

NEXT-GENERATION ENGAGEMENT TECHNOLOGY ENHANCES PATIENT OUTCOMES

Rolling out cutting-edge mobile tools and infrastructure helps healthcare organizations improve quality of care and patient satisfaction.

EXECUTIVE SUMMARY

Facing increasing financial penalties for generating high readmission rates, hospital administrators, staff and clinicians strive to ensure that patients released from their facilities don't pay a quick return visit. Yet despite the widespread use of many new medical, social and business methodologies, readmission rates have remained stubbornly high.

Now, after years of frustration and soaring penalties, healthcare providers have zeroed in on patient engagement and satisfaction as a way to hammer down readmission rates. Sophisticated mobile and fixed devices, powered by multimedia, social media, artificial intelligence and other cutting-edge technologies, are improving patient care and helping providers make more informed decisions on both treatments and long-term support.

A robust technology framework and support infrastructure are essential to creating, deploying and managing patient engagement devices and applications. Each provider turning to engagement technologies in an effort to drive down readmissions has its own unique goals and needs. From network solutions and access points to applications, storage and processing, technology vendors ensure that a robust and reliable foundation is in place to ensure a positive experience for both patients and providers.

The Importance of Lower Readmissions and Higher Patient Expectations

Now more than ever, healthcare providers strive to reduce readmissions to their facilities. The penalties for providers who don't do their utmost to prevent patients from spending days or weeks going through a healthcare revolving door are mounting rapidly.

In October 2012, the Centers for Medicare & Medicaid Services (CMS) started slashing Medicare payments for Inpatient Prospective Payment System hospitals with excess readmissions. The action stemmed from a provision in the Affordable Care Act of 2010 that required the U.S. Health and Human Services Department to establish a readmission reduction program.

According to CMS, [excess readmissions are measured](#) by a ratio that's achieved by dividing a hospital's number of predicted 30-day readmissions for certain conditions (heart attack, heart failure, pneumonia, COPD, hip/knee replacement and coronary artery bypass graft surgery) by the number that would be expected, based on an average hospital with similar patients. A ratio greater than 1.0000 indicates excess readmissions.

Hospital readmissions have been identified as a major contributor to healthcare costs. While some readmissions may be planned or unavoidable, it has been [estimated](#) that more than \$8.25 billion is spent each year on potentially preventable readmissions.

Expanding Engagement

Various studies have linked factors such as patient age, overall health and specific disease conditions with risk for readmission. A patient's socio-economic status, education level and racial or ethnic background have also been cited as likely risk factors. While healthcare providers have little or no control over basic patient characteristics, there is one area that shows significant potential for lowering current readmission rates: patient engagement.

Hospitals and clinics nationwide increasingly are launching patient engagement initiatives with the goal of getting more

people to actively participate in their own care. In fact, [research shows](#) that patients who are both engaged and satisfied with their care are less likely to be readmitted to the hospital 30 days after discharge.

Still, for many healthcare organizations, achieving active patient engagement and making healthcare a two-way collaboration between patients and providers remains a struggle. Part of the problem is the way healthcare organizations approach the issue. To date, most providers offer patients, at best, a simple web portal that allows users to access their basic health records, examine test results and order prescriptions refills.

Although numerous studies have shown that patients are intrigued by the possibility of using sophisticated digital healthcare tools, such as mobile apps and wearable devices that provide detailed diagnostic data, providers generally have been slow to embrace these options. Sadly, compared with the digital technologies that many people now use on a daily basis — such as texting, social media and streaming video — the patient portal appears outdated.

Realizing that portals are only a partial solution to satisfactory patient engagement, a growing number of organizations are turning their attention to the next generation of point-of-care technologies. New approaches and systems now help improve patient insight and comfort while allowing clinicians to deliver faster and more efficient patient care, all of which can reduce the average length of a hospital stay and the number of readmissions.

At [Geisinger Health System](#) in Danville, Pa., for instance, staff use tablets to interact with admitted patients. The devices allow patients to review their health records and also entertain themselves. Patients can access more than 100 applications, including one that provides educational resources, care team information and details about their stay. As of 2017, the health

The Challenges of Patient Engagement

Despite continuing innovation, many providers still struggle to involve patients in their own care. But don't blame the patients.

The top challenge, says Bertrand Ross, medical director at Virginia-based Optima Health, is getting physicians on board with improving patient engagement. In an [article](#) published in NEJM Catalyst, Ross observes that physicians have been somewhat hesitant to put in the extra work necessary in order to support patient engagement initiatives.

"Doctors to some degree worry the changes will be too disruptive," he notes. "How will physicians blend patient engagement into their [care delivery] workflow?"

Kathryn Duevel, medical director of quality and innovation at APMC Health, a multispecialty health network in Minnesota, says in the article that incentives may be necessary to get doctors more committed to improving patient engagement.

Duevel also expects that the national shift to value-based payments will help speed the adoption of patient engagement technology. "Larger organizations have the capacity to invest in other processes, such as patient engagement, that don't contribute directly to the fee-based system," she says. "As we transition to a value-based system, the value of patient engagement starts to pay off, and organizations with fewer resources can make the financial equation necessary to fund patient engagement work."



system had deployed 250 tablets in three of its hospitals.

As mobile technology becomes ever more tightly integrated into daily life, patients are coming to expect a similar level of service and interaction in their point-of-care treatment. To meet this expectation, and to compete effectively in an increasingly regulated healthcare sector, organization leaders must develop a clear patient engagement strategy and be prepared to act on and embrace the powerful new technologies patients desire.

What Drives Patients?

A recent [survey](#) conducted by business management firm Ernst & Young found that both healthcare consumers and physicians are hungry for increased digital engagement. More than half of the consumers surveyed (54 percent) indicated that they were comfortable in contacting their physician digitally. They also expressed interest in using personal technology, such as a smartphone or a connected device, for information sharing (33 percent) and video consultation (21 percent).

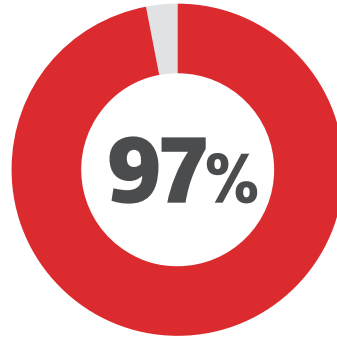
The report also discovered widespread agreement among physicians that digital technologies and data sharing will contribute effectively to the overall well-being of the population. The study revealed that 83 percent of physicians believe that increased consumer- and patient-generated data from connected devices would benefit the overall quality of care and enable more personalized care plans.

Two-thirds (66 percent) of physicians replied that increased digital technologies would reduce the burden on the healthcare system and its associated costs. A slightly lower number of physicians (64 percent) believe digital technologies will help reduce the burden on doctors and nurses while making a positive impact on the critical issue of burnout.

Creating incentives for data sharing is critical to ensuring patient use of healthcare engagement technologies, the study observed. Although only 26 percent of consumers are interested in sharing lifestyle information with their physician, the number of positive responses rose significantly when several incentives were added to the question.

The most attractive incentives for increasing patients' digital engagement with their physicians are reduced waiting times (61 percent) and cost savings (55 percent). Additionally, despite hesitation in sharing dietary and exercise information, 26 percent of consumers indicated that the ability to receive tailored diet and exercise plans would encourage their engagement via the use of digital technology.

Perhaps most important, the report uncovered increased awareness among consumers about the current level of innovation in the health sector. A full 64 percent of consumers consider the U.S. health industry to be innovative. Physicians are also on board with patient engagement technologies. The report found that 70 percent of physicians are positive about the effectiveness of the technologies currently in use.



Percentage of healthcare provider executives who believe the industry needs new ways to measure the customer experience¹

Plan a Thoughtful Deployment Strategy

As healthcare organizations begin planning their point-of-care engagement strategies, they can learn from the examples set by several of the field's most prominent trailblazers. Moving more deeply into the field, healthcare providers will soon discover that patient engagement isn't a single technology, but rather a combination of hardware, software and services solutions. When blended together, those tools provide a comprehensive ecosystem of patient, family and caregiver support that help to improve treatment, lower costs, enhance comfort, instill knowledge and calm fears.

At the cutting edge of engagement, healthcare providers are tapping into artificial intelligence to treat patients more proactively. New Orleans-based Ochsner Health System, for instance, recently announced an initiative to bring AI directly into patient care workflows.

Deploying a predictive model developed by its electronic health record system vendor and powered by the cloud, Ochsner believes that an AI approach will allow it to deliver rich patient insights to care teams in real time, providing the ability to detect potential adverse health events more quickly and accurately. During the course of a 90-day pilot, Ochsner's Rapid Response Team was able to successfully reduce adverse events outside of the intensive care unit by [44 percent](#).

Another pioneer of AI-driven engagement, Philadelphia-based [Jefferson Health](#) system, is using natural-language processing to redefine how to provide smart, innovative patient care at Thomas Jefferson University Hospital. The facility has equipped several of its patient rooms with an AI-powered bedside platform. The device, which resembles a clock radio, allows patients to control several room functions through voice commands (including room lighting and temperature) and obtain on-demand information about hospital clinicians and services.

A microphone built into the device transmits patient queries as audio files directly to the AI platform, which then employs NLP capabilities to translate the audio into text. The platform then scans that text for trigger words to determine the nature of the question, and uses those words, the surrounding context and other data to find the requested information via a secure application programming interface.

The device then transmits an audio response to the user within two seconds.

Smart Devices and Bedside Apps

Similar to Geisinger, the University of California, San Diego's Jacobs Medical Center directly targets patient engagement and satisfaction with digital tools people use everyday. Jacobs Medical Center, a 245-bed medical and surgical specialty hospital, provides admitted patients with tablets and equips their rooms with smart TVs. The technologies are designed to give patients direct control of their healthcare experience and their surroundings.

Once they arrive, patients have immediate access to the tablets, which allows them to take command of their room environment, reducing the need to call for assistance to lower shades or adjust the room temperature. The devices are also equipped with popular entertainment apps, and patients have the option to download many of their favorite apps as well. Additionally, patients have the ability to share content on the devices with clinicians and room guests on the smart TV.

The tablet also includes the MyChart Bedside app, which enables secure access to medical records. Patients simply create their own unique PIN, which grants safe and easy access to their medical records and test results. The app also allows users to view photographs and biographies of their healthcare team, a current schedule of medications and upcoming procedures and educational materials prescribed by physicians.

Interactive Interfaces

Yet another approach to patient engagement is under way at Virginia healthcare provider [Carilion Clinic](#). Since September 2014, the organization's Carilion Roanoke Memorial Hospital has used the GetWell Inpatient interactive patient care system to involve patients in multiple aspects of their healthcare. Understanding that engaging and motivating patients and their families is essential to both improving care and reducing readmissions, Carilion is using the technology to ensure that patients continue on the road to recovery long after they leave the hospital.

New patients at the Roanoke facility are greeted with a brief introductory video welcoming them to the hospital. After the video concludes, the patient answers a series of questions to gauge his or her comprehension of the content.

The system then notes in the EHR that the video has been completed. Later, caregivers are free to assign other videos to the patient, based on the individual's condition, medications, planned procedures and other unique factors. Patients can also manually select resources to review again, as needed.

The system also gives patients the opportunity to communicate with staff members about issues, such as dietary restrictions, pain level or room comfort, so their needs are addressed as they arise. The approach improves the patient experience and often translates

into higher Hospital Consumer Assessment of Healthcare Providers and Systems patient satisfaction scores.

GetWell content is presented as tiles on a screen, often 55- to 70-inch smart HDTVs, although organizations can use other types of devices, such as tablets mounted at the foot of a patient's bed. Another GetWell feature is an interactive digital whiteboard that integrates with the hospital's real-time location services. The whiteboard shows patients their daily schedule, introduces staff as they walk into the room and logs which clinicians have visited the patient.

Besides informing the patient, the system's standardized messages help reduce staff workloads. When a caregiver has a full patient load or is in a crisis situation, he or she might not have the time to explain all the nuances of a drug to each patient. With GetWell technology, the message, evidence-based and vetted by subject-matter experts, remains the same in all circumstances.

GetWell's Precision Engagement interface is designed to match different styles to various types of patients, based on demographics. The teen interface, for instance, uses emoticons, while GetWell Town, for younger patients, is a cartoon-based environment that replaces most text content with pictures.

Building a Robust Foundation

While next-generation point-of-care engagement technologies are key to improving patient outcomes and satisfaction, the success of such tools hinges directly on a healthcare facility's supporting infrastructure. From network solutions and access points to storage technology, providers must ensure that a proper foundation is in place to handle the demands imposed by both patient engagement and clinical initiatives.

With the number of patient engagement and clinical mobility devices growing exponentially, a healthcare organization's wireless infrastructure must be able to support and scale with growing demands. Every new wireless solution added increases the strain on existing network resources.

What's more, growing data traffic from mobile devices can slow down or even block connectivity, disrupting critical daily workflow. To anticipate and meet increased network demands, many organizations will conduct site surveys that help determine

A Touch of Personalization

[Holy Redeemer Health System](#) in suburban Philadelphia has made personalization a key element in all of its patient engagement technologies. Software allows patients to personalize their experiences and also enables staff to truly get to know who they're helping.

The organization's transformation center, which houses several physician offices, as well as imaging and lab services, relies on software that enables staffers at the front desk to offer each patient a personalized greeting.

What's more, each of the center's examination rooms offers patients the ability to pick their own waiting music and control the volume. A waiting room houses a virtual fish tank to entertain visiting children.

Chris Holt, chief experience officer for the organization, calls efforts like the virtual fish tank a good use of space and an innovative way to surprise patients and visitors.



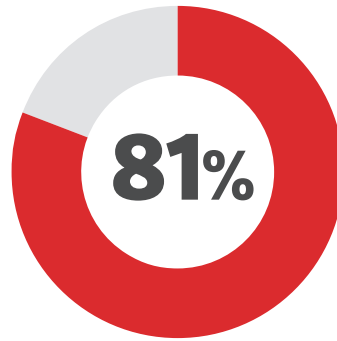
not only where to place APs, but also how to handle periods of increased traffic, pinpoint traffic bottlenecks and understand how to improve the overall network infrastructure for long-term stability.

Site Survey Recommendations

Key points to consider when conducting a site survey include:

- Discovering and understanding current network connection and performance issues, as well as their impact on end users
- Building out enough bandwidth for anticipated traffic needs
- Examining the host facility's size and layout, as well as the construction materials used in exterior and interior walls (wireless signals can be degraded or blocked by brick or masonry walls, requiring the need for additional wireless APs)
- Strategically positioning APs in locations that will maximize signal strength
- Uncovering and eliminating single points of failure (components that, upon failure, will bring down the entire network) and ensuring that rapid-convergence architectures and technologies are used across the network
- Specifying the technologies that will be used to maximize uptime for mission-critical applications, such as EHRs, image archiving and biomedical devices
- Selecting compatible endpoint devices

After completion of the site survey, it's time to consider how to approach network monitoring. Given the critical nature of healthcare services, it is essential for organizations to deploy an efficient and reliable monitoring solution that ensures data protection, maximum performance, immediate responsiveness and network continuity.



Percentage of healthcare payer executives who say their company is investing in technology to improve member experience²

A high-quality network monitoring solution also offers the ability to:

- Improve overall network reliability
- Assist with capacity planning
- Track activity trends across the network
- View the full network topology
- Streamline the troubleshooting process should issues arise

Intelligent alerting, a feature found in most high-end network monitoring solutions, ensures that key employees, including network administrators and IT staff members, are immediately notified in the event anything suspicious or out of the ordinary is discovered on the network. Intelligent alerts give organizations the opportunity to respond to and mitigate any harmful tasks being carried out before they can inflict damage to the network and network-connected resources.

Security: A Never-Ending Mission

To fully secure protected health information and other types of confidential data carried over hospital networks, it's important to deploy an advanced security architecture that can provide a strong foundation for meeting healthcare industry security specifications such as HIPAA.

Maintaining strong security is a never-ending mission. Both mobile and fixed systems are prone to many different types of attacks. Therefore, it's vital to keep system upgrades and patches up to date.

Healthcare organizations must also routinely monitor systems and mobile devices used by patients and staff. Fixed systems, such as PCs and servers, should be routinely and securely backed up to prepare for ransomware attacks and system outages. For smartphones and tablets, enterprise mobility management systems are critical for keeping track of end-user activity.

A Network Initiative

Like other healthcare organizations worldwide, [Children's Hospital Los Angeles](#) faced the need to effectively and securely connect and manage an exploding number of connected devices on its network. The organization had gone from overseeing 6,100 connected devices to 30,000 over the course of a decade.

Looking at the possibility of coping with upward of 100,000 connected devices in just five years, the hospital turned to a robust, multisolution network management setup to help it create a resilient environment and turn insight into action with end-to-end visibility.

Focusing on centralized network management, the hospital is now able to make actionable insights. That has led to both greater engagement of patients and smarter operations in its clinical and research settings. The setup also enables CHLA to eliminate roadblocks created by lingering audit concerns and provides ubiquitous control in the event of a security incident.

What's more, it helps the provider organization to reduce costs related to the execution of tasks such as device provisioning, and has vastly lowered the organization's issue resolution costs.



Hospitals and health systems are well acquainted with the need to plan for and systemically cope with sudden medical emergencies. However, the same should hold true for IT-related crises. An effective disaster recovery plan, therefore, should focus not only on maintaining or rapidly restoring electronic access to medical and billing records, but also on outlining strategies and procedures for bringing patient, clinical and business services back online as soon as possible.

Additionally, when training employees for disaster recovery initiatives, it's a good idea for healthcare organizations to prepare for worst-case scenarios that include the loss of power, communication, network services and other vital resources. By taking this step, providers can help to ensure that team members are able to perform work roles to the best of their abilities, even if they don't have access to the usual support services that are considered essential to quality patient care.

CDW: A Security Partner That Gets IT

Healthcare providers need a trusted partner that understands how to efficiently and securely capitalize on point-of-care patient engagement technologies to improve the quality of care and drive down hospital readmission rates.

CDW Healthcare's knowledgeable experts understand IT infrastructure challenges and leverage strategic technology partnerships to enable providers to select, implement and support the patient engagement solutions that best meet their needs. CDW provides the expertise, services and telepresence technology necessary to help providers improve communication, collaboration and cooperation between patients, physicians, specialists and affiliates.

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The CDW Approach



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