

Technology: Changing the future

McKnight's June 2018

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These tech
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are making a
difference

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Here's where the data breaches can be found

'Misuse' and 'physical' data compromises are the top challenges

By Lois A. Bowers

The most common types of data breaches in skilled care and senior living relate to misuse or paper copies of records, according to Verizon's "2018 Protected Health Information Data Breach Report."

The good news is that there are steps the industry can take to lessen the chances of a breach occurring, a cyber security expert tells *McKnight's*.

"Misuse" offenses could include looking at records without a business need (for instance, because the resident is famous or infamous), sending unnecessary resident records along with necessary ones or not minimizing the data displayed on a screen to just what is necessary to be viewed, says John Barchie, a senior fellow with Arrakis Consulting.

"Misuse is generally initiated with malicious intent — or at least the intent to satisfy curiosity — but some systems over-collect and over-report information, exposing patients needlessly," he says.

"It is possible, for example, to require a practitioner to state the business case prior to opening a patient record, and it is also possible to limit the field a practitioner reviews for a given task, but this requires a level of sophistication that records-keeping software generally does not employ or that is not employed because the custodians or data-owners don't want



Photo: IAN HOOTON/SPL / Science Photo Library / Getty Images Plus

Operators in this field may have an increased risk of damage to their reputation when a data breach occurs.

it 'interfering' with patient care.

"The level of security necessary to reduce misuse through technical controls is a trade-off between ease of use and security," he says.

Physical damage

The second-most common types of breaches in nursing and residential care facilities occur in the "physical" category, according to the report. These breaches can happen when someone prints out medical data or extra copies of a record, or does not properly dispose of extra copies that are printed, Barchie says.

"At this stage, almost everything can be performed electronically, for a cost," he says. "Where such a cost is undesirable, extra effort, shred bins, locked records rooms, etc.,

should be amply supplied."

Barchie says he isn't surprised that these types of breaches are the most common in senior living and care.

"Background checks and proper technical monitoring can be used to combat this exposure. The technology is there, but it is an add-on to existing records-keeping software," he says. "Thus, it is an added expense at a time when nursing and care facilities are experiencing other financial stresses. The organizations as a whole need to lobby the software providers for tools to help minimize the ability for records abuse and the need for hard copy."

Reputations at stake

Nursing and residential care facilities, Barchie says, may have

an increased risk of damage to their reputation when a data breach occurs, compared with other businesses, because they tend to be smaller operations.

"The tools are there to combat internal malicious intent, but they may not be cost-effective for organizations in the 623 category," he says.

"This is something the organizations as a whole, through their trade associations, can ask software developers to address."

Additionally, Barchie recommends that senior living operators follow the HIPAA Security and Privacy Rules and perform background checks.

"Generate a risk assessment to identify the areas of greatest risk, and put some controls around that," he adds. ■



Focus more efforts on telehealth, feds are told

Agency gets an earful after asking operators where it should direct its efforts

By Lois A. Bowers

Chronic care management via telehealth and remote monitoring, service coordination in affordable housing, and long-term care financing are some of the new directions that the Centers for Medicare & Medicaid Services should explore through its Center for Medicare and Medicaid Innovation, according to feedback the agency received from skilled care and senior living operators.

CMS recently posted a 4,643-page PDF of the more than 1,000 comments the agency received after sending out a request for information in September.

At the time, CMS said it was seeking comments “on a new direction to promote patient-centered care and test market-driven reforms that empower beneficiaries as consumers, provide price transparency, increase choices and competition to drive quality, reduce costs, and improve outcomes.” Input was due last year.

“The responses from this RFI will help inform and drive our initiatives to transform the healthcare delivery system with the goal of improving quality of care while reducing unnecessary cost,” CMS Administrator Seema Verma wrote in an announcement accompanying its release.

Distance learning

A pilot project testing chronic care management using telehealth and remote monitoring was one



A pilot project using telehealth and remote monitoring is one of the ideas LeadingAge “strongly recommends.”

of the ideas that LeadingAge said it “strongly recommends.”

The proposed demonstration would include people aged 60 or more years who have at least two of five specific chronic conditions (diabetes, heart failure, hypertension, chronic obstructive pulmonary disease and asthma) and are living in their own homes or in independent living, senior housing, affordable housing or assisted living communities, or in independent living or assisted living portions of continuing care retirement communities, LeadingAge President and CEO Katie Smith Sloan wrote in her 22-page letter.

The payment system for the

test could match that of the Independence at Home demonstration, she said.

New incentives

Participating settings, Sloan added, would receive annual incentive payments.

“Payment amounts would be based on a percentage of the Medicare savings (Parts A, B and D) achieved as a result of telehealth services used to help older adults manage chronic conditions, improve health outcomes, and reduce hospitalizations, hospital readmissions, and transitions to higher levels of care (independent living to AL or AL to skilled nursing),” she wrote.

Service coordination

Episcopal SeniorLife Communities Vice President John Broderick wrote that his company would like to see a targeted demonstration project that looks at how Medicare Advantage plan benefits could be expanded to cover wellness and service coordination for older adults and younger, disabled residents of affordable housing.

“Several options could be explored, including coverage for individuals enrolled in Advantage plans or a housing-based benefit that would be targeted to the property as a whole through a multi-payer approach,” he wrote in a four-page letter. ■

Photo: verbaaka_studio/iStock/Getty Images Plus



Can robots serve as trustworthy companions?

Researchers are trying to assess residents' comfort levels

By Lois A. Bowers

Independent living and assisted living communities are serving as testing grounds as University of Texas at Arlington researchers try to develop robots that humans can trust and respond to as companions and caregivers. Researchers hope the efforts will meet resident needs and help operators address labor challenges.

Members of the university's new Emotional Robotics Living Lab recently conducted a \$20,000 study of how residents of a Brookdale Senior Living community in Arlington, TX, interacted with robots using well-known sonnets from Shakespeare. After three weeks of interactions, they observed a significant drop in depression and an increase in human-robot social engagement.

"The idea here is not to replace humans but to fill a gap," says Julienne Greer, Ph.D., an assistant professor of theater arts and director of the lab.

More research is planned. The new lab will feature two robots, NAO and Pepper, from SoftBank Robotics.

In a related project, Noelle Fields, MSW, Ph.D., an assistant professor in the university's School of Social Work, is conducting a \$10,000 study of whether theater interventions with robots also can have positive effects on older adults who have dementia or cognitive decline and live in assisted living communities. UTA declined

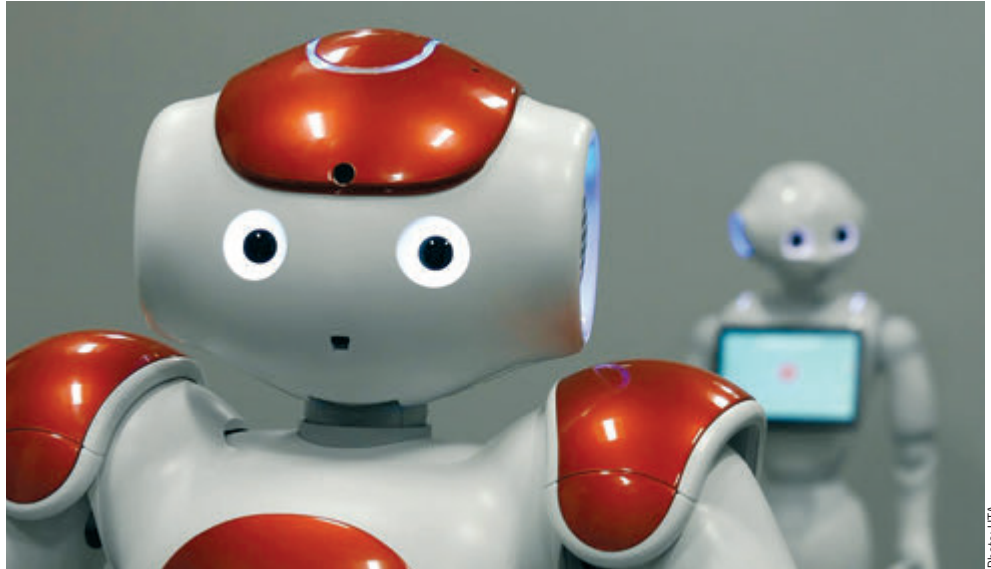


Photo: UTA

The University of Texas at Arlington's new Emotional Robotics Living Lab features two robots, NAO (left) and Pepper.

to share the names of the participating communities with *McKnight's*.

"Our hope is that these different studies could show that our Shakespeare robot intervention can have a general positive therapeutic effect on older adults and provide new tools for those working with them to reduce depression and increase engagement," Fields says.

Brown, Hasbro team up

Meanwhile, researchers at Brown University in Providence, RI, have teamed up with Hasbro to design a smart robotic companion capable of assisting older adults with everyday tasks.

The university investigators will aim to add artificial intelligence capabilities to Hasbro's

current Joy for All companion pets, animatronic dogs and cats designed to provide interactive companionship, comfort and joy for senior living residents and others.

The project name, ARIES, stands for Affordable Robotic Intelligence for Elderly Support.

"The 'A' in ARIES stands for 'affordable,' and that's something we're taking very seriously," says Michael Littman, Ph.D., a professor of computer science at Brown and co-principal investigator on the grant. "This is one of the important reasons Hasbro is a great industry partner for this project. The current Joy for All pets cost roughly \$100, while similar robotic products can cost \$5,000 to \$6,000. We want the ARIES robot to be available

to anyone who needs it."

The researchers' goal is to develop additional capabilities for the ARIES companions to help older adults — especially those who may have mild dementia — find lost objects, remember to take their medication and carry out similar tasks.

"We know that caring for an aging population will be a tremendous challenge in the coming years, and we think technologies like ARIES could play a small but potentially important role in helping people meet that challenge," says Bertram Malle, Ph.D., a professor in Brown's Department of Cognitive, Linguistic and Psychological Sciences; co-director of Brown's Humanity-Centered Robotics Initiative and the principal investigator on the grant. ■



Newcomer Orangeworm is targeting providers

Tech criminals are hitting a wide variety of targets involved in healthcare

By Doug Olenick

Many providers are under attack by a new cyber-gang named Orangeworm, which is striking with the Kwampirs backdoor.

The previously unknown group was identified by Symantec as it has systematically attacked healthcare sector and affiliated groups, primarily large organizations, in the United States, Europe and Asia.

The related victims include equipment vendors, pharmaceuticals and IT solution providers for healthcare, Symantec reported.

Orangeworm does not exclusively target healthcare, but the sector receives the majority of the group's attention, with Symantec finding that 40% of its attacks hitting that industry, 15% going after IT, manufacturing 15%, logistics 8% and the remainder against unknown targets.

"The Kwampirs malware was found on machines which had software installed for the use and control of high-tech imaging devices such as X-ray and MRI machines. Additionally, Orangeworm was observed to have an interest in machines used to assist patients in completing consent forms for required procedures," the report states.

Corporate espionage?

The general consensus is the malicious actors are attempting corporate espionage. Attribution



Photo: Andrew Brookes/Cultura/Getty Images Plus

The general consensus on Orangeworm is that malicious actors are engaging in corporate espionage.

tion, as always, is difficult, but Symantec believes Orangeworm is likely operated either by an individual or a small group and not a nation-state actor.

Jon DiMaggio, senior threat intelligence analyst for Symantec Security Response, says that not only is attribution difficult, but little is known regarding how the initial infection is accomplished.

Finding weak links

"We are still trying to validate this information. We do have a theory, however, which is based on evidence collected in our investigation. We theorize that the victims were initially infected by phishing emails, as well as compromising medical devices that had open connections to the public-facing internet. Since some medical devices

run legacy technologies to run medical software, it would leave the systems vulnerable to older, easily exploitable vulnerabilities," he says.

Using the backdoor

Once inside, the malware deploys the backdoor Trojan. A copy of the malware's primary DLL payload is then extracted and obfuscated with some extra code before it is dropped. The software then creates persistence by loading the main payload into memory so it will be accessed on reboot.

The attacker, through the backdoor, also collects the system's basic network adapter information, system version information and language settings. Symantec researchers believe these data are used to determine whether the target

is of high value or possibly a honeypot decoy.

Once the target computer is judged to be a worthwhile victim, the backdoor is spread laterally to other devices on the network.

It does this by copying itself over network shares, a method Symantec recognizes as old-fashioned, but one that will work well on systems running older operating systems such as XP — an activity of which many healthcare facilities are guilty.

When this is accomplished, Kwampirs extracts information about the networks, connected servers, the operating systems in use, hostname, routing table for network interfaces, configured MAC addresses, IP addresses and list of local accounts with administrative access. ■



Want to avoid ransomware attacks? Prepare.

Many organizations continue to avoid obvious steps that could prevent problems



Photo: Colin Anderson/Blend Images/Getty Images Plus

By Robert Abel

The threat is huge. The response? Not so much. Or at least the response isn't on par with the threat when it comes to ransomware.

Even as ransomware continues to threaten industries, many organizations skip some obvious steps that could help avoid future infections. These include properly training employees on online safety, actively monitoring their networks, ensuring systems are patched and properly backing up important files, to name a few.

Until operators start taking these threats seriously with a more proactive approach, organizations will continue being hit with otherwise preventable attacks, experts say.

Known vulnerabilities with available patches are providing gateways for criminals to infect entire networks with programs such as WannaCry. It's crucial that organizations ensure their systems are up to date to prevent repeats.

WannaCry ransomware was distributed through the EternalBlue Windows SMB vulnerability, a flaw that was patched in March 2017 but was heavily exploited in the May 2017 WannaCry attacks and June 2017 NotPetya attacks. The attacks didn't have to be as damaging as they were.

SiteLock web researcher Michael Veenstra says that beyond the ever-present need for strong data loss contingencies, the most important thing an administrator can do is maintain effective security policies across the board that ensure systems are maintained and patched in a timely fashion.

"The EternalBlue vulnerability was patched on all supported Microsoft operating systems two months prior to the WannaCry outbreak and one month before the existence of the vulnerability was publicized by a leak from the Shadow Brokers," Veenstra says. "Organizations affected by this attack would have been saved countless dollars — between paid ransoms, incident response and



immaterial costs, like the loss of customer trust — if the servers on their network were kept up-to-date.”

Ignorance of how ransomware attacks work also contributes to the spread of ransomware infections. Employees often aren't aware of best practices to prevent attacks. Human errors can prove just as dangerous, if not more so, as unpatched systems, meaning that organizations should work to better educate employees on how to spot phishing attacks and admins should enable backups and contingency plans in the event of mistakes, researchers say.

“According to Verizon’s Data Breach Investigations Report, the use of social actions, like personalized phishing emails, increased from 8 percent to 21 percent of malware incidents in 2016,” says Cyberbit Chief Technology Officer Oren Aspir. “By training employees to avoid phishing emails, the majority of ransomware will be avoided.”

There’s an added bonus for putting effort into training. Preventing phishing attacks also can curb other cyberattacks as well, said Shalabh Mohan, vice president, products and marketing, at Area 1 Security.

“Phishing is the root cause for a majority of all cybersecurity incidents, and that includes ransomware breaches,” Mohan says. “To truly protect against ransomware, organizations should look toward stopping phishing attacks comprehensively for their end-users, irrespective of what attack vector it may be coming from.”

STEALTHbits Technologies Chief Technology Officer Jonathan Sander says that although there are very good platforms that can ramp up user awareness of these threats, the real trick is to find ways to keep the damage to a minimum in the case where



Photo: elegendy/Stock/Getty Images Plus

Security experts say that many operators aren't taking proactive measures.

“The most important defense against a ransomware attack is to be prepared before it happens.”

Sanjay Kalra, Lacework

ransomware does get in.

Experts agree. Dean Ferrando, SE Manager – (EMEA) at Tripwire, says, “Organizations should continually test their backups and implement a streamlined restoring process to reduce the impact an attack will have on trade” in case an infection slips through.

One of the biggest ways to reduce the damage of a ransomware attack is by ensuring that all important files are frequently backed up in a safe place in the event of a compromise.

“Fresh backups are key to remediating after a ransomware attack and destructive attacks more generally,” says Chris Doman, a security researcher at AlienVault. “It’s imperative that the backups are located somewhere that the ransomware can’t touch” since it’s possible for ransomware to infect backups as well.

It’s also important to under-

stand that cloud storage can become corrupted and plan accordingly to prevent cloud backups from becoming compromised. As more organizations move to the cloud, researchers warn organizations to keep track of the blind spots that could arise from using these platforms.

“In the cloud, you get huge advantages in agility but it’s also harder to maintain an accurate assessment of your entire environment,” Tim Prendergast, CEO at Evident.io., says. “New functionality is turned on, updates are deployed, and default settings run counter to your policies; no one organization can see and respond to everything going on.”

Prendergast says ransomware in the cloud takes advantage of unprotected data, services and servers operating in company cloud environments and that once the malware has infiltrated

the environment, through one of many potential weaknesses, it locates and encrypts unprotected data and systems to fuel ransom demands for Bitcoin, Ethereum or other digital currencies.

“An organization that carries out an effective data-backup strategy for servers and for user-endpoints is far more likely to successfully recover from a ransomware event than the organization that puts its faith in the criminal’s ability to assist in a recovery,” says Scott Keoseyan, threat intelligence leader at Deloitte Risk and Financial Advisory Cyber Risk Services.

Organizations also should ensure that they have the proper tools to effectively monitor their networks and spot potential attacks before they can cause major damage.

Keoseyan says a comprehensive vulnerability management program that provides a continuous monitoring outlook of an organization’s publicly exposed assets, is critical. The information gathered must be fed into a remediation process that includes timelines and service-level agreements for mitigation and remediation.

“Incident response, disaster recovery and business-continuity planning had been moving in the direction of understanding things like ‘how to acquire bitcoin to pay ransoms’ but it is critical that these key cyber-security and IT processes be adapted to account for scenarios where recovery via ransom is not an option.” Keoseyan says.

“Once an adversary encrypts your data, your options to deal with the attack get very limited, very fast,” says Sanjay Kalra, co-founder and chief product officer at Lacework. “The most important defense against a ransomware attack is to be prepared before it happens.” ■

2018

TECHNOLOGY BREAKTHROUGHS

This always will be a high-touch line of work. But in many ways, it is increasingly becoming a high-tech field as well. In fact, technology already touches just about every aspect of seniors housing and care. In the following pages, we highlight some of the notable technology breakthroughs that are redefining caregiving, operations and integration. Although the respective merits of each selection can be debated, this cannot: More breakthroughs are coming.

4 that improve caregiving

This sector is all about caregiving. And thanks to a new generation of tech tools, that task is becoming more manageable. Here are four game-changers that are making a difference – or soon will be.



Photo: Front Porch Center for Innovation and Wellbeing

Robots

The robots are coming, the robots are coming! Actually, they already are here — and not a moment too soon. Some communities are using robots as therapy pets for residents with Alzheimer’s disease and other forms of dementia. Others are integrating larger robots to transfer and carry residents. Given the dire projections for worker shortages, it’s clear that more communities likely will be counting on robots to do some heavy lifting.



Photo: Jose Luis Pelaez, Inc./Blend Images/Getty Images Plus

Sensors

Sensors can help operators detect signs of illness and other problems before they become noticeable. Sensor-connected tech tools also are allowing residents with disabilities and functional challenges to better connect with the community. These tools also play a critical role in tracking residents’ locations and movements. The bottom line: They are giving residents, their families and communities a greater sense of relief.



Photo: Westend61/Getty Images Plus

Wearables

Wearables that foster healthier aging are becoming more common across senior living and skilled care settings. And why not? GPS watches can keep seniors who have dementia safer. Wearables that attach to a bracelet can alert caregivers to alterations in residents’ routines. Others can help seniors with specific problems, such as neuropathy, which makes walking and balancing difficult. These tools are making more than a fashion statement.



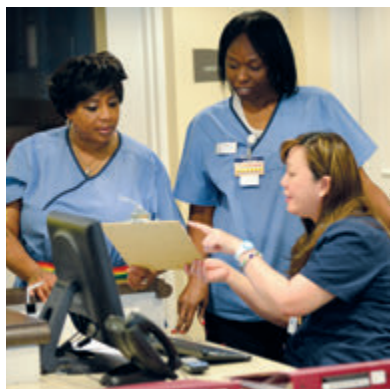
Photo: Westend61/Getty Images Plus

Social engagement

Social isolation can fuel emotional issues ranging from loneliness to depression. Studies also have linked isolation to heart disease and other ailments. An array of solutions and devices can help older Americans better connect with friends and loved ones. They have one thing in common: They help keep their users better connected and socially engaged.

4 that improve operations

You have a business to run. And it keeps getting more challenging. These four tech tools can help you do a better job of managing operations and the bottom line.



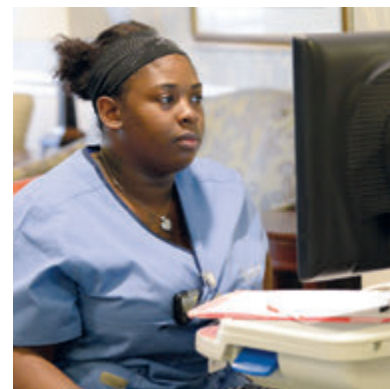
Staff retention/management

So you say you need help finding help? There's an app for that. And software. Actually, there's a whole cottage industry of tech-based employment assistance emerging. From finding the keepers to keeping them around, these tools address virtually every aspect of hiring, motivating and training your most valuable resource — your people.



Big data analytics

Big data analytics is one of the hottest terms being used in this sector today. This rapidly emerging tool has the power to deliver unprecedented information and insight for operators. Users are harnessing data-driven discoveries to carve out new business opportunities, assess current practices and to get a head start on preparing for the future. It never has been easier to create mountains of information — or to put them to good use.



Communications

Thanks to communications-related technology, operators can stay in better touch internally and externally. From e-mail, to texts, to integrated video screens and more, communication options keep getting better. In fact, the many ways this field uses communications tools often is hardly noticed. But make no mistake: These tools are resulting in better-informed managers, staff, residents and their loved ones.



Security

Here, the benefits delve into several areas. Let's start with residents. From wandering prevention to GPS monitoring, operators can keep a close eye on the folks they care for. Then there is building security, which is benefitting from new locks, video options and other tools. Finally, new data security tools are coming to the fore. Collectively, these tools are helping create safer living and business environments.

4 that improve integration

This is no longer a stand-alone business. To thrive, you need to be connected, both internally and externally. These four tech tools are playing a central role in making that happen.



Electronic health records

Electronic health records are making operators better at their jobs. From more efficient charting, to reducing medical errors, to better reporting and enhanced integration with other players, EHRs are helping operators improve both quality and their bottom lines. And as data increasingly play a more central role, their use will surely become more important.



Telehealth

Telehealth is rapidly expanding into senior living and care settings, where residents may require quick assessments from outside medical professionals. The expansion is particularly notable in rural areas, where distance formerly acted as a care deterrent. But it is also making its presence felt in urban/suburban settings on weekends and evenings, when waiting for a physician to return a phone call is not practical.



Care transitions

Technology is empowering operators while enhancing a more collaborative approach to resident care. To be sure, readmission penalties are helping drive its growth. But so are demands to better evaluate, monitor and motivate residents. Mobile options are becoming more prominent here, as are advanced software applications that enhance understanding across care settings. The result? Better transitions.



Partners

Whether upstream or downstream, tech tools are getting all involved on the same, er, page. In the growing world of accountable care organizations and post-surgical care, it's critical that senior care and acute care partners work as one. Conversely, the same goes for working with home care agencies, hospice organizations and other ancillary partners. Tech tools are playing a key role in bridging what was once a huge divide.



Using tech to keep residents engaged

Tech tools can help your residents avoid social isolation



By Majd Alwan, Ph.D.

Ray Heuser, a 78-year-old resident of Longwood at Oakmont, near Pittsburgh, and longtime tech aficionado, is key to that life plan community's head-on intervention of a silent killer among older Americans: social isolation.

Heuser, through his involvement with Longwood at Oakmont's resident technology interest committee, champions the use of and helps to improve MyLAO, an app-based digital technology used to increase residents' engagement and community interaction.

For Longwood at Oakmont, a LeadingAge member in Verona, PA, as for all providers of aging services, social isolation is a major concern. It has been shown to increase the risk for a variety of poor health outcomes in people of all ages. Whether a phone call, a Facebook post or having coffee with a neighbor, regular social interactions keep all of us psychologically sound. Without these connections, we suffer; the health effects of prolonged isolation, according to the results of

one study, are equivalent to smoking 15 cigarettes a day.

The good news is that tech can help. An array of solutions and devices to help older Americans surmount isolation — from apps such as the one in use at Longwood at Oakmont, to headphones for the hard-of-hearing that mimic the look of trendy Beats by Dr. Dre, or friendly, digital avatars reminiscent of “Lady” from the animated Disney classic that augment home-care services — are now available. But sorting through the options can be overwhelming, and successful implementation often is a mix of art and science, requiring clarity on the needs, desired functionalities and maybe even preliminary testing and reassessment.

To help providers determine the best solution for their needs, LeadingAge CAST's Social Connectedness and Engagement Technology workgroup, which includes Longwood at Oakmont and other aging services providers, late last year released a free, comprehensive online resource that covers a variety of tech solutions which aid social connected-



ness and engagement. Here, drawn from actual CAST members' experience, are some best practices to help providers successfully plan for, select, test and implement such tech solutions.

Getting started

- Get buy-in and support from all groups involved in tech use: leadership, activity department management and staff, as well as your tech champion residents such as Ray Heuser. Consider discussions with family members if the technology is to be used to communicate with various relatives.
- Provide sufficient time to train your organization's staff and your champions before rolling out new technology to a pilot group.
- Select a test population carefully to ensure its members are willing and able to use and engage with the technology and ultimately benefit from it. Track results carefully, and tweak as necessary, to avoid expanding too quickly. Lessons learned from the trial period can be used to adjust and enhance the program as it expands to other communities.
- Be mindful that the benefit of a tech solution may not be immediately apparent, either to staff or residents. Don't hesitate to customize, personalize or adjust a solution on a case-by-case basis. Though time-intensive, doing so increases the odds of adoption and improved quality of life and care for the residents involved.



Photo: iStockphoto.com/ErinCassidy Images Plus

Tech tools can keep your residents connected in many ways.

“Regular social interactions keep all of us psychologically sound.”

- Solicit feedback continually, and from a wide group of staff and residents involved. One provider found that residents were more likely to share their preferences with dining and maintenance staff, with whom their bond was stronger, than with the tech support team involved.

tinual adoption. Keep tabs on resident/client logins to aid with IT support. Brainstorm with your vendor and your activities and engagement staff members to ensure continued embracement and use over time.

- Address concerns and manage expectations. Keep residents

and staff informed about and assured of security measures and the protection of personal information. Let them know what management does and does not expect from the adoption of new technology.

Training

- Identify and train residents, like Heuser, to act as ambassadors. They can encourage use and help with training and support throughout the day, as well as in non-classroom situations.
- Limit size of onboard/training sessions to 10 to 15 residents per meeting to ensure that sufficient attention is given to each participant.
- Monitor the rate of adoption, and identify additional or special training needs and any accessibility/use needs. Users with poor vision or who have difficulty with steady hand motion, for instance, may need additional support.

Check out CAST's Social Connectedness and Engagement Resources, read our case studies, use our online selection tool and let me know your thoughts. ■

Marketing and use

- Communication about availability and use of a tech solution must be continual and widespread. Family members, for instance, can help advocate for and encourage use of a tech solution, especially if they are using it on the other end.
- Track resident use of technology over time to ensure con-



Majd Alwan is executive director of LeadingAge's Center for Aging Services Technologies, or CAST, responsible for creating and leading a network of technology companies, providers and research institutions focused on technology solutions for an aging society. Follow him on Twitter @LeadingAgeCAST.

Hear it from the dean of long-term care journalists
 Editorial director John O'Connor gives it to you straight with blogs at
www.mcknights.com and
www.McKnightsSeniorLiving.com

Using the EHR to unlock the next big thing

As electronic health records take root, operators are probing new ways to advance both knowledge and care

By John Hall

It's easy to see why the electronic health record attracts so much attention from operators and clinicians. In the age of resident-centered care, the EHR is the documentation hub — the living record — that chronicles every facet of residents' changing health, and every caregiving touchpoint.

The perfusion of tech in this sector is not as surprising as the rate at which it's being adopted, as seen in practically every category monitored each year in the annual LeadingAge Ziegler 150 study, which analyzes the nation's largest 150 not-for-profit senior living providers. Ziegler's most recent compilation found 84% of operators have now adopted EHRs, in tandem with similar adoption rates in point-of-care documentation technology.

With most adoption issues under their belts, skilled nursing facilities now are focusing on more sophisticated technologies around electronic referral management, analytics and connectivity, whereas assisted living and home care settings now are delving deeply into interoperability issues, experts say.

Innovation and evolution have been swift.

"The first generation of EHR solutions, many still in use today, did little more than move the



EHRs allow operators to gain unprecedented clinical insights.

maturation of machine-learning toolsets. "This provides incredible potential to vastly improve the efficiency and quality of care," he adds. "Leveraging the targeted application of deep machine learning to both structured and unstructured data in a comprehensive personal health record can provide a means to identify early indicators for a change in condition and opportunities for intervention." ■

paper from the manila folder in the physical filing cabinet into the virtual manila folder in the electronic filing cabinet," observes John Damgaard, president and CEO of MatrixCare. "The electronic health record was literally comprised of little more than scanned images of paper documents. Even the user interfaces were built to replicate existing paper-based forms.

"The focus was squarely on data entry, and the result was an end-user experience that was difficult at best," he adds.

But things have changed in the newest generations of EHR systems.

"Today's EHRs are a significant improvement over earlier systems," Damgaard adds.

"Human factors engineering has been applied to user interfaces to improve their intuitiveness and efficiency and lower training requirements. Multi-dimensional analytics tools are used to identify variance in key process and outcome measures. Clinical decision support — driven by episodic discrete data and logical rules and expressions — are used to coach care decisions in line with the validated standard of care for the combination of a given population segment and its changing conditions. Care coordination tools are employed to focus the full care team on the patient and progress against the care plan. This combination of capabilities represents the state-of-the-art in deployed EHR technology."

With the thorniest implementation issues now under their belts, facility managers can look forward to a host of exciting innovations.

Those include significant increases in the capability of top-tier cloud computing environments to manage big data environments and in the

Three Tips

1 As America continues the migration to value-based care and as long-term post-acute care networks continue to narrow, outcomes performance will become the ultimate determinant of success or failure. Tapping into the power of data analytics can help you get a true assessment of where their strengths lie.

2 Referral management software can help providers understand which types of services are profitable for them and which are not, as well as help them identify their best referral sources. By marketing their organizations' strengths, they can attract the right kinds of referrals and minimize those that may not be a good fit.

3 Seek technology partners committed to interoperability — so they can facilitate the exchange of data necessary for a truly comprehensive personal health record.

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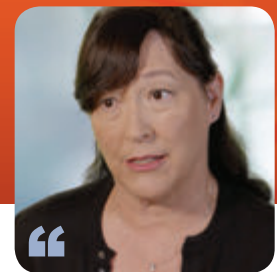
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The new key to working across channels

Interoperability is like a Rosetta Stone that lets your organization navigate across various platforms

By John Hall

A skilled nursing facility or assisted living community could spend a fortune on a world-class electronic health records system. But alone, it would be virtually worthless out of the box.

For without the ability of hospital discharge planners to download medication records, physicians to upload care summaries, or payers to review charts, it all would be a waste of time and resources.

Interoperability is the engine of EHR, or as the Healthcare Information and Management Systems Society defines it, the “ability of different technology systems and software applications to communicate, exchange data and use the information that has been exchanged.” The sharing occurs among a host of entities — from clinicians and labs to hospitals and pharmacies — regardless of application or vendor.

There are few examples of greater transparency than this across all of healthcare. And it’s becoming the price of admission to play in the larger arena of accountable care organizations and provider networks.

“Being able to facilitate electronic transitions of care and referrals provides skilled nursing facilities with the ability to create deeper relationships with their referral partners and solidify



Photo: Maskof/Maskof/Getty Images Plus

their position in a preferred network,” notes A.J. Peterson, vice president, general manager of interoperability for Netsmart, which recently introduced a new cloud-based electronic health record platform, called myUnity, designed to help integrate senior living communities and at-home care providers into the overall healthcare system to improve health outcomes and increase their value as referral partners.

“Integrating clinical data from the hospital or primary care provider into the SNF EHR delivers efficiencies, in removing data entry, improves safety through electronic clinical reconciliation and drives higher productivity and census through expediting the time it takes to accept a referral and complete an admission,”

Peterson adds.

Netsmart CEO Mike Valentine said the company has a “fundamental belief” that individuals’ care records should follow them as they traverse various healthcare settings, regardless of provider. “And, as our clients provide that care, they need complete, immediate and easy access to information that captures a person’s entire health story,” he adds.

Majd Alwan, Ph.D., senior vice president of technology for LeadingAge and executive director of the Center for Aging Services Technologies, says developers are most keenly focused now on interoperability issues as the electronic health record continues to mature. Along with that are advanced features such as clinical decision support, quality data analytic tools and dashboards, all of which “are improving quality of care, and impacting quality measures and metrics, like 5-star ratings, which are shaping referral networks as well as contracts with managed care,” he adds.

According to Peterson, as healthcare IT networks mature, more of the workflows incor-

Interoperability can help your organization become a preferred partner, while forging better relationships with resident-referral sources.

porate external healthcare data within the provider’s EHR and not within a third-party disconnected portal. In addition, the use of interoperable technology is driving toward predictive modeling, which identifies risk and recommends interventions to proactively care for individuals.

Near-future innovations could see advanced analytics driving from the amount of discrete data that are being sharing across the healthcare ecosystem. As data become “more liquid,” they will continue to drive artificial intelligence, machine learning and precision medicine in the healthcare space, he adds. ■

Three Tips

- 1 Ensure that you have a healthcare IT partner that is on the cutting edge of shaping interoperability standards and driving adoption and promotion in the communities you serve.
- 2 Build a strong governance model within your organization that promotes buy-in to the operational use of healthcare IT in the daily workflows of your team.
- 3 Foster collaboration and partnerships within your community to adopt technology tools that provide value to the individuals you serve across the entire care continuum.

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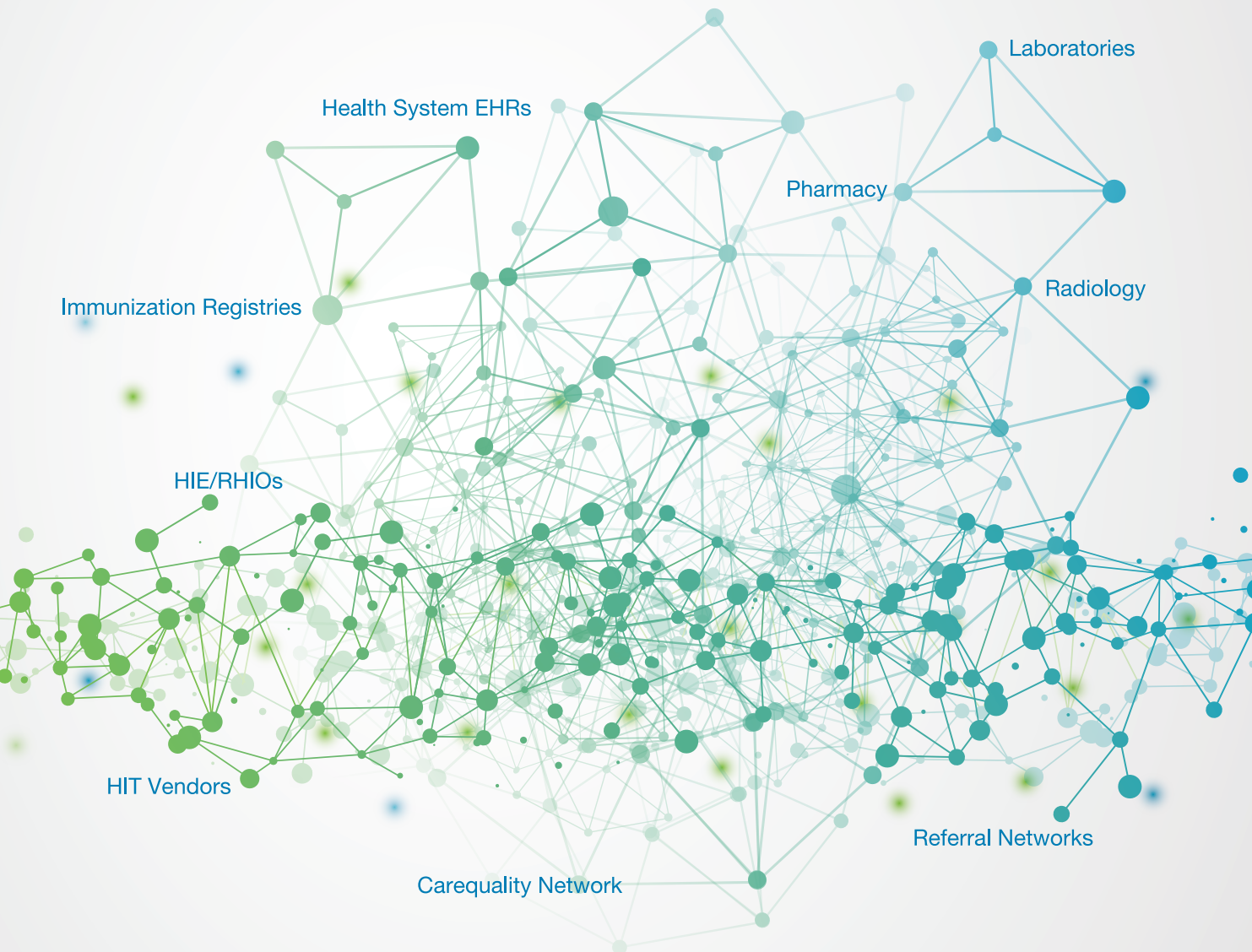


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The right prescription for managing meds

Medication management technology is dramatically adverse reducing drug-related events and preventable errors

By John Hall

Seniors housing and care operators have developed remarkable innovations aimed at curbing drug costs, ensuring medication safety, preventing diversion and predicting and modifying problematic prescription and dispensing issues.

With much of the attention today focused on antibiotic overuse, opioid addiction and adverse drug events (which clearly are the biggest culprit for yet another big issue — rehospitalizations), it's no wonder a locked medication cart and cabinet and crossed fingers are no longer enough.

“Medication management technology benefits skilled care and senior living environments by reducing the risks of transcription errors, drug-drug interactions and errors of omission,” says Chad Worz, PharmD, BCGP, chief executive officer of the American Society of Consultant Pharmacists. “The advent of electronic health records and their interoperability to nursing home electronic medical records has provided more efficient transfers of prescription information from nursing homes to pharmacies. The days of manual paper-to-paper quality assurance checks are all but gone, eliminating the errors created by poor handwriting, omissions and other tran-



Photo: Moments Captured by Vanessa

scription problems.”

Thanks to remarkable and powerful software and other IT tech, providers today are blessed with a large array of tools and solutions.

Most pharmacy services providers today are able to access and upload vital information to electronic health record systems to closely manage prescribing and dispensing medications with client facilities.

Electronic medication administration records are a critical component of that. And thanks to sophisticated clinical decision support and data analytics applications, providers are able to make use of such technology to manage their medications efficiently.

Yet, as sophisticated as any medication management technol-

ogy is today, there's no substitute for the vigilance of well-trained and attentive staff.

“Getting different systems to communicate cleanly is not always simple,” Worz says. “Having different software systems communicate cleanly in both directions has been slow to occur due to the sheer number of systems and the language by which each different software solution speaks.” Keystroke and menu-pulldown errors sometimes occur, he adds.

Soon, as systems become more interoperable and bidirectional communications become reality, a vast array of opportunity begins to emerge in terms of global health initiatives, Worz says.

He envisions anticholinergic burden and pharmacogenomics as future notable innovations. And he also sees similar “big data” approaches to safer medication regimens that will begin to influence individual management approaches.

Management advice

Literature is rife for best practice medication management. Here's a look at key observations:

The days of manual paper-to-paper quality assurance checks are all but gone, practitioners note.

- Implement a root cause analysis system to identify problems.
- Be extremely mindful of resident handoffs from one setting to another.
- Engage your consultant pharmacist on all medication management issues.
- Have your house in order with effective protocols.
- Finally, invest in an EHR system. ■

Three Tips

1 Technology is only as good as its use and interpretation. Involving the consultant pharmacist in analysis of the medication data and their and subsequent influence on prescribers is critical. Pharmacists can use algorithms to identify risks and make recommendations to the care team for improvements. This enhances patient and resident quality of life and saves dollars to the health system by reducing medication misadventures and decreasing hospitalizations.

2 Move quickly to systems that can communicate electronically — hospital systems to nursing home EHR systems to pharmacy dispensing systems. This is an initial step in reconciliation of medications.

3 Use advanced-level thinking about medications. two-thirds (66%) of rehospitalizations are secondary to medications.

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Mobile tech breaks through old barriers

Old physical limits no longer apply as these new tools help operators better manage both care and operations

By John Hall

Mobility is an ongoing theme in seniors housing and care. Everyone values it highly. The kind of mobility that has radically transformed this sector comes largely in the form of cellular phones and tablets — and the applications are nearly as ubiquitous as the devices themselves.

Here are just a few of the more significant ways mobile tech is transforming senior living:

- **Resident-centered care.** Point-of-care systems allow caregivers to document every interaction and upload the information to electronic health record systems. Mobile tech also has significantly improved residents' lives by offering nearly endless connectivity with families, friends and loved ones.
- **Staffing.** Nurses and aides are now able to chart their care and manage practically every facet of their work life on tablets and phones, providing a means to combat attrition and do more with less. "Mobile technology enables staff to gain efficiencies and have more direct facetime with residents," says Mark McIntyre, executive vice president and general manager of CareWorx. "Bedside documenting allows for real-time



Photo: F5 Productions/Blend Images/Getty Images Plus

and more accurate data entry and patient information while with the resident."

- **Operations.** Ancillary staff such as housekeeping and maintenance are able to use "smart" devices and mobile tech applications to check mechanical systems and keep the physical plant healthy 24-7. Adoption and innovation have been brisk and constant. Mobile tech is now beginning to evolve into cloud-based data analytics applications, providing timely and useful data that operators can use to improve the way they manage their business and provide care. Near-future applications such as voice-activation are opening up new ways to get things done, says Scott Code, the associate director for the Center for Aging Services Technologies.

It's all about efficiency and connectivity — both of which are highly valued by anyone who works in long-term care today.

"Mobile devices enable information capture and data-gathering during direct interaction with residents," McIntyre says. Infrastructure improvements in Wi-Fi and software-as-a-service (SaaS), cloud-based applications also are facilitating even more widespread use.

Planning is key

As mobile tech becomes more ubiquitous, those who oversee the use of mobile devices in senior living settings are confronted with numerous management challenges, both large and small.

Among them are privacy issues. Mobile tech is a data-producing monster, and it's easy for the information it derives from residents and staff to be misused.

McIntyre advises managers to carefully plan and strategize how mobile devices are to be used. "It's not as simple as buying a bunch of mobile devices at a local big box store and distributing them to staff," he says. Maintaining data integrity

Mobile tech is affecting virtually every operational area in seniors housing and care.

is another major concern. And then there's the issue of, well, mobility. "Operators have some hesitation with them," he adds. "The fact that they move around and aren't fixed to a wall is one concern." There's also inventory to manage. In addition, there's a popular misconception that Wi-Fi is "expensive," he adds.

McIntyre advises some soul-searching, such as what you are hoping to achieve by its use, what kinds of devices to allow, how to avoid infection control issues and how well they integrate with IT systems (including EHR). "It's important to assess your current network and determine whether it can handle the load of new devices and whether your current setup is adequate," McIntyre adds. ■

Three Tips

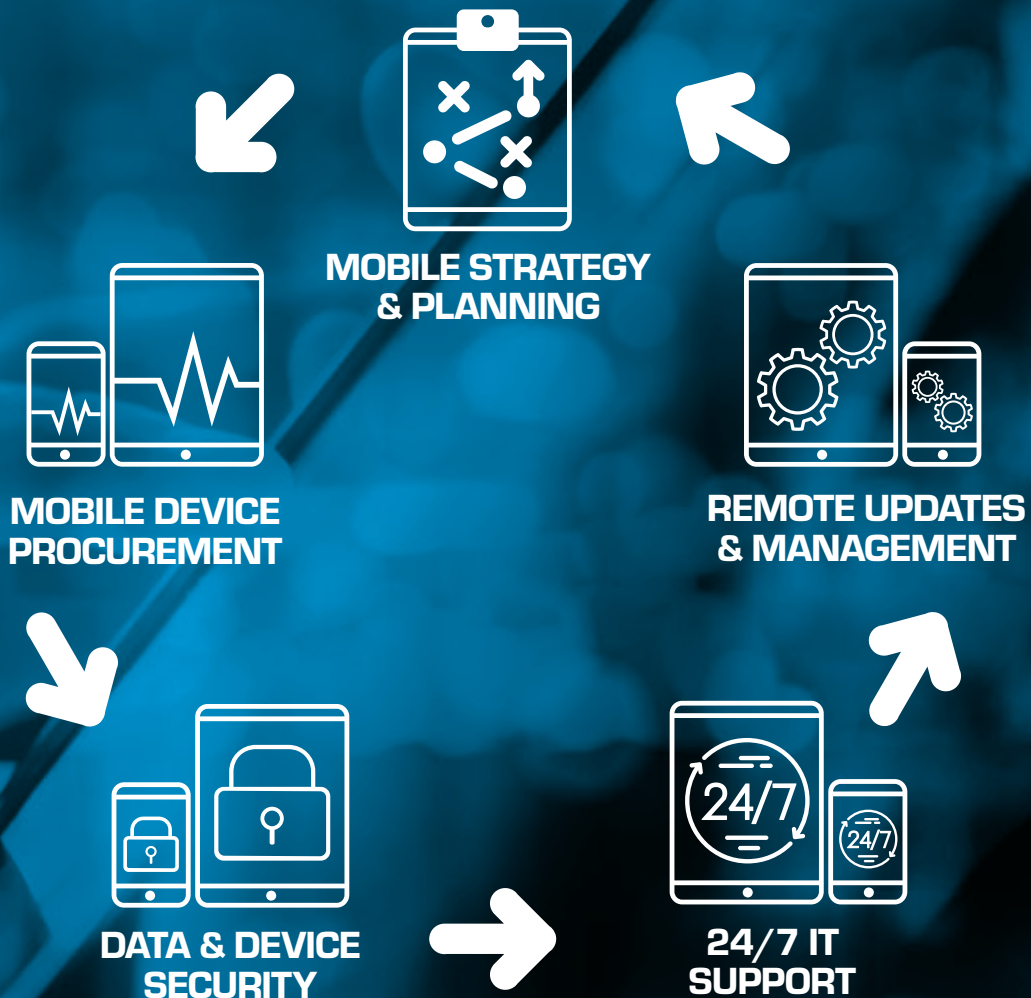
- 1** Don't go ad-hoc with mobile technology. Take the time to develop a strategy. This will save frustration and cost in the long run.
- 2** Assess your wireless network. You need to know whether your setup is adequate and whether it can handle more load. Good infrastructure will encourage technology adoption, not hamper it.
- 3** Security is vital. Make sure you have a plan in place for remote monitoring and management of devices.

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Property management enters a new era

Mobile devices and information technology are working together to help keep communities running well

By John Hall

The IT world now offers a wealth of software solutions to manage everything from locks, lights and laundry, to furnaces and foodservice. Some of those solutions are evolving beyond operators' wildest expectations, whereas others are just beginning to realize their potential.

Welcome to the world of property maintenance, where mobile devices and information technology are working in tandem to streamline and improve every operational aspect of seniors housing and care.

New maintenance software solutions automate many tasks, and using mobile tech vastly increases productivity while preventing larger maintenance challenges down the road, says Dan Roberge, president of Maintenance Care. Many issues are now easily flagged via mobile or PC keyboard by caregivers and residents.

"Property managers now have proper facility documentation tools in what is known as electronic environmental records, which deal specifically with the health of a building or the environment around a resident," he says. "This has elevated response time and quality of work, directly impacting a resident's way of life."

The EER covers the whole

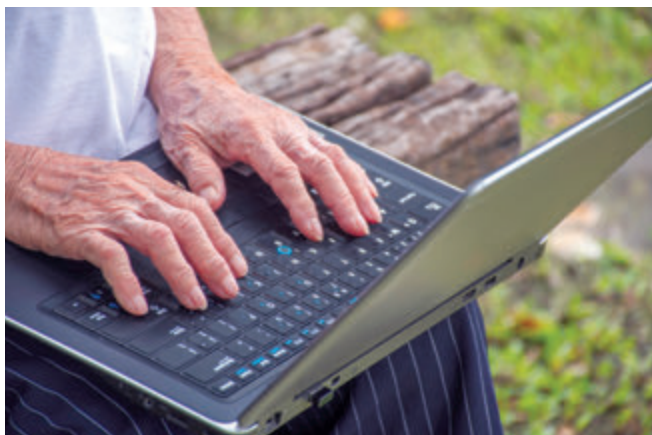


Photo: Thada Amnuchokiam/EyeEm/Getty Images Plus

Caregivers and residents can flag issues more easily.

water flow management and even lighting and power needs," he adds.

On top of things

Tech used properly can help facility managers stay on top of deferred maintenance, one of their thorniest challenges: .

"Deferred maintenance is a huge issue, particularly given the numbers of communities that have been developed over the last few years," Roberge says. "While the large amount of development has driven down overall industry occupancy, it has disproportionately affected older communities that are losing prospective residents to competitors because of inferior physical plant quality." ■

gamut of documenting and maintaining a working and safe environment for everything from bed entrapment, bed lifts, fire safety and temperature controls to water flow and temperature, *Legionella* prevention and more.

"The simple fact of documenting the process can lead to reduced accidents and a better standard of living," Roberge says. "Add fail-safe technology solutions like mobile notifications for more important requests, as well as auto-scheduling and reminders to complete the higher-risk issues on time, and property managers can be assured they are providing the best service available."

Mobile tech has had a significant effect. "The advent of the mobile device was the one major determining factor that has changed the way property

managers respond and execute in their day-to-day operations," Roberge says. "Having the ability to receive an important maintenance request, determine if it is an emergency and who is best to respond to it without having to receive a phone call, write it down or forget about it later, has allowed for a better workflow. Homes have equipped themselves with building-wide Wi-Fi coverage, allowing for the maintenance team to simply connect to the internet without the expensive cost of a phone plan."

Roberge sees future tech such as voice activation and sensors playing a bigger role.

Amazon's Alexa and Google's Home technology are revolutionizing communication by removing accessibility barriers, even bringing residents themselves into operations such as staff evaluation and facility maintenance.

Even applications such as artificial intelligence (AI) have a place in the future of maintenance care. "AI monitoring of movements of bodies in a physical space could help anticipate facility controls such as temperature changes,

Three Tips

- 1 Start simple. Get a good process for communicating, receiving and responding to day-to-day requests around the facility.
- 2 Dedicate a "super user" to get to know the technology, communicate to all parties the important elements of the software and use it to the maximum.
- 3 Your data are key. EER should be just like EHR. The data belong to you, and you should gain key knowledge from them. Make sure your provider is keeping them safe, secure and private. The information you gain from your technology will help you save money, time and possibly lives if you learn from it.

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Lending a helping hand where it's needed

Tech tools are hardly a replacement for inadequate staffing, but they can help alleviate the challenge

By John Hall

High salaries and world class benefits usually are a guarantee of a stable workforce. In seniors housing and care, where such things understandably are difficult to come by, technology has stepped in to help fill the void.

And experts say it is having a positive effect.

In an industry beset by uncomfortable attrition rates in the midst of a baby boom generation, the influx of which it has never seen before, providers and owner-operators are marshalling all kinds of technologies that not only allow thin staffs to be more efficient and productive, but happier as well.

Such efforts are indeed going right to facilities' bottom line when one considers that the costs to replace a lost employee can be nearly a quarter of the individual's salary.

The tech tools getting the most attention these days are mobile devices, which the biggest segment of the workforce demographic in this sector has grown up with. Literally at their fingertips, workers are able to view and modify their schedules, communicate with managers, and in some cases, stay abreast of the current conditions of their residents.

But operators also have realized indirect dividends of other



Photo: AOD

burgeoning tech such as digital signage, resident portals and community connectivity apps, which are being leveraged to make their jobs easier, says Majd Alwan, Ph.D., senior vice president of technology for LeadingAge and executive director of the Center for Aging Services Technologies. Tech also is streamlining charting and reporting, and future applications such as voice and facial recognition could be commonplace tools that drive efficiency and increase security.

"New tech solutions help providers and operators avoid gaps in coverage, identify employees approaching overtime and find ideal replacements with an automated absence management process that includes real-time alerts, collaborative scheduling, mobile applications and employee certifi-

cation tracking," says Beth Baerman, communications director at Attendance on Demand Inc.

"By supporting resident needs with effective labor-budget management, proactive employee scheduling and direct and indirect care labor reporting, providers deliver the highest-quality care for the best value by eliminating time-consuming manual processes," Baerman adds. "Efficiently managing workflows for creating a schedule, tracking time and finding replacement workers with the right skills and qualifications that elevate the employee experience allow providers to focus on caring for their residents."

Next-generation work communication systems will leverage intuitive and familiar social tools such as push notifications, instant messaging, online status and incoming message indicators to share the planning work load, increasing collaboration and engaging employees. Balancing defined care ratios with budget and meeting staffing quotas also is an ongoing challenge.

"Scheduling people is different than scheduling things," one work scheduler told researchers

Tech tools can help operators better deal with staffing challenges, such as scheduling, reporting and workflow.

conducting a study on long-term care employment practices.

The research was conducted as part of the Work, Family, & Health Network, which is funded by a cooperative agreement through the National Institutes of Health and the Centers for Disease Control and Prevention. "How work schedules are determined has important employment and social implications for workers and their families," researchers noted in their July 2016 article, published in the *Industrial and Labor Relations Review*.

"Research has found that long work hours and erratic schedules negatively influence employee mental health, employee job quality, employee safety and patient/resident care. Work schedules have also been shown to affect work-life conflicts by influencing employees' abilities to manage child and elder care, commuting, school, household chores and personal health." ■

Three Tips

- 1** Offer data visualization tools, which enable effective workforce management planning.
- 2** Collaboration features allow you to share the scheduling workload with employers, workers and residents.
- 3** Using automated workflows can address labor compliance, leave requests, unplanned absences and census changes.

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