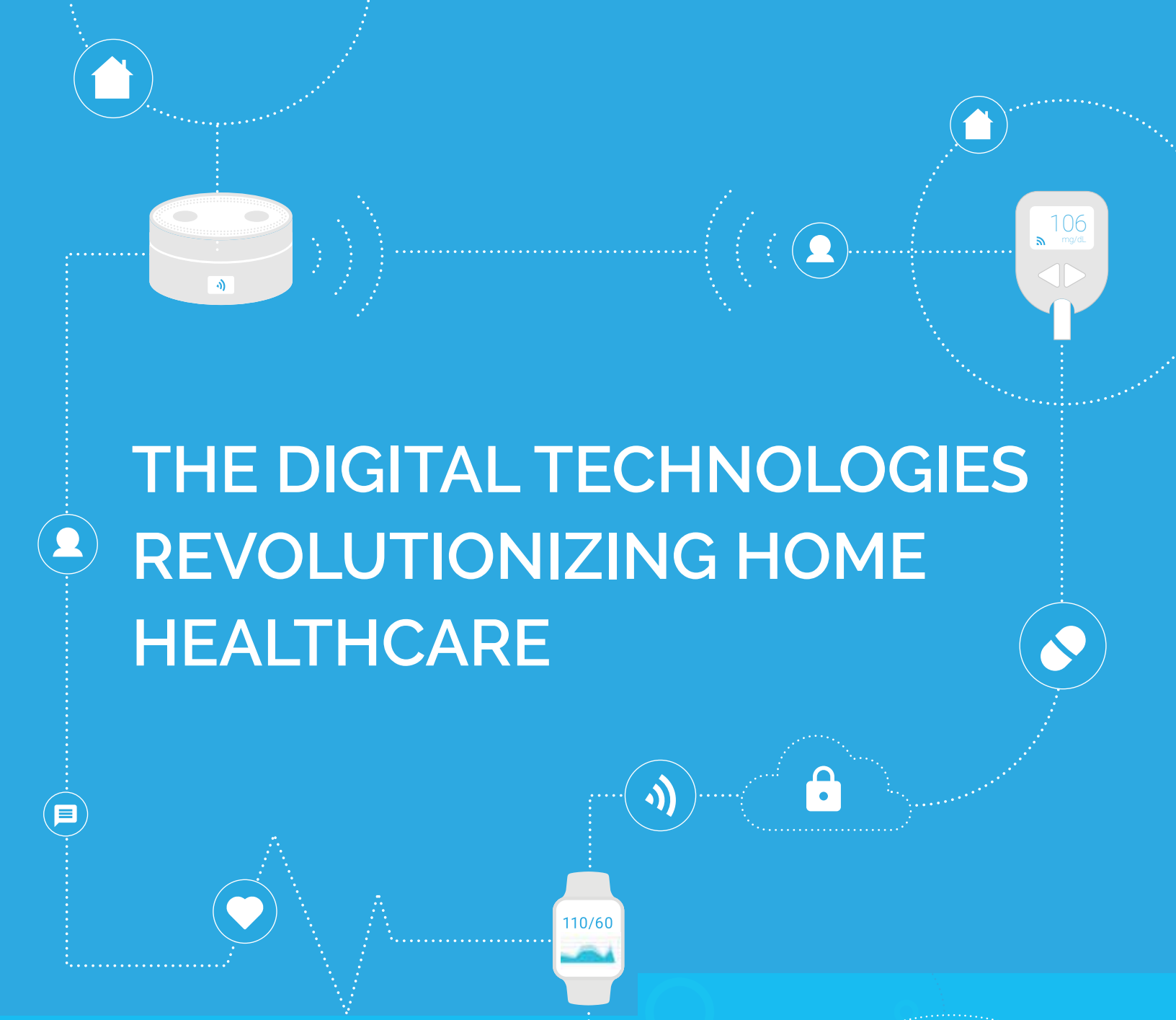
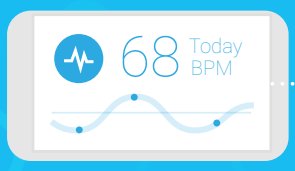
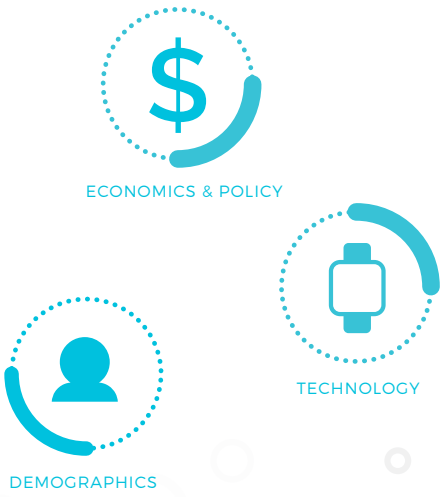


THE DIGITAL TECHNOLOGIES REVOLUTIONIZING HOME HEALTHCARE



orbita

As of 2012, about half of all American adults had at least one chronic health condition; one in four suffered from two or more.[2] Many of them are baby boomers, who are aging into Medicare at the rate of 10,000 each day.[3]



THE DIGITAL TECHNOLOGIES REVOLUTIONIZING HOME HEALTHCARE

Telehealth. Telemedicine. mHealth. Whatever term you're using, digital home healthcare solutions are taking off. What's behind this take off? Economics, for one. It's no secret that the U.S. has the world's highest per capita health care costs – more than twice the average of other developed countries.[1] To counter this, cost-reduction policies are increasingly being put in place. Fee-based, "volume" reimbursement is being replaced by value-based reimbursement models based on quality of care and outcomes. The Affordable Care Act has rules aimed at rewarding[1] providers that reduce unnecessary care, duplicative care, and medical errors. Read missions penalties are being levied. The list goes on.

Demographics are also driving the move towards home healthcare. As of 2012, about half of all American adults had at least one chronic health condition; one in four suffered from two or more.[2] Many of them are baby boomers, who are aging into Medicare at the rate of 10,000 each day.[3] Home healthcare for chronic conditions, and for medical problems that just come with the aging process, is a natural. It's what people want – and not just for their chronic conditions. Most of those recovering from an acute procedure would rather recover at home than in the hospital.

What may be the biggest driver of the move to home healthcare are the digital technologies that make it possible to provide healthcare that's more cost effective, more outcome effective, and more of what the healthcare consumer wants.

As of 2015, there were more than 165,000 mobile health apps available to consumers, and the number of iOS apps alone has grown more than 100 percent over the past two years.[9]

THE CORE TECHNOLOGY THAT'S MAKING DIGITAL HOME HEALTHCARE POSSIBLE

Digital home health care is being enabled by the same technology that's brought us the always on, totally connected world we live in today. What Steve Case calls the 3rd wave of the Internet is transforming how healthcare is being delivered at home[4] through 1) near ubiquitous connectivity, 2) mobile apps and the computing power of smartphones, and 3) an ever growing array of smart, connected digital devices.

Internet connectivity:

Ninety-five percent of all American households have wired network access to the internet[5] and two-thirds of Americans have broadband at home.[6] Access to wireless networks is also near-ubiquitous, available in one form or another, to over 99 percent of the U.S. population.[7]
Not all access is created equal: many rural areas have low download and upload speeds. Yet the answer to the questions "Can you hear me know? And can I connect to the Internet?" is increasingly "yes."

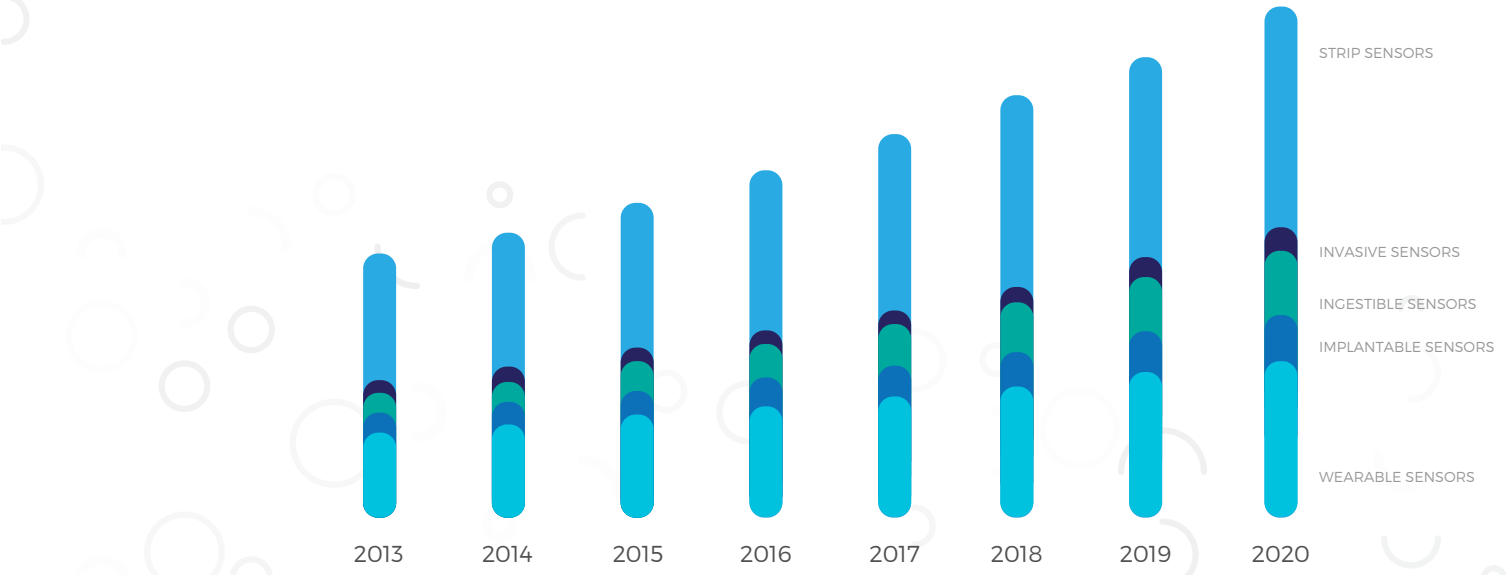
Mobile apps:

Two-thirds of Americans now own smartphones.[8] Smartphones have become fully-functioning computers that provide a personalized, mobile, always on/always available way to access friends, family, applications, games, and information. With smartphone and tablets surpassing PCs as the preferred way to access content and applications, many home healthcare applications are going mobile. As of 2015, there were more than 165,000 mobile health apps available to consumers, and the number of iOS apps alone has grown more than 100 percent over the past two years.[9]

Smart, sensor-enabled devices:

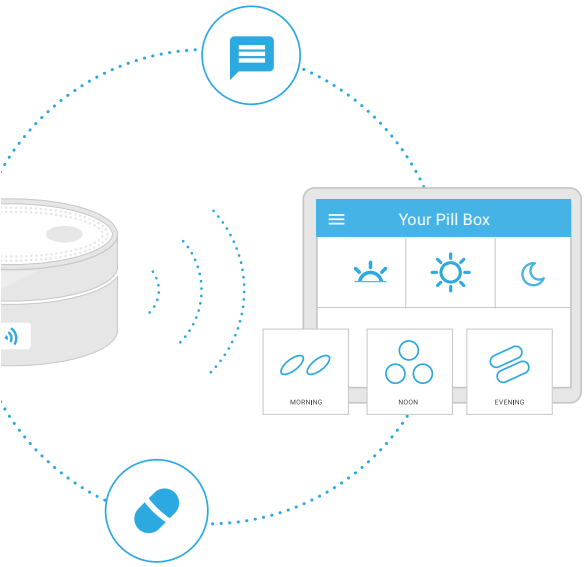
The growth of ever cheaper and smaller sensors has revolutionized home health and wellness. Smartphones are smart, in part, because they're packed with sensors - sensors that can record step counts, location, ambient temperature, and other data relevant to patient activity and wellness. For example, step count data can help to inform how well a patient is adhering to a recovery plan for a hip or knee replacement. Beyond smartphones, sensors that can measure vital health and environmental data relevant to personal wellness are also found in household devices, wearables and a wide range of (formerly analog) medical devices purpose-built for home healthcare.

The rise of smart healthcare devices: "Self-care" medical devices, like blood pressure and blood glucose monitoring kits, and telemetry monitoring for heart conditions, have been around for years. Today, as they become more accurate, cheaper to build, more connected, and even disposable these personal healthcare devices become a part of an holistic system that connects patients with their caregivers and healthcare providers.



GROWTH OF DISPOSABLE HEALTHCARE SENSORS[10]

New voice-powered digital devices like the Amazon Echo are generating significant interest as alternative ways to engage patients.[11]



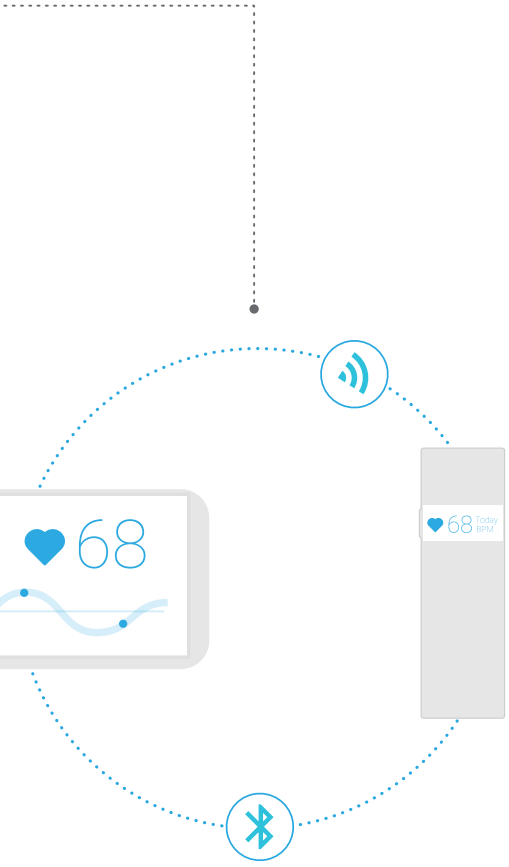
Putting fitness devices to new use:

Wearables are emerging as a key tool for home healthcare. Brands like Fitbit have always promoted the wellness benefits of their products, but they have not had as much of a presence in clinical applications. More recently, manufactures of fitness wearables have started to pursue applications in pure healthcare. Fitbit CEO James Park has noted that "Fitbit has an incredible opportunity to serve as the consumer healthcare engagement engine. I could argue that, better than anyone else, we can help people engage with their health, engage with their family's health, engage with their insurer and employer and engage with the healthcare system.[11]

Taking advantage of connected home devices

Even devices not designed strictly designed for wellness or healthcare are getting in on the act. Motion monitoring devices have been used for years to track the movements of those at risk of falling. It's now possible to buy home security systems for a fraction of the cost and complexity of more well-known personal emergency response systems. If you've fallen and you can't get up, you may soon be able to use your home security system. New voice-powered digital devices like the Amazon Echo are generating significant interest as alternative ways to engage patients whose special needs prevent them from using other digital interfaces.[12]

These core technologies combine to provide the foundation for all modern applications in digital home healthcare. Smart devices provide the data, mobile apps and smartphones the personal platform for engaging the patient, and ubiquitous network access to connect it all together. The results are applications that enable the patient, their caregivers, and their providers to better understand when health is at risk and to respond more quickly and in a more informed way to problems or potential problems as they're spotted.



HOW TECHNOLOGY IS IMPROVING HOME HEALTHCARE QUALITY

What, exactly, is technology doing to improve healthcare outcomes – while minimizing risks, reducing costs, and balancing the "conflicts of interest" that providers, payers, and other healthcare marketplace participants grapple with? As so much of healthcare moves out of the acute care setting – with its full range of sophisticated equipment, and the presence of trained professionals – and into the home, this question grows in importance.

Better care and better outcomes happen when medical professionals have access to better and more timely insights into what's going on with their patients, when all the parties involved – medical professionals, patients, caregivers – are in better communication, and better able to coordinate care, and when patients are more equipped, informed, and engaged in their own care.

Here are some areas where digital technology improves home healthcare:

Access to information and expertise

Hospital staff are trained to provide patients with the information they need to get well and stay well. The problem comes in when patients leave the hospital or medical office. How do you make sure that a thick packet of instructions stays with them, and is used? Digital versions of those information packets can make sure that care instructions are at the patient's fingertips, and patients who understand their care plan are 30 percent less likely to be readmitted.[13]

50%

of average patients do not take their medications as prescribed.

700K

Americans experience adverse reactions to prescribed drugs that result in a trip to the ER.

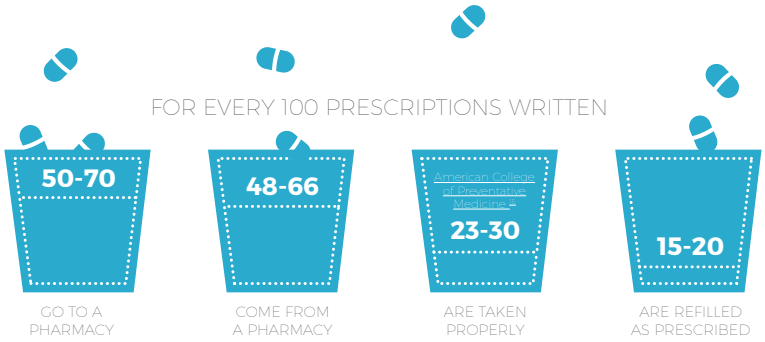
$29B

estimated annual cost of patients not taking their medications as prescribed.

Going further, home care plans can be part of a complete digital experience that guides the patient through their treatment with reminders, encouragement, education, and more, all delivered in a way that is always available, personalized, and adjusts over time as the patient's needs change.

Ensuring that patients take their medicine, and follow their treatment protocols:

Hospitals manage prescription medication adherence closely. What happens when you go home? Nearly 60 percent of the US population takes at least one prescription drug, and as many as one-half of them don't take their medication as prescribed. This non-adherence adds nearly $300B to the national health care bill each year.[14]



Monitoring patients and intervening as needed:

Effective healthcare requires careful, consistent monitoring of vital signs; body chemistry (e.g., glucose for diabetes); movement (e.g., to avoid bed sores); healing progress for wounds; heart, lung, and muscle strength; sleep quality and duration. In hospital settings, an array of equipment and staff are available to monitor and intervene as needed. Not so in most homes.

Care coordination involves "deliberately organizing patient care activities and sharing information among all of the participants concerned with a patient's care to achieve safer and more effective care." [16]

Coordinating care among caregivers and providers:

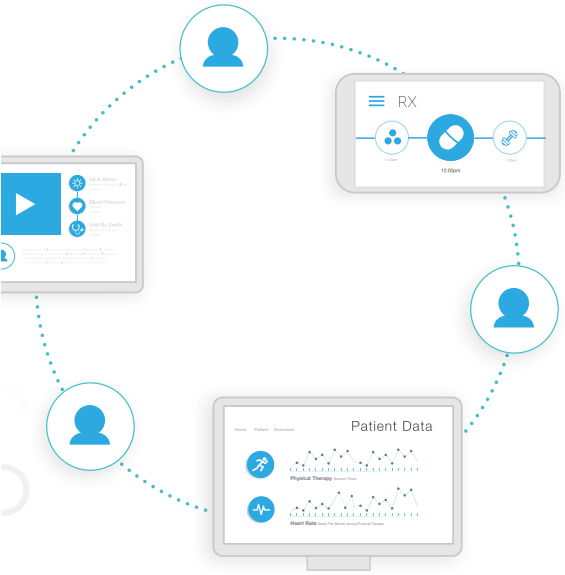
Connecting patients to their providers is an important step in creating strong home healthcare experiences, but most patients have a team of care providers around them: their physician, nurse practitioners, visiting nurses, home aides, and, of growing importance, friends and family members. Care coordination involves "deliberately organizing patient care activities and sharing information among all of the participants concerned with a patient's care to achieve safer and more effective care." [16]

Patient Support, Encouragement, and Engagement:

Whether for a short period, or on any ongoing basis, many patients need help with the basics of self-care and daily living. Physicians, nurses, and aides are trained to provide this support, and, in an in-patient setting, timely support and encouragement can be delivered with great regularity. Once home, patients must rely on family, friends, neighbors, visiting nurses, and home health aides for this type of care. This cadre of caregivers may not be available 24x7, and they may not be knowledgeable enough, skilled enough, or even motivated enough to provide effective support and encouragement. Digital home health applications offer a communication path to keep patients involved and engaged in their own care, while empowering and informing their care providers.

TECHNOLOGIES ENABLING THE "LAST MILE" IN DIGITAL HOME HEALTHCARE

The foundation technologies described earlier define digital home healthcare, but they are not the only technologies required to deliver a complete digital home healthcare solution. Software is required to power the applications and user experiences for both the patient and their home healthcare providers.



The following types of software play critical roles in digital home healthcare applications:

Social computing:

The success of social media applications like Facebook, Twitter, and others have set the digital standard for how people communicate, collaborate, and coordinate with each other in group settings.

From this world comes important digital technologies and capabilities that are relevant to coordinating care, managing intervention, and engaging patients at home in their own care. Technologies like:

- Messaging and communication (text, voice, and video)
- Activity feeds
- Discussions
- Commenting and sharing
- Notifications and Alerts
- Shared Calenders

Analytics (actionable insights):

Digital devices and smart phone apps create data. Lots of data. But without the ability to quickly process and analyze it to detect important trends, anomalies, and risks, all that data is useless. Clinicians don't need more data. They need actionable insights. Analytics technology processes data from apps and devices to identify the insights that inform the actions that should be taken. And it's not just about sending alerts. Clinicians struggle with "alert fatigue" already. What these solutions require are intelligent data-driven decision support tools that are aligned with established care protocols, but flexible enough to meet the needs of individual patients. When used in a home care setting, these solutions help reduce unnecessary emergency hospital visits, and re-admissions.

All the major cloud technology providers, including Microsoft, Amazon , and Google, have made significant investments and commitments to support secure healthcare applications.

Content and Experience Management:

Technologies for managing content and user experience are mature in the digital marketing world – for example, they are used to manage, monitor, measure visitors to consumer web sites and mobile applications.

Sometimes lumped under the category of "customer engagement" technologies, these same technologies play an important role in digital home health and "patient engagement". To start, content management capabilities apply to curating and delivering educational information, treatment instructions, and other patient-centric content. Managing and delivering this information digitally – whether as digital text, pre-recorded video content, or live video teleconference – increases patient engagement and improves treatment adherence while saving costs.

Secure Cloud Computing:

The benefits of cloud computing are proven. Cloud computing offers a high performance, extensible, highly scalable means to quickly bring solutions to market. It goes without saying that protecting personal health information is critically important in any healthcare solution. While moving sensitive health data between the patient at home to a cloud-based application accessible by caregivers and physician systems seems prone to peril, modern cloud technologies have advanced considerably to address these challenges. Key security requirements include:

- Strong authorization and authentication
- End-to-end encryption of all digital data both "at rest" (in storage) and "in transit" (moving over the network)
- HIPAA-compliance of all systems and organizations serving the solution

SOURCES

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4 Washington Post, May 2015

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10 Grand View Research, October 2014

11 Mobile Health News, May 2016

12 Medical Marketing and Media, January 2016

13 Lehigh Valley Health Networks, 2015

14 NEHI (Network for Excellence in Health Innovation), December 2011

15 Agency for Healthcare Research and Quality

16 Agency for Healthcare Research and Quality

17 Amazon AWS for Heathcare Providers and Insurers

18 Forbes, December 31, 2015 citing US Department of Health and Human Services data

All the major cloud technology providers, including Microsoft, Amazon,[17] and Google, have made significant investments andcommitments to support secure healthcare applications. Breaches still happen – in 2015, there were more than 112 million healthcare records hacked[18] - but more often as a result of holes in legacy systems built before modern encryption technologies and techniques, or flaws in human-directed security processes.

Building a complete home healthcare solution

Digital home healthcare is defined by the three core technologies of connectivity, mobile apps, and smart, sensor-enabled devices, but digital home healthcare requires other technologies to enable the patient monitoring, education, intervention, and collaborative care required for a complete, digital home healthcare solution.

ABOUT ORBITA

Orbita provides the first secure (HIPAA-compliant) cloud-based platform for creating and managing digital home healthcare applications. Orbita's purpose-built platform gathers data from wearables, home health devices, and other connected devices into collaborative care experiences that vastly improve patient engagement and care coordination. Orbita works with healthcare providers, payers, home care service providers, medical device manufacturers, and other healthcare organizations to enable digital home healthcare solutions that increase treatment adherence, improve outcomes, reduce costs, and minimize risks for patients with chronic or post-acute healthcare needs.

CLICK HERE to request a demo of Orbita's home healthcare platform or contact us at

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