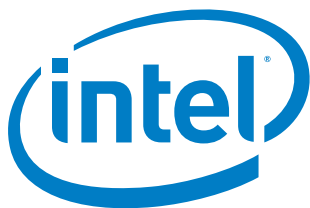


Get the Most Out of Going Mobile: Best Practices in mHealth Implementation

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Our population is becoming more mobile on a daily basis, and healthcare professionals are no exception. In fact, the very nature of the healthcare industry makes it ripe for a move to mobile. It also presents special implementation challenges.

Healthcare is an on-the-go occupation. In hospitals, clinicians may walk miles a day, visiting patients on different floors and in different departments. Nurses often spend more time at patients' bedsides than at the nurses' station. In office-based practices, clinicians frequently move from room to room as well as from clinic to hospital and back.

It's no wonder, then, that so many clinicians have a smartphone in their pocket or a tablet in their briefcase. Staying in touch and accessing information is key in today's world, and nowhere is that more true than in the healthcare industry, where constant communication is critical to delivering effective and efficient patient care.

The Rise of mHealth

In survey results published in December 2012 by the Healthcare Information and Management Systems Society, more than 90 percent of respondents (mostly hospital CIOs and IT managers) reported that physicians at their organizations used mobile devices. The rate was almost as high for non-physician clinicians.

Increasingly, these clinicians are using several different screens—mobile and otherwise—throughout their days. According to the IDC Health Insights Clinical Mobility Buyer Behavior Survey, clinicians use upwards of 6 screens in one day, including desktop computers, laptops, smartphones, and tablets. In fact, doctors' use of tablets has almost doubled since 2011, with more than three fifths of physicians reporting that they use one.

"Our overall population is moving mobile, and people want to embrace mobility in the work place,"



including healthcare, says Jared S. Quoyeser, Americas Healthcare Industry Manager for Intel Corporation. By 2015, IDC projects \$7 billion will be spent on mobile devices, services and software in healthcare, and the number of mobile apps for healthcare is expected to double, Quoyeser says.

"It's exciting to see the ramp up of application development, and you'll see the acceleration of that over the next three to five years," Quoyeser says. "Healthcare IT investment is increasing. The venture capital community recognizes the business opportunity moving forward."

More important, according to Quoyeser, clinicians and health industry analysts see mobile applications as a critical component in the new age of patient collaboration and patient coordination. "Physicians need to engage with their patients on a higher level," he says.

Mobile healthcare information technology can make this happen.

Unlocking the Potential of mHealth

Right now the potential of mHealth remains unrealized in most health organizations. Despite high mobile usage among clinicians, the HIMSS survey found that most organizations report they have a long way to go to create a mature mobile environment. Almost one-third of organizations surveyed don't have an overall plan for mobile technology.

What's more, only a small percentage of patient care is actually facilitated by mobile technology. Less than one-quarter of respondents said that data captured on mobile devices is integrated into an electronic health record.

A variety of factors--inadequate funding or staff, a dearth of full-featured applications, privacy and security challenges, lack of standards, and unreliable wireless networks--have prevented the full integration of mobile technology in healthcare, the survey reveals. These situations, however, are improving. Quoyeser says in most areas of the country wireless networks are approaching that 99.9 percent uptime necessary for "clinical-grade wireless networking." Innovative companies have devised new solutions to security challenges, and there's been an explosion of mobile apps for healthcare.

Combine that with the availability of government funds for the implementation of electronic health records and the move toward value-based reimbursement, and healthcare organizations across the country are looking to mobile solutions as a viable way to share information and increase both effectiveness and efficiency of care.

Steps to Success

Developing an effective mobile technology plan for a healthcare organization is a balancing act, according to Ashley Perry, Healthcare Ambassador for Lenovo. There are so many considerations she says: security, usability, compatibility, durability, and--of course--mobility.

"CIOs tell me that [the key to a successful IT program] is not the device, it's the data," Perry says. "Or they'll say, 'It's not the device, it's the workflow,' or 'it's the patient.'"

Actually, it's all of those things--and more, Quoyeser says.

"You really have to step back and look at the holistic solution, as well as the critical components."

According to Quoyeser and Perry, there are five key steps to ensuring success when establishing a mobile technology plan. They include:

1. Choosing the Right Device

"Hardware is the foundation of an organization's mobile technology program," Perry says. "It's the

What Does BYOD Mean for Healthcare?

Consumerization of IT--blending personal and business technology--is a trend across many different industries. Employees who depend on mobile devices for personal connectivity now want to bring those capabilities into the work place. This has led to a bring-your-own-device movement in a variety of professions, including healthcare. However, the trend has special implications in healthcare because of the sensitivity of patient information.

"When you look at mobile devices accessing patient health information and the potential to have a breach of this information, this is something that's at the top of mind for IT organizations and CIOs," says Jared S. Quoyeser, Americas Healthcare Industry Manager for Intel Corporation. "And it will continue moving forward."

Allowing clinicians and other staff to use their own devices on the job may lead to higher rates of mobile technology usage with fewer hardware purchases for the organization, but it also means more challenges for the IT staff who end up managing, updating, tracking, wiping, or bricking devices with a variety of operating systems and from a variety of sources, says Ashley Perry, Healthcare Ambassador for Lenovo.

"Healthcare data is very high risk," Perry says. She acknowledges mobile technology introduces a whole host of new scenarios for the IT department to try to secure. Organizations must make sure they put in place the right policies and procedures to manage, not only the devices they have within their own shop, but also devices that are coming in through BYOD.

"Patient data is only as safe as the weakest link in the chain," Perry says. "BYOD and the consumerization of IT make it very difficult to manage that weakest link--who is usually the end user."

Even if you have the most secure setup, Perry adds, there's still opportunity for that system to be breached by something as simple as a password

on a Post-it note. Add that kind of unintentional breach with a device that easily fits in a pocket or a briefcase, and it becomes the stuff of nightmares.

Still, Perry says, there are solutions.

She recommends implementing a multi-layered approach to mobile device security. Fingerprint login, for instance, offers another layer of protection over a secure password. Additionally, she says, it's important to have the capability to tag devices and remotely track, wipe or brick them if necessary. Even something as simple as an asset tag with contact information and an 800-number stamped on the device also helps reduce the number of devices that go missing.

Another layer of security is cloud storage of sensitive data so that patient information doesn't reside on an easily pocket-able device. Perry says that a new backend security solution offers secure cloud access to data works with all types of devices, regardless of operating system. In an environment where BYOD is all but inevitable, this type of solution is critical, she says.





least complicated and possibly the least expensive part of the overall solution. It really should be the easy part.”

Things don’t always work out that way. According to Perry, there are subtleties within those decisions that truly can impact all of the other levels of implementing effective solutions. A device may have the right technical resume, but it still can fail if it doesn’t have the right form factor or features for the job at hand, she says.

Mobile devices come in many configurations--and one size most definitely does not fit all. Choosing the right form factor is the first step. The smartphone is convenient and highly portable, but likely won’t fit the bill when it comes to viewing images or entering large amounts of data. It’s more important that a device fits the workflow and routine of a clinician than it fitting in his or her pocket.

Different people in healthcare organizations have different perspectives on how to choose the right device. Clinicians need devices that are optimized for the point-of-care. IT staff may be more focused on security and data management. And administrators are looking at the overall care delivery process. They ask questions like: How can this technology help support the organization’s mission? Which device will extend the resources of the organization most effectively? And, how can

we take advantage of some of the HITECH funding that is currently available?

Form factor: To choose the right device you have to start with the end user, Quoyeser says. “We’ve done many studies looking at how clinicians work--how doctors work, how nurses work, and how they engage with patients,” Quoyeser says. “One of the things that we clearly see is that there is not one device for everyone.” He points to Intel’s Mobile Point-of-Care Selector Tool (available at <http://www.intel.com/content/www/us/en/healthcare-it/mobile-point-of-care-selector-tool.html>) to help narrow down device recommendations based on job function and other factors.

Perry agrees that decisions need to be made in consultation with the clinician. “If the device is extremely manageable and secure, that might be the IT person’s dream,” she says, “but it won’t work if it’s not the right device for the clinician at the point of care.”

Quoyeser recommends looking at why the clinician is using the device (Is it for content creation or information access?) and where they are using it (At the point of care? At home? In an office?). Some clinicians will actually do all of these things in all of these places throughout the work day. There are devices--or combinations of devices--that can meet those diverse needs, such as workstation on wheels (WoW) which boasts an attached handheld device. The clinician can sit down and use the workstation in content creation mode, then grab the handheld device for data access while on rounds.

Durability: Quality and durability also factor into the device decision, Perry points out. “In healthcare environments, you have a swirl of unpredictability.. These devices are not always treated in the gentlest manner, and clinical staffers don’t have time

“Hardware is the foundation of an organization’s mobile technology program.”



to call the help desk. When something breaks, they'll often put it in a corner with a sign on it that says 'Broken' because they simply don't have time to call the help desk call. We can reduce that frustration and downtime with durable devices."

Infection control: Not all devices have to be 100 percent antimicrobial, but staff do need to be able to use common disinfectants on them without damaging the device. According to Perry, the [Lenovo website](#) offers advice and recommendations on how to disinfect mobile devices safely.

In the end, the best device is the one that can satisfy the clinician, the IT department and the administrators. "Innovation is the key to being able to serve those needs," Perry says. "To be able to create that wow factor and have the end user say, 'I really love this device. It's awesome. It's what I want to use.'"

2. Choosing Applications/Software

The decisions don't end with the device. In fact, you're not really done deciding on the device until you've also decided on the applications and other software that will run on the device.

Here again, workflow rules. And that doesn't mean automating the already existing workflow; it means optimizing the workflow. "You can't just transition your paper processes to your mobile devices and think you're going to get the ROI you want,"

Quoyeser says. "That's not going to happen."

It's critical not only to find or develop applications that fit with the way your organization's clinicians work, but also to help them improve workflow.

3. Connectivity

Mobile technology without connectivity is of little use. Connectivity is key to accessing information, sharing information and running applications effectively. If you're depending on wireless to get critical patient information to the point of care, anything less than 99.9 percent reliability can mean the difference between life and death.

4. Integration

It's not just about choosing new applications and software; the organization's mobile plan should include support for legacy applications and ensuring the ability to share information across departments and even across institutions, as well.

Perry admits this is a tall order for some IT departments, especially if an organization has a bring-your-own-device policy. "It can be pretty complex to manage all the variations in addition to that standard active directory, group policies and Windows management that we're used to," she says.

5. Workflow transformation

And finally, we get what we came for: workflow transformation that improves quality and efficiency of care. "Look at how mobile healthcare solutions can engage and enable collaborative workflows because that's where you want to get," Quoyeser says. "That's where the really strong return on investment is. Data look up is a good start, but how can you use mobile devices to really collaborate with your care team?" (For more on the benefits of workflow transformation, see the sidebar on ROI.)

mHealth is enabling coordination and collaborative workflows in a healthcare environment where everything moves: clinicians, patients, equipment-everything. It's very different from other enterprise work settings in which staff are primarily sedentary, Quoyeser says.

"To be able to take a mobile device and use it across your workflow, to have access to information when you need it, access to other clinicians and collaborate where you need to, this is the key," he says.

Determining ROI

The capabilities of mobile technology are impressive, but what about the bottom line? It takes a substantial investment in hardware, software, policy development, and secure implementation to put mobile technology in place in the healthcare setting. How do healthcare administrators know that mobile technology will give a strong return on this investment?

First, says Ashley Perry, Healthcare Ambassador for Lenovo, it's important to realize that costs involve more than money. Time, data security and usability, all figure into the total cost of ownership. It's not just about price point, but also about determining the best use of limited resources.

And that means looking at trends in healthcare and making sure the choice fits with those trends. Perry points to the current emphasis on the patient experience. Ignoring the patient experience when making a mobile technology plan, she says, can imperil the investment.

"Technology is truly a part of that patient care experience," she says.

Technology can enhance patient care, patient education and patient communication--or it can act as a roadblock. Is the screen visible from different angles? Is it touch enabled and easy to navigate? Does the screen block the patient's view of the clinician? Is the information secure?

There also are considerations of the physical space. Healthcare is one of the most regulated industries

in the country, and those regulations dictate even things as seemingly minor as depth requirement for cabinets. If a technology doesn't meet the needs of the healthcare environment, it likely won't give you a positive return.

Another factor in ROI is how a device affects the efficiency of workflow. Jared S. Quoyeser, Americas Healthcare Industry Manager for Intel Corporation, recommends stepping back and really looking at workflow.

"Think about all the time patients are waiting for clinicians, clinicians are waiting for patients or waiting for information," he says. "When you look at how you can take out that white space in the workflow, both on the business side and the clinical side, that's where you start to get a really strong ROI."

Healthcare administrators also should analyze ROI from a standpoint of the movement toward patient-centered care and accountable care organizations, and the shift from volume-based reimbursement to value-based reimbursement. A [study](#) of medical complex patients in California found that comprehensive care including patient education, home visits, frequent contact and goal-oriented care plans--all of which can be facilitated through mHealth--led to 38 percent fewer readmissions, 36 percent fewer in-patient days, 30 percent fewer ED visits, and 26 percent lower costs over all.

Now that's the kind of ROI that patients, clinicians, and administrators can all get behind.

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