EXECUTIVE SUMMARY

When hospitals and providers enhance their patients’ journey with support from technology, they see results. Most patients report improved satisfaction and become more engaged when they’re provided the means to do so through online portals, mobile applications, online chat or even email.

Beyond communication tools, many healthcare organizations are adopting a range of technologies, from comprehensive data centers to mobile devices, to connect with patients in other ways and improve standards of care.

No matter which smart deployments an organization plans, the backbone — data centers, networking, security, cloud computing resources and third-party services — must be capable of scaling to accommodate increased traffic and growing data sets, as well as staff and patient expectations.

The right mix of technologies, backed by a strong infrastructure, can improve clinical workflow, increase staff productivity, enhance patient experience and ultimately prove profitable for hospitals and providers.
Patient engagement improves patient compliance, which in turn greatly improves patient outcomes. As the industry moves toward a values-based environment, patient satisfaction makes good financial sense.

In October 2012, the Affordable Care Act implemented a policy withholding 1 percent of total Medicare reimbursements — about $850 million — from hospitals. The withholding will double to 2 percent for 2017. Hospitals and providers earn that money back each year through a measure of basic care standards and high patient satisfaction scores. Top performers receive bonus money from the pool.

Performance is measured by the Hospital Consumer Assessment of Healthcare Providers and Systems survey, required of all U.S. hospitals by the Centers for Medicare and Medicaid Services. Most of the 32–question survey addresses nursing care. However, the remaining questions focus on patient experience and satisfaction in other areas.

Now that patient experience directly affects revenue, the impact of these patient satisfaction scores cannot be overstated. Massachusetts General Hospital Nursing and Patient Care Services advises its employees: “The survey results are publicly reported on the internet for all to see — so results impact our reputation. The government will reimburse us on results — so, excellent survey performance keeps the hospital financially strong.” That is true for all healthcare organizations today.

Patient Versus Provider Perception

CDW conducted its own Healthcare Patient Engagement Perspectives survey to gauge how patients and providers interact and identify which technologies may offer healthcare organizations greater return on their investment. Of those surveyed, 57 percent of patients said they became more engaged with their healthcare during the past two years by speaking to providers more frequently (63 percent) or accessing their healthcare information more often (59 percent).

Meanwhile, 70 percent of providers report that they have seen a change in their patients’ level of engagement. A majority (64 percent) of providers attribute the rise in patient engagement to technology advancements.

However, the survey revealed disagreement on how well providers are connecting with patients. Only 35 percent of patients believe their provider has improved engagement with them, while 60 percent of providers say improving patient engagement has been a top priority.

Engaging with healthcare providers continues to be a challenge for 65 percent of patients, but don’t assume it’s older patients expressing dissatisfaction. Patients in the 18– to 49–year–old age group are 19 percent more likely to say they face challenges when trying to engage with their healthcare provider than those 50 years or older.

The top challenges that patients report when trying to engage with providers include limited office hours (40 percent), slow response times (33 percent) and repetitive data entry requirements (23 percent). Dissatisfaction among younger patients may also be due to greater expectations in provider response times, 24/7 availability, user interface design or even data integration.

There is also some disagreement between patients and providers on the best way to communicate. Providers see more value in mobile applications, whereas most patients rate online chat applications higher. However, both groups see equal value in web–based access to general healthcare information and online patient portals.

The survey found that 78 percent of patients want easier access to their personal health records. The greatest benefits patients saw to this access include being better informed about their medical information (48 percent), saving time (45 percent) and improving participation in their own healthcare management (41 percent). In fact, a majority of surveyed patients prefer access to more information than their providers typically give them, in order to take a more active role in their own healthcare.

In response to that demand, 67 percent of providers are working on making personal healthcare records more informative and easier to access.

Despite efforts by many providers to improve communication, patients still see room for improvement. When communication with providers is strong and consistent, patients are more likely...
to comply with physician instructions, take an active role in their own healthcare and be happier with the results.

Enhancing Patient Satisfaction Through Technology

Many healthcare leaders have been pleasantly surprised to find that the same investments and process efficiencies that improve patient satisfaction also tend to improve hospital and provider profitability. This win–win scenario is spurring the search for more ways to use technology to everyone’s benefit.

One familiar area of innovation is patient check-ins, which are now done faster, more conveniently and more securely thanks to technology. Digital signage helps patients and families better navigate unfamiliar hospital hallways. Electronic check-ins via mobile apps or kiosks reduce office supply costs and data errors associated with handwritten forms. Similarly, paper insurance forms have been replaced by electronic data entry and verification via portable workstations. Barcoded identification bracelets for patients improve accuracy over their older typed counterparts and can also speed treatment processes.

Overall, patients are less frustrated thanks to faster and more streamlined intake processes. Investments like these demonstrate how technology and process efficiencies can improve patient care and better meet patient needs. But opportunities still exist to adopt technology throughout the entire patient journey.

Strategic Technology Touchpoints

Successful institutions look for strategic touchpoints within the patient journey and ask how each touchpoint can be refined for an improved total experience. Smart deployments of technology can differentiate a healthcare provider from competitors as well as increase patient-satisfaction scores.

Touchpoints aren’t always patient-facing. For example, hospitals and patients alike are vexed by long lags in patient bed turns. Historically, bed-turn processes have been lengthy and a bottleneck for the entire operation. These delays affect staff’s ability to efficiently respond to patients’ needs and leave frustrated patients lingering in waiting rooms, emergency rooms and hallways for a bed or room assignment.

A robust data center infrastructure can enable faster, more efficient bed-turn processes. While unexpected community outbreaks can occasionally cause a backlog in beds, even that situation can be mitigated through technology such as predictive analytics. Using technology to develop more efficient processes not only helps staff perform their jobs, but also contributes to a better patient experience overall.

To further reduce the stress on emergency rooms, many organizations are launching telemedicine programs or satellite medical offices and clinics. Fully integrating data and services across all sites is a critical part of this strategy. Patient care can then be offered in a variety of ways, many of them more convenient for patients. Patients who require hospitalization can also be easily checked in and appropriately routed from any site.

Barcodes used on identification bracelets, medicine administration units and specimen labels help to speed up treatment and testing, increase patient safety and improve accuracy. Scanning apps can be used from a variety of devices, including a smartphone in the lab, a tablet during rounds or a medical cart at the nursing station.

Patient-facing technology inside the hospital room can also improve the quality of a patient’s stay on a more personal level.

For example, when patients are able to order and customize meals on a digital menu or instant message housekeeping or a nurse, they rate their experience highly. Patients also favor bedside infotainment units, wall-mounted screens with cable and movies, and Wi-Fi accessibility for communication with friends, family and providers via any number of personal devices. Patient education through technology also scores highly, especially when it’s interactive.

Interactive Technology Scores Big

Increasingly, patients want greater access to their health information and educational resources so they can play an active role in their own healthcare. But not all forms of information sharing are equal.

Interactive technologies such as mobile apps, interactive monitors or videos with gamelike elements appear to enhance retention better than noninteractive materials such as electronically displayed information and videos that offer no way for the viewer to respond. Patients also like interactive technology more.

A 2011 study by The Beryl Institute found that hospitals using interactive technology to communicate with patients increased patient satisfaction scores by about 10 percent, and increased satisfaction with hospital educational materials and courses by as much as 42 percent. The 2016 HIMSS Connected Health Survey revealed that 47 percent of hospitals expect to expand their use of connected health technologies over the next few years.

Interactive technology allows patients to be active participants in their care. It can also benefit staff, for example, by allowing nurses to prioritize patient requests. Opportunities abound to integrate this technology into the larger patient experience.

Mobile-Enhanced Healthcare

Mobile health, more commonly known as mHealth, offers additional opportunities to simplify tasks, improve clinical workflow and enhance the patient experience through the use of mobile devices. Between text messages, apps, wearables and other online tools, the ways that mHealth can be applied are limited only by the human imagination.

From a patient-focused perspective, mHealth has been applied toward patient education using a bedside tablet or personal smartphone. An in-hospital navigation app can guide patients to their preferred destination, be that radiology or the cafeteria. Patients can also access portals or message a physician, nurse or hospital services.

But more opportunities abound, from early remote check-in to hospital bill payment to instant electronic checkout at discharge. Access to patient health records, complete with a copy of post-discharge care instructions, reminders to make follow-up appointments with providers, and the means to schedule such appointments online or through a mobile app also empower the patient and increase engagement and patient-satisfaction scores.

mHealth also provides the infrastructure to automatically update and sync records as well as to continue conversations across channels uninterrupted. A consistently high-ranked patient experience often begins with collaboration technology, along with a plethora of IT services that can help deliver care that matches patient expectations.

A Complete Picture

While technology solutions like these can be developed piecemeal, the best systems arise when healthcare organizations take the time to identify what defines a good patient experience. According to The Beryl Institute’s State of Patient Experience 2015 study, 83 percent of U.S. hospitals have a formal structure for addressing patient experience, but only 47 percent have a formal definition for what patient experience is and only 58 percent have a formal mandate or mission statement.

The results appear to indicate that attempts at improving patient engagement and the patient experience are often not integrated or focused on the total patient experience. This could account, at least in part, for the disconnect between providers and patients when it comes to engagement efforts.

While the study shows patient and family engagement is clearly on the rise, it’s obvious that many opportunities exist for technology-based improvements at several touchpoints. Similarly, planning needs to happen on the back end to effectively integrate these solutions and optimize the results.

Ransomware Mitigation

In May 2016, the Kansas Heart Hospital learned firsthand about the importance of data backup and breach planning when it was hit with a ransomware attack. After the hospital paid the initial ransom, attackers demanded a second sum. The hospital refused; Dr. Greg Duick, Kansas Heart’s president, claimed the attack didn’t interfere with routine operations, nor was patient data compromised. But it became clear that no matter how much the hospital paid, they were unlikely to gain access to the ransomed files.

Ransomware is a growing threat, and Kansas Heart Hospital is not the only healthcare provider to experience it. According to a recent Healthcare IT News study, nearly three-quarters of U.S. hospitals may have been hit with such attacks in the past year. So far, few have been successful, but the threat remains.

Kansas Heart had a backup and recovery plan in place, Duick says, which is a critical first step to mitigating the effects of ransomware. Better yet, hospitals can avoid becoming victims in the first place by educating users, adopting appropriate security and performing frequent data backups.

Plan and Prepare Infrastructure to Meet Objectives

Healthcare organizations have been focused on rolling out key technology and process changes, mostly driven by the federal government’s electronic health record (EHR) and meaningful use (MU) requirements. Now that EHR systems are largely in place, health systems can focus on optimizing that infrastructure as they gear up for the third round of MU requirements.

Fortunately, today’s technology is capable of easily handling clinical workloads. Cloud solutions have grown to include additional security and compliance capabilities. Service-level agreements, mobile Backend as a Service and other solutions are now tailored specifically to healthcare provider environments. Enterprise flash is proving itself in clinical applications and delivering superior performance. Converged infrastructure has become a standard for both clinical and non-clinical workloads.

The next stage is leveraging those modern technologies to create agile IT departments that can scale rapidly to meet data and infrastructure demands across the continuum of care. With planning, healthcare organizations of all sizes and budgets will be better able to identify areas of opportunity and invest in the appropriate technology.
The Infrastructure Imperative

Networking, storage and security technology all play a critical role in the success and ongoing viability of any patient-centered technology rollout. This back-end infrastructure is the backbone of patient-centered technology initiatives. To achieve the levels of scalability, reliability and support required today and in the future, it may be necessary to invest in upgrades or replacements in the existing infrastructure, especially legacy systems.

Best Practices in Networking and the Data Center

The data center is the heart of a hospital operation. The network is the circulatory system, moving data both from and to the data center. There are six main technologies in the data center that require attention when planning an upgrade or build:

- **Storage management and virtualization** — Data storage needs are growing at unprecedented and unrelenting rates. EHR is driving much of this storage need but so is the increasing use of rich media images and video applications in patient files. Storage management and virtualization enable smarter leveraging of server environments for maximum efficiency, security and storage capacity.

- **Server virtualization** — Server virtualization and clustering solutions make it possible to run multiple applications and operating systems independently on a single server. These technologies also enable the integration of disparate storage systems and the ability to enhance business continuity.

- **Client virtualization** — Virtualizing end-user desktops affords IT the best and most efficient means of managing desktops. It also enables end users to access their virtual desktops from practically any device, thereby enabling work from anywhere while also making the desktop vastly more secure.

- **Backup and business continuity** — Backing up all applications and data is essential in ensuring the organization can continue to operate during (and recover from) any disaster, ranging from the physical (such as a hurricane) to the virtual (such as a ransomware attack).

- **Power and cooling systems** — These systems are of greater significance today because compact, higher density server technologies consume more power, generate more heat and require more cooling. Additionally, power waste adds to a hospital’s operating costs. Improving efficiencies in this area can save a hospital thousands of dollars each year.

- **The network** — Networks today require greater capacity, speed and reliability built in. Given EHR demands, patient expectations, and the pressures of multiple applications and devices, network traffic continues to climb. Lives depend on clinicians’ ability to access critical patient data. Protecting the network’s integrity, reliability, resiliency and security is essential. So is optimizing its performance and increasing bandwidth. Fortunately, newer technologies can provide for all of these needs and offer additional features too.

Network and Data Security

Protecting patients and facilities from data breaches and hacker attacks is a critical concern for healthcare organizations. Compliance issues also figure heavily in data security risks, because something as simple as a health worker having access to too much patient information can result in a violation of the Health Insurance Portability and Accountability Act. IT must walk a thin line to ensure information is available only to appropriate users and to protect it from malevolent attacks inside and outside of the organization.

A comprehensive network and data security platform will provide a range of solutions, including authentication, data loss prevention, mobile security, physical security and threat prevention.

Fortunately, new hardware and software can automate many security processes and even augment staff expertise on trickier detection and response calls. Security software can protect patient data and communications outside the hospital too.

Cloud-Based Services

Healthcare organizations increasingly look to cloud solutions to run patient portals, manage telehealth programs and improve efficiency with a central repository for up-to-date information at the point of care. In fact, a recent SADA Systems survey found that 95 percent of healthcare organizations plan to increase cloud services in the future.

Cloud-based services are a great option for healthcare environments with limited IT staff, expertise or budget because they offer economies of scale — everything is more affordable through shared costs versus the hospital buying and maintaining all the hardware in-house.

Cloud services can also make data more accessible and easily shared among providers, a need that will only increase alongside industry consolidation.

Third-Party Services

Building or upgrading new networks and data centers is challenging, especially when time is short and resources are limited. The good news is that help is available through third-party services. Even hospitals with tight budgets and limited IT staff can easily find assistance to help them meet their goals.

Third-party services provide a cost-effective and efficient means of getting everything done on time, from initial assessment to final rollout. Specific areas a hospital might consider outsourcing to a third party include:
• **Assessment, planning and design** — determines what infrastructure is needed to support the desired technology
• **Cloud services** — includes planning, migration and integration
• **Configuration** — ensures the chosen solution is optimized and well integrated
• **Hosting and managed services** — includes network and communication services, server hosting and managed print services
• **Installation and deployment** — includes testing installed technology and handling rollouts
• **Product lifecycle support** — includes license management, maintenance contracts and help desk support

### CDW: A Healthcare IT Partner That Gets IT

Patients welcome greater engagement. According to multiple studies, they actively seek opportunities to communicate with providers and participate in their own healthcare. Both patients and providers have ample resources for connecting — the challenge for providers is finding the right mix of incentives and tools to help patients in their quest for greater engagement.

CDW can help. As technology continues to play an essential role in expanding engagement, CDW Healthcare is uniquely positioned to deliver industry insights as well as technology, solutions and services needed to advance this important objective.

CDW has long been a trusted IT resource to healthcare organizations of all sizes, working across the continuum of care. Our experienced staff can guide you to the best hardware and software solutions to meet your needs. And we provide the services and support to ensure you get the maximum performance and value for the life of your technology.

Contact your CDW Healthcare account manager today, call 800.500.4239 or visit [CDW.com/communIT](http://CDW.com/communIT).

To discover more about the patient technology experience, and how IT can ensure deployment success, visit [CDW.com/communIT](http://CDW.com/communIT).

### 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.

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

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