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Where the Patient and Technology Meet
IT's most important contributions to hospital care don't always happen in the OR
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From the back office to the operating room, technology continuously transforms hospitals, making them ever more efficient and able to deliver leading-edge care. But as high tech as today's hospitals are, one critical area remains stubbornly low tech: the nonclinical, routine interactions with patients.

The prosaic ways that patients physically experience the hospital--everything from registration to food service to filing complaints--are primitive by today's IT standards. At many organizations, patient-specific technology, if it exists at all, is limited to consumer Web sites with plenty of marketing material but few, if any, options for patients to impact their hospital encounter. Hospitals remain perplexing and paper-heavy--in other words, far less patient-friendly than they aspire to be and that new technologies could help them to become.

But in a few places, technology and the patient have begun to intersect in exciting ways. Hospitals and health systems like Hackensack University Medical Center, the University of Colorado Hospital, Baylor Health Care System and Detroit Medical Center are using electronic check-in, interactive TVs and "rounding robots," among other approaches, to fundamentally change the patient experience.

As IT refines the patient experience, providers will have to overcome a host of challenges, including a lack of products and an inadequate understanding of what patients really want from their hospital experience.

At the Door ...or Before

An electronic environment can captivate patients, especially if the technology is convenient to use, saves time and provides new or improved services. The sooner this happens in the hospital experience, the better.

"There are more organizations looking at how to create a better experience for patients before they even come to the hospital," says Randy Carter, vice president of organizational development and strategy at Planetree, a nonprofit organization that promotes patient-centered care.

The University of Colorado Hospital in Denver and Dallas-based Baylor Health Care System are tackling one aspect of a hospital visit that patients often find onerous: the registration process.

The University of Colorado Hospital is developing express arrival at its Anschutz Outpatient Pavilion, located on its new campus in Aurora, Colo. The pilot project lets internal medicine patients register online at home and print out a bar code. Once they get to the hospital, they hand the bar code to the receptionist on

the first floor, who scans it and sends them to the internal medicine department.

"In the two minutes it takes to get to their destination, we'll do our work," says the hospital's medical director of informatics, C.T. Lin, M.D. "We'll recognize the person, address them by name, know why they're there."

At Baylor Sammons Breast Imaging Center, Dallas, patients use a stylus to enter information on an e-clipboard, or MediKiosk, which is a wireless tablet roughly the size of a legal pad. The e-registration system retains certain information so that returning patients don't have to fill out those data fields again. Patients electronically sign their names, then swipe their driver's licenses to verify their identities. Staff reverifies identities against a second form of ID.

The entire e-registration process takes about three minutes, one-fifth as long as the old paper process. The MediKiosks are manufactured by Galvanon, Maitland, Fla., and average about $4,000 each, including associated licenses.

The seamlessness of these processes and the time saved by not having to repeatedly fill out the same forms are extremely attractive to patients. "We knew within a week that patients really liked it," says Jason Whiteside, manager, business development, Internet development services at Baylor. A 10-question exit survey of the first 1,000 patients showed that 95 percent approved of electronic registration.

While patients can benefit from IT-powered processes, there continue to be some limitations for staff. At Baylor, for example, electronically collected information must still be manually typed into the hospital's registration system. The project designers did not create a computer interface to link the devices with the hospital's registration system, in part because they found that connecting the hospital's six admission, discharge and tracking systems was too cumbersome.

Nevertheless, Whiteside says, registration staff do have an easier time updating patient records now because data from the e-clipboards appear in a separate window on the employee's screen and updated fields are highlighted. In the old paper-based process, staff had to flip through patient charts to find updated information.

"In the paper world, 50 percent of registrations only happened after the doors closed," Whiteside says. "Now, the majority happen immediately."

Baylor considers its e-registration pilot so successful that it will expand it to other outpatient departments by the end of the year. Several locations currently use e-clipboards, with between five and 25 devices per site, depending on patient volume.

Project leaders anticipate cost savings. The total cost to implement e-registration was $175,000 for devices, labor and training. While the savings are not yet calculated, the hospital has already saved $18,000 by not having to print paper forms.

In Touch Online

One way to score big points with patients is connecting them electronically with their physicians.

At Group Health Cooperative, which operates two hospitals and 25 medical centers in Washington and

Idaho, patients can securely e-mail physicians, review lab results and request appointments, among other options. The feature has been so popular since it was introduced in August 2000 that Group Health recently provided parents access to their children's medical records and soon plans to introduce an interactive component for patients. The Transforming Patient-Centered Care Project will allow patients to complete health risk assessments online that will then be used by their physicians to plan preventive care.

Connecting patients and physicians comes with its own set of challenges. At Group Health Cooperative, for example, some doctors worried that e-mails would make their relationships with patients more impersonal. Instead, says Ted Eytan, M.D., medical director of informatics, the option strengthened the physician-patient bond.

"Patients can be more in touch with their caregivers. And it appears that messaging allows a differing degree of disclosure," he says. "Patients feel more open to discuss personal issues with their doctors electronically."

The University of Colorado Hospital had a similar experience when in 2001 it launched a pilot that gave 100 congestive heart failure patients real-time access to their medical records. Physicians worried that the program, known as SPPARO, or System to Provide Patient Access to Records Online, would push their malpractice rates sky high and that patients would not understand the information in their records.

Neither happened. "There was a slight increase in phone calls [to doctors] in the first six months, but then it died down and there was only a single patient complaint, where the person wanted a reference to alcoholism struck from his record," Lin says.

But while physician fears were overblown, so were some of the hopes of project leaders. The SPPARO pilot was structured so that half the patients had full, real-time access to their medical records while half did not, and patients viewed their information without input from hospital personnel. "The researchers had hoped to find a change in health [with full access] but that didn't happen," Lin says.

What was instructive, though, was the divergence between what physicians thought patients would do with their medical information and what patients actually did. Physicians worried that patients might access medical information before their clinicians did, and then spend time fretting about what it might mean. In reality, patients were more passive in how they used the information. They wanted convenience, the ability to coordinate care and the opportunity to access their information while traveling or away from home.

The University of Colorado Hospital also has adapted an IDX product called Patient Online to create a physician-patient portal it dubbed My Doctor's Clinic. The portal supports appointment requests, prescription renewals, referral requests and secure messaging. A survey showed that among patients using the portal, 55 percent rated their experience as "very good" or "excellent," compared with only 30 percent of patients in a control group who did not use it.

A Humanizing Experience

IT's real benefit to patients, says Planetree's Carter, may lie in its ability to make the experience of being hospitalized less impersonal. Tracking software that lists a patient's individual needs and preferences, such as food choices and whether he or she requires a specially sized wheelchair, can create what experts call "mass customization." Similarly, bedside computers and interactive televisions enable patients to order food, communicate with nurses and housekeeping staff, learn about their health conditions and medications, and have more control over their environment.

The Get Well Network in Alexandria, Va., for example, prompts patients to watch safety videos and lets them rate their pain levels. The software platform resides on a hospital's own IT infrastructure, so patients can e-mail or page nurses, depending on the preference of the hospital. To date, 28 hospitals, including Sentara Williamsburg (Va.) Community Hospital; Thomas Jefferson University Hospital, Philadelphia; and the University of Chicago Comer Children's Hospital, have installed the software. The company is launching an outcomes study, headed by David Nash, M.D., to examine the impact of the technology on patient perceptions of quality, safety and nurse behavior. "IT should be able to work for patients by making [the hospital stay] a more humanizing experience," Carter says.

Even when the health care encounter occurs outside its walls, a hospital can use IT to better connect patients with physicians and make the experience more personal. Another project at the The University of Colorado at Denver and the university's Health Sciences Center is one example.

Known as Diabetes-STAR, the six-month project builds on technologies already in place at the hospital, including its physician-patient portal and SPPARO. Patients will be able to electronically check on their diabetes-related laboratory values, find out how their health could be improved, set health goals and get automatic follow-up on those goals, which are set against national benchmarks. They will also get rated on their health status, for example receiving three out of five stars for meeting specific health goals.

"Time is limited in the clinic visit, and it is difficult for many patients to get personalized assistance between visits," says project leader Stephen Ross, M.D. "The Internet provides a great opportunity to enhance my medical care by providing patients with personalized information and guidance at a time and place that is convenient for them."

Robots are not be the first things that come to mind when considering ways to humanize the patient experience. But they can do just that, says David Ellis, corporate director of planning and future studies at the Detroit Medical Center, which uses 10 robots across its hospitals. When the robots round, doctors can essentially be in two places at once.

InTouch Health, Santa Barbara, Calif., manufactures robots that stand 5-foot-5 and have computer screen heads that display live video of the physician as the he or she speaks from a remote location. [See sidebar, page 40.]

Mr. Robot at Hackensack Medical Center rounds several times a day in the bariatric surgery unit, significantly more often than if the doctor was there in person.

Indeed, freeing doctors to spend more time with patients is one of the great selling points for applying technology to the patient experience. In addition to robots, Hackensack University Medical Center employs a host of technologies, including computers-on-wheels, known as COWS, and wireless tablets that let clinicians spend more time at the bedside. The wireless devices have an additional benefit: They let patients see rather than try to visualize what the doctor is telling them. Physicians can show patients their X-rays and other test results right at the point of care.

And it's not only clinicians who can better connect with patients through IT. Hospital leaders are learning to do so in ways that are truly enlightening. Three years ago, the University of Colorado Hospital created its CEO e-mail project to gauge patient satisfaction. The brainchild of former CEO Dennis Brimhall, the project automatically sends patients e-mails after discharge asking about their experience. If they respond

with comments or reply in the negative to any question, they receive a personal reply from the CEO, who forwards their message to practice managers and physician directors. On average, the CEO responds to 12 patient e-mails a day.

The feedback has been so positive that the health system is extending it. Practice managers will receive a "heads-up" message when patients who had voiced problems come in for an appointment, with details of what went wrong in the previous visit.

Different Paths

Across hospitals, there tend to be two very different strategies to link IT with the patient experience. Some providers, like the University of Colorado Hospital, actively look for technologies that are patient-centered. They tailor projects to fit specific aspects of the patient experience, such as real-time access to medical information or a physician-patient portal. Others, like Hackensack, use a more traditionally structured approach, first implementing technologies such as electronic medical records, then moving to computerized physician order entry before looking at IT that has a direct patient impact.

Whether the focus is on inpatients or outpatients also affects the strategy. Ambulatory projects are easier, experts say, because they offer more flexibility and the patient population is larger. "We have 23 outpatients for every inpatient," Lin points out. "And if you want to bring these projects to the inpatient, you'd have to completely rethink them. For example, who will have access to the medical record if the patient is incapacitated?"

Hospitals also must be creative when planning patient-friendly IT because there are few products currently on the market. Most vendors are focused on core technologies, such as EHRs and CPOE. Much of what pioneering hospitals are creating is generated in-house or inspired by initiatives at other hospitals.

What patients want from their health care providers has not changed much over the years: a personalized experience, access to information and ready connections to family, all of which can be greatly enhanced with IT. So why do providers lag in this area? "Health care is very good at buying technology," Carter says. "But 99 percent of all IT in health care is financial. Health care has always had a difficult time understanding the question of 'How does this affect the patient?' "

And patients can confound providers. At the University of Colorado Hospital, sign-up for the physician-patient portal has been very slow although 85 percent of patients are believed to have Internet access, Lin says. But everyone expects that pressure will build to better utilize IT to enhance the patient experience.

"Boomers are information-dependent folks and technology will play an increasingly important role in their care," Carter says. "IT can help hospitals become more patient-centered. But it's all about how you frame it."

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