CDW® PEOPLE WHO GET IT™

HEALTHCARE

MEETING THE HEALTHCARE CHALLENGES OF AN AGING POPULATION THROUGH IT

The growing number of seniors in the U.S. requires care providers to be smarter and more effective at delivering their services.

EXECUTIVE SUMMARY

The American healthcare system, already strained by inefficiencies and growing staff shortages, is about to be hit by another major challenge: a U.S. population projected to grow substantially older in the coming decades.

Addressing this challenge will require healthcare organizations not only to recruit and retain more employees but also to find creative, efficient ways of delivering services and providing preventive care. Technology can help to fill in the gaps by enabling healthcare workers to do more with less and by helping seniors to proactively monitor and manage their health. Telehealth, mobile devices and electronic health record (EHR) systems are already providing immense value in the healthcare sector, and adoption is likely to grow. Emerging technologies — such as wearable devices, artificial intelligence and smart home solutions — also have the potential to make a significant impact on senior care.

To enable new use cases, healthcare organizations must both implement intuitive end-user solutions and build out the IT infrastructure to support them.

The Challenges of Senior Care

The U.S. is rapidly getting older.

The U.S. Census Bureau notes that by the year 2030, all baby boomers will be older than 65. At that point, one out of every five U.S. residents will be of retirement age. And by 2035, for the first time in American history, senior citizens are projected to outnumber children under the age of 18. Currently, there are around 3.5 working–age adults in the U.S. for every retirement–age person, a ratio that is projected to shrink to 2.5 to 1 by 2060. Over that time frame, the median age of the U.S. population is expected to grow from 38 years to 43 years.

As the U.S. population ages, the growing number of older adults will face increasing health problems (including issues such as hearing loss, cognitive decline, balance issues, vision impairment and depression), placing a strain on the healthcare system. The situation is exacerbated by the fact that the caregiver workforce is also aging — and shrinking as workers retire. The Society for

67%

The percentage of Americans age 65 and older who use the internet today, up from just 14 percent in the year 2000[1]

Human Resource Management reports that 46 percent of HR professionals in the healthcare and social assistance industry believe that the loss of talent over the next two decades will be either a "problem" or a "crisis." However, the healthcare industry appears to be doing less to prepare for this talent shortage than other sectors. For instance, less than half (48 percent) of healthcare and social assistance organizations are actively identifying their near–term workforce needs, compared to 58 percent in other industries. Healthcare and social assistance organizations are also less likely than organizations in other industries to track their workers' retirement eligibility.

According to a 2018 report from the global human resources consultancy Mercer, demand for healthcare workers will outpace supply by 2025. By that year, there will be a projected supply gap of 11,000 physicians, 29,000 nurse practitioners, 95,000 nursing assistants and an eye–popping 446,000 home health aides.

The shortage of home health aides is particularly concerning, as a shortage of hospitals and care facilities may require many seniors who need care to live, receive treatment or rehabilitate at home. Navigant Consulting reports that 21 percent of rural hospitals are at "high risk" of closing unless their financial situations improve. Some of these will likely be absorbed into larger healthcare organizations, but the ones that close for good will put pressure on the senior care industry to be more effective at delivering care in seniors' homes.

Technology can help senior care organizations to fill the gaps. For one, the right devices and applications can help healthcare workers to be more efficient and productive, allowing more work to be done — and care to be delivered — by fewer employees. Also, the use of solutions such as data analytics and artificial intelligence can help healthcare providers to arrive at insights on how to optimize their operations, and in some instances can even help to diagnose patients more accurately than a physician could do alone. Finally, a number of technologies have the potential to improve preventive care, allowing providers and patients to proactively address developing health issues and prevent more serious complications later on.

To illustrate one example, researchers have identified a number of ways that smart home solutions can help seniors to avoid an incident, such as a fall, that might force them out of their own homes and into assisted living facilities. These solutions include:

- **Medication management:** Hardware–based medication reminder systems — which remind patients about their medication at a prescheduled time, provide them with the appropriate dose and even give vocal guidance — can ensure that seniors take their medicines as prescribed. This not only helps them to better manage existing conditions

Senior Care: By the Numbers

286,300 — The number of workers in adult day services centers in the U.S. on any given day[2]

14 million — The number of Americans expected to be living with Alzheimer's disease in the year 2050[3]

$10,200 — The projected monthly cost of hiring a home health aide in 2048 (up from $4,200 in 2018)[4]

25 percent — The percentage of seniors who use digital health technologies[5]

58 percent — The percentage of seniors who seek out healthcare information online (with 43 percent searching for healthcare information on Facebook)[6]

125,000 — The estimated number of annual deaths due to people failing to take their prescribed medications. Failure to take medications also accounts for 10 percent of hospitalizations, costing the U.S. healthcare system up to $289 billion per year.[7]

150 million — The number of Americans expected to suffer from a chronic illness (such as heart disease or diabetes) by 2020[8]

Sources: [2]cdc.gov, "Adult Day Services Centers," Aug. 1, 2019; [3]Alzheimer's Association, "2019 Alzheimer's Disease Facts and Figures," March 5, 2019; [4]Genworth Financial, Cost of Care Survey 2018, Oct. 16, 2019; [5]JAMA, "Trends in Seniors' Use of Digital Health Technology in the United States, 2011–2014," Aug. 2, 2016; [6]Solutionreach, "Are Senior Citizens Engaging in Healthcare Technology?" Dec. 14, 2018; [7]The New York Times, "The Cost of Not Taking Your Medicine," April 17, 2017; [8]Mercer, "Demand for Healthcare Workers Will Outpace Supply by 2025, " 2018

Source: [1]Pew Research Center, "Tech Adoption Climbs Among Older Adults," May 17, 2017

but also can prevent side effects (such as drowsiness) that can lead to a fall if too much medication is taken.

- **Exercise:** Exercise can help prevent falls by making muscles stronger and more flexible, improving balance and increasing stamina. Smart home technologies and wearable devices can help to monitor seniors' activity levels so that care providers can ensure their patients are getting adequate exercise. Accelerometer- or acoustics-based fall detection systems can also lead to a faster response when a fall does occur. Even in noninjurious falls, nearly half of seniors need external support to get up.

- **Safe homes:** Automated or voice-activated lighting can help prevent scenarios where seniors are walking through their homes in the dark, leading to a safer and more navigable environment.

75%

The percentage of U.S. residents 50 years or older who owned a smartphone in 2018[9]

Technology can also help to address staff shortages by making senior care facilities more attractive places to work. Research indicates that turnover rates in assisted living facilities hover around 30 percent (more than double the turnover rate for bedside registered nurses in a hospital setting), and 20 percent of senior care employees cited insufficient technology as a factor in employee burnout. Further, 15 percent of healthcare workers saw almost immediate improvements in job satisfaction after their organizations adopted an electronic health record (EHR) system.

There's no stopping the trend of an aging U.S. population — or the fact of an increasingly graying healthcare workforce. The only thing healthcare providers can to do mitigate the impact of these trends is to prepare for them. Adopting technologies that improve senior care and make employees more productive (and building out infrastructure to support these solutions) is one of the few concrete ways of doing so.

If senior care organizations wait until they're overwhelmed by patient needs and staff shortages to implement new technologies, they'll find themselves scrambling to catch up. The time to act is now.

How Technology Improves Senior Care

Healthcare IT is at a fascinating crossroads. Solutions such as mobile devices and EHR systems have already changed the industry, making organizations and individual practitioners vastly more efficient. However, more visible, accessible data — if leveraged intelligently — has the potential to do much more to improve healthcare outcomes and optimize care delivery. Consumer-oriented digital health solutions, such as wearable monitors that track metrics like exercise and sleep, have only recently gained wide adoption among individuals, and are largely not yet integrated with institutional healthcare systems. Data privacy concerns, always a serious consideration in highly

regulated industries such as healthcare, are partly responsible for this lag. But more mundane concerns, such as a lack of adequate reimbursement models and application programming interfaces, also contribute to a sense of uncertainty about when (and to what extent) certain transformative use cases will gain widespread acceptance in healthcare.

Still, many practical, present-day IT solutions have the power to dramatically improve upon standard practices. And, because many older Americans often live in the same place where they receive medical care (whether that is at home, an assisted living facility or a nursing unit), senior care may present a unique opportunity for broader deployment of home-based digital health solutions.

The list of existing and emerging technologies that can help to maintain and improve the health and care of seniors includes the following:

- **Mobile applications:** Smartphones and tablets, along with mobile applications, can not only help frontline senior care workers to access data instantly but can also help seniors themselves to track and monitor their own health metrics. For example, Breezie, a tablet-based platform built on Samsung frameworks, enables senior care providers to deliver care and services through a personalized tablet interface. The platform integrates telehealth, medical alerts and personalized health information, along with games that promote mental agility. Additionally, Breezie has social components (such as an address book, email and video calling) to help prevent isolation, and the platform even facilitates the ordering of services such as transportation, grocery delivery or care visits. Fifty-nine percent of seniors who use the platform say that Breezie helps them to feel less isolated, and the percentage of users who said they had an overall sense of well-being more than doubled (from 39 percent to 83 percent) after three months of using the solution.

- **EHR and EMR systems:** Healthcare organizations have raced to implement electronic health record (EHR) and electronic medical record (EMR) systems in recent years, with 86 percent of office-based physicians implementing an EMR or EHR system by 2017. EMR systems support digital versions of clinical paper charts, containing notes and information that are primarily used for diagnosis and treatment. Meanwhile, EHR systems go beyond standard clinical data to provide a broader view of patient care, and the records can follow patients from doctor to doctor and facility to facility. Both types of systems help to minimize errors, enable better coordination between care providers and speed up care delivery.

- **Data analytics:** Predictive analytics has the potential to make senior care far more proactive — and, in some cases, even automated. By monitoring and tracking metrics that

serve as leading indicators of serious medical events, providers can intervene before a crisis hits. For instance, strokes are often preceded by a period of slowed activity. If senior care providers were able to remotely and unobtrusively track their patients' movement (either through wearable devices or smart home sensors), they might be able to spot changes in activity and act on these warning signs before a patient suffers a stroke. In addition to improving health outcomes for seniors, such a solution could save thousands of dollars in healthcare costs each time it prevented a serious medical event.

- **Monitoring:** Like people of all ages, many seniors are already using consumer market health trackers, including devices such as Fitbit and Apple Watch. These wearable devices can track metrics such as activity, blood pressure, heart rate and sleep, providing a wealth of information that can inform care delivery. Beyond their potential for delivering health and activity data to care providers, wearable devices can be a source of engagement and motivation for seniors. Just as working–age people who wear fitness trackers commonly set daily activity goals,

300,000

The number of older Americans hospitalized each year for hip fractures, 95 percent of which are caused by falls[10]

wearables may motivate seniors to hit their "10,000 steps" or other health–related objectives, helping to improve their overall health and potentially decreasing their risk of chronic disease. Some wearables even allow users to connect with friends through apps, providing an added social component.

- **Telehealth:** Telehealth solutions, which connect patients and clinicians via secure video links, are making inroads throughout the healthcare industry. In one common use case, patients in rural areas with a shortage of specialists use telehealth to connect with providers. While these patients often travel to a local healthcare facility for their virtual appointments, telehealth solutions can also connect providers to patients in their homes — an option preferred by many seniors due to its speed and simplicity. U.S. News & World Report compares home telehealth visits to the physician house calls of yesteryear. The publication suggests that telehealth might be able to reduce hospital readmission rates, particularly for seniors living in nursing homes or other long–term care facilities. While telehealth acceptance is growing, policies around reimbursement for providers still vary from state to state.

  The federal Centers for Medicare & Medicaid Services finalized a rule in April 2019 that authorized healthcare plans through Medicare Advantage to dramatically broaden telehealth services to seniors. Under the new rule, seniors can use telehealth services in their own homes instead of having to visit a healthcare facility, making access to care at home a reality for all Medicare patients

- **Smart living spaces:** In both assisted living facilities and seniors' own homes, smart home technologies can help to create spaces that are safer for seniors, easier for them to navigate and capable of monitoring environmental metrics. Through the use of sensors, wireless connectivity and data tracking platforms, smart home technologies can gather data on home environment variables such as illumination level, temperature, gas leakage, oxygen level and the activity or location of occupants.

How VR Enhances Senior Living

While virtual reality (VR) has been slower to catch on in the consumer gaming and entertainment markets than many observers predicted, the technology is making an impact on seniors in a number of ways.

Restoring sight: Samsung partner IrisVision has created a smartphone–based VR system that helps people with severe macular degeneration to see clearly again. The app uses the phone's camera to record a person's surroundings, then displays the image in real time in a person's periphery (where they still have vision). The software automatically focuses on what a person is looking at, meaning a user can seamlessly switch between reading a book and gazing at a landscape without manual adjustment.

Pain management: Another Samsung partner, AppliedVR, has an app that allows users to immerse themselves in VR content scientifically designed to distract from pain and teach coping skills.

Community engagement: An assisted living facility in Norwood, Mass., partnered with a Boston startup to use VR to allow residents to virtually attend the New England Patriots' Super Bowl victory parade in 2019. "I think some residents were a bit skeptical," says Tom Fitzpatrick, a technology specialist for the facility. "As soon as they put the VR goggles on, they had a better understanding that they are transporting to that location."

IT Infrastructure and Solutions That Support Senior Care

To successfully roll out new IT solutions that enhance senior care and make staffers more effective, organizations must also adopt supporting technologies and infrastructure, including:

Cloud–based applications: Not long ago, many senior care organizations were reluctant to adopt cloud resources of any kind. Concerns about data privacy are, for good reason, a major concern in the industry, and many CIOs and technology directors considered it an unacceptable risk to place any patient data outside the organization. As the public cloud has matured, however, stakeholders within these organizations have grown more comfortable with the model, and 70 percent of

Source: [10]cdc.gov, "Important Facts About Falls," Aug. 1, 2019

healthcare leaders now say that on-premises software and data will continue to move to the public cloud in the future. In addition to cloud infrastructure and applications, many organizations have invested in cloud-based EHR platforms, which allow for automated updates and give providers location-independent access.

Backup and storage: As organizations in healthcare and other industries refresh their on-premises data center infrastructure, many are upgrading from spinning-disk storage to flash storage. While the sticker price of flash remains higher than that of traditional storage, data efficiency technologies such as compression and deduplication bring the effective cost of each solution in line with one another. And, because the performance level of flash storage is so much higher than that of hard disk drives, organizations that invest in flash typically see a greater return on their investment, with an improved user experience for latency-sensitive

41%
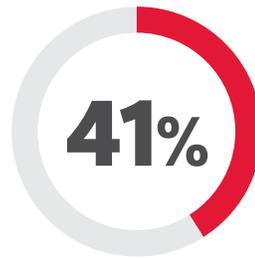
The percentage of seniors who say that technology helps to keep them healthy[11]

applications. Additionally, organizations are often able to achieve savings on their backup environments by moving seldom-used archival data to inexpensive tiers of public cloud storage.

Networking: Both wired and wireless networks are essential to supporting new IT applications in senior care. Emerging Internet of Things use cases may require dedicated wireless connectivity solutions. Meanwhile, video-intensive applications such as telehealth will strain the existing IT networks of some organizations, requiring new investments. This strain is felt even more as patients demand access to streaming services such as Netflix, which further use bandwidth.

Security: More devices and applications mean more data, and more data means greater vulnerability. In addition to staying in compliance with data safety regulations such as HIPAA, senior care providers must proactively ward off the same sorts of threats that affect organizations across all sectors. To take one relatively small (but nonetheless catastrophic) example: A ransomware attack forced a Michigan medical practice to fold entirely in 2019; after doctors refused to pay a $6,500 ransom, hackers wiped all of the practice's files, including appointment schedules, patient data and payment information.

Mobile devices: It's easy (and usually inexpensive) to try out a new mobile app to see if it will improve care, make employees more productive or enhance seniors' lives. But rolling out mobile devices to support these applications requires a much larger investment. Senior care IT leaders need to consider which devices will support both the highest-value and widest array of use cases, while also factoring in variables such as cost, battery life and usability. For devices that seniors will use themselves, an intuitive interface and a large screen size are top priorities, making tablets a better fit than smartphones for many organizations.

Mobility management: Enterprise mobility management solutions give organizations visibility into (and control over) mobile devices, content and applications. This is essential in a senior care setting, when much of the data being accessed via mobile devices is sensitive and regulated. In addition to placing safeguards around patient data, EMM tools can prohibit certain applications and behaviors, preventing legitimate users from inadvertently putting the organization at risk. Mobility management solutions typically include identity and access management features, and also allow IT administrators to remotely wipe mobile devices if they're lost or stolen.

Disaster recovery: Senior care organizations must adopt disaster recovery strategies, policies, procedures and solutions that enable them to quickly bounce back from — and continue delivering care during — a natural disaster or cyberattack that threatens business continuity. In addition to creating redundancy through colocation centers, public cloud providers

Encouraging IT Adoption

Adoption and engagement should be top considerations when introducing new technology into a healthcare setting — not only for patients, but also for care providers. Each group has its own concerns, which should be addressed in targeted way.

The American Medical Association notes that physicians have four key questions about digital health:

- Will it work?
- Will I get paid?
- Will I get sued?
- Does it work in my practice?

Seniors, contrary to stereotypes, are often eager to embrace new technologies. (Fifty-nine percent of U.S. residents between the ages of 65 and 69 own a smartphone, for instance.) However, seniors may have practical concerns, such as disabilities that make technology more difficult to use.

To encourage IT adoption, organizations should roll out solutions that simplify — rather than complicate — life for both providers and patients. And they should provide ample training to address each group's questions and concerns.

"That interplay is very important. If you have a lot of unengaged patients, the provider is going to lose interest," says Dr. Kamal Jethwani, a doctor who has studied IT adoption in healthcare. "If you have an unengaged provider, the patients lose interest."

Source: [11]Link.age Connect, 2019 Technology Survey: Older Adults Age 55–100, April 2019

or other means, organizations must craft and test out detailed plans for failing over critical systems in the immediate wake of a disaster. Many organizations opt for Disaster Recovery as a Service engagements, in which a third-party provider takes responsibility for most major tasks related to DR planning and execution.

Collaboration: Senior care organizations may invest in a range of collaboration technologies, with different stakeholders using different solutions. For example, doctors, nurses and other care providers may want to share patient status updates via secure, HIPAA-compliant text messaging apps. Business teams, meanwhile, may want access to team collaboration suites that unify applications such as voice, text, calendar and file sharing. Video collaboration is especially important in healthcare, as high-quality cameras, displays and audio solutions can result in improved telehealth experiences for patients.

CDW: We Get Senior Care

With decades of experience helping healthcare organizations design and implement IT solutions to improve care, CDW's solution architects understand that care providers need more than just technology. Providers also need a partner that can provide knowledgeable guidance, respond quickly to their questions and help maintain hardware and software for optimal performance.

In addition to delivering healthcare-specific solutions and services, CDW can help senior care organizations to build out, maintain and secure backbone infrastructure that keeps tech tools working for patients and providers.

Among the services CDW offers:

Security assessments: Through vulnerability assessments, penetration testing and other engagements, CDW's security team can help care providers gain visibility into their environment to better protect applications and data.

Wireless assessments: By assessing a healthcare facility's wireless environments and making recommendations for improvements, CDW can help ensure that new mobile devices and applications work effectively throughout the organization.

Disaster recovery services: CDW's solution architects help organizations to put disaster recovery tools and procedures in place, ensuring that care delivery continues and data is preserved after cyberattacks or extreme weather events.

Compliance assessments and services: With compliance assessments and services, healthcare organizations can verify that they are complying with patient data regulations.

The CDW Approach

ASSESS
Evaluate business objectives, technology environments, and processes; identify opportunities for performance improvements and cost savings.

DESIGN
Recommend relevant technologies and services, document technical architecture, deployment plans, "measures of success," budgets and timelines.

MANAGE
Proactively monitor systems to ensure technology is running as intended and provide support when and how you need it.

DEPLOY
Assist with product fulfillment, configuration, broad-scale implementation, integration and training.

Learn more about how CDW's solutions and services can help your organization deliver better care to seniors.

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