Mobile Technology for Clinicians: How Much Is Enough?

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Introduction

What is an executive to do as mobile technology has become more pervasive in their healthcare organizations? While in our personal lives, mobile technology has become virtually ubiquitous, there is also a rapidly, growing number of healthcare professionals using this technology in patient care delivery settings.

Given the accelerated rate of improvements and innovation in the mobile devices themselves as well as the applications that support various professional functions, the healthcare industry is continuing its rapid pace of adoption. As a result, the investment requirements for mobile technology may not be as predictable as might be hoped. Rather, executives will want to ensure that they have a thorough understanding as to how mobile technology is positioned to meet strategic goals within the organization, as well as interacting with the community and how they will tactically manage, fund and support a proliferation of mobile technology among clinicians.

The investment in mobile technology is not singular. It will require a comprehensive approach to ensure how to integrate devices and applications, cycle technology that best fits clinicians, and refresh technology, when appropriate, while protecting the organization’s investments as much as possible. The goal of this white paper is to assist executives address three aspects of mobile technology for clinicians:

- Identifying the strategic and tactical value of this technology for your healthcare organization,
- Planning for mobile technology for your clinicians, both short-term and long-term, and
- Managing clinician and executive expectations and outcomes.

[Note: Mobile technology in healthcare is a topic that is extensive and can address the interaction of various types of users and their respective functions. This white paper will not address the impact of mobile computing on healthcare consumers, as well as the interaction between clinicians and consumers via Mobile Technology. In addition, medical devices that can monitor patients in either ambulatory or inpatient healthcare environments will not be included in this document. Our focus is primarily on clinicians who support patients within acute settings and many of the ambulatory settings in which patient care are delivered with the assistance of mobile technology.]

In May 2011 Manhattan Research published survey results that found about 30 percent of physicians in the US used iPads to access EHRs, view radiology images, and communicate with patients.

About 62 percent of physicians in the United States are now [2012] using tablets, according to the most recent data from Manhattan Research. Most of these physicians are using iPads and about half of all tablet-toting physicians use the devices at the point of care, the research firm found. What’s more, physicians who use smartphones, tablets, and computers tend to spend more time online on each device than those physicians who only have two of those devices. [1]
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What Is the Value of Mobile Technology to Your Healthcare Organization?

With a growing number of concurrent organizational demands for investment as well as market pressures, executives and clinician leadership should enter into a discussion of the value proposition for mobile technology. This will not solely require an initial investment, but may also require multiple devices per clinician and on-going support when devices are not available. The on-going support and maintenance approach for medical technology cannot be underestimated. The advent of mobile technology in healthcare settings now introduces the potential for HIPAA Privacy and Security risks as well. As a result, the value proposition needs to be balanced with a realistic understanding of efforts and resources that will be required both short-term and long-term.

When initiating the value discussion for mobile computing, there are a number of operational areas that may realize value from this investment, including but not limited to:

- Competitive technology to support enhanced patient care,
- Recruitment of physicians, nurses and other clinicians (investment in technologies that facilitate access to patient information and immediacy of information),
- Workflow efficiency in fixed and patient care outside the healthcare organization,
- Patient safety (the closer the patient documentation, the better for patient safety),
- Patient satisfaction (some industry sources are not clear as to whether it has value for patients), and
- Employee satisfaction.

One other element of the value conversation will need to address whether the healthcare organization underwrites the investment and whether clinicians will be allowed to use their preferred mobile device to access patient care information. There also needs to be awareness that today mobile devices and available non-healthcare applications have matured at a far greater pace. Ultimately, today's devices will always be limited by its reduced footprint especially since corresponding healthcare applications require a larger footprint to exhibit large quantities of data. For the foreseeable future, there will be a disparity in the number of applications and degree of functionality on mobile devices for clinicians as opposed to those available for other industries. However, it is important to note that other industries have also reached an understanding that not every device can provide comprehensive functionality but rather select functionality for the individual's workflow.

What about cultural alignment and expectation that mobile technology will be integrated into clinician workflow? While the objective of each operational investment is to produce a high degree of adoption so that benefits can be realized. There is limited or sporadic value to be realized without the cultural fit to adopt new technologies that can benefit patient care.
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Planning for Mobile Technology for Your Clinicians

How will you begin the planning process for introducing or expanding mobile technology for clinicians in various healthcare settings? Based on experience, the following framework can assist healthcare organizations of any size and complexity to conduct sufficient due diligence in advance of proceeding with a mobile technology initiative for clinicians:

- Where is the state of the market today for devices and specific healthcare applications?
- Requirements definition including Workflow Implications,
- Mapping of device to access to application(s) / Patient care requirements,
- Technical and Compliance requirements (e.g. Wireless Infrastructure Assessment includes capacity, placement, bandwidth, testing, etc.),
- Selection of device(s) / On-going maintenance and device management,
- Service Level Agreement (SLA) and expected support model,
- Budgeting for device refreshment / Replacement / etc.,
- Education and training approaches,
- Total Cost of Ownership (TCO), and
- Policy development.

[Note: A brief description of each of these elements of planning for mobile technology for clinicians is found below. This should only be used as a guideline since much more detailed information will be required to complete a planning process.]

“It’s less about the technology holding the industry back, and more about the reimbursement model for healthcare,” says Kenneth Kleinberg, senior director of research and insights at The Advisory Board Company, a global healthcare research, technology, and consulting firm. “Quality hasn’t been rewarded, physicians don’t have incentives to share data…… Healthcare isn’t a system—it’s a bunch of individual entities looking out for themselves. Just adding more bandwidth to a broken system doesn’t work.

….. The first wave of change that healthcare organizations have dealt with (or are still dealing with) is what [Harry] Kim, [senior director of Hewlett-Packard’s healthcare group], calls the “digitization of sick care.” Nearly 80 percent of healthcare is dealing with chronic illness. To improve care for patients with chronic health problems, health providers need to be able to effectively monitor and capture the right data from them, pull it back into electronic medical records, and make it available to both patients and physicians to act upon.” [2]
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What We Know About the Market Today...
As your designated committee investigates the state of the current, healthcare mobile technology market, there will be a number of facts that will come to light:

- **Smartphones**: The limited screen size poses an enormous challenge for healthcare applications to present sufficient data and to size the information for the limited screen footprint.
- **Many Electronic Health Record (EHR) vendors have been porting some level of functionality to smartphones as these devices have become more ubiquitous among physicians.**
- **Mobile devices have moved well beyond the smartphone to tablets.** Tablet devices cannot fully take the place of a laptop PC both in terms of available applications and level of functionality that can be made available to the clinician.
- **Tablets typically have a 10.4 inch screen that provides a better opportunity to view larger quantities of patient data.**
- **Direct care nurses are tasked with collecting the majority of patient data.** The applications for nurses are not and may not be optimized for smaller screens as limitations of the applications themselves.
- **On-line, patient documentation is not as conducive to smaller mobile devices while working at the bedside.** In addition, medication administration may not lend itself to smaller devices.
- **Other clinical tasks that may not be conducive to mobile devices.** Any task that requires more critical thinking and comprehensive documentation such as care planning or discharge planning may not lend itself to documentation at the bedside with mobile devices.
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What We Know About the Market Today… (continued)

Varied mobile devices will probably be required for your organization: There are a variety of mobile devices available including Workstations-on-Wheels (WOWs), laptop PCs, scanners, tablets and smartphones. Today, clinicians may require access to more than one device to complete their patient care tasks and activities.

Applications: The number of applications available for mobile devices used for either direct patient care or indirect access to patient information is limited today. Why is this true? Many applications have been optimized to screens that range from 17 to 19 inches, especially screens that consolidate significant quantities of patient data.

Culture matters: Given the influx of mobile computing into everyday life, it has become a ubiquitous. In addition, professional cultures can also foster and support the proliferation of mobile technology as well as influence adoption levels.

Personal constraints: Limitations resulting from eyesight or medical conditions such as arthritis can and will provide challenges to some clinicians depending on the type of mobile device(s) selected.

Requirements Definition Including Workflow Implications

A multi-disciplinary team should be convened to identify all requirements that apply to the various clinician roles and workflow requirements. Included in the multi-disciplinary team should be representation from an executive sponsor, Risk Management, a Compliance Officer, Physician leadership, clinicians across specialties, Health Information Management, Bio-Medical Engineering, and Information Technology.

While on the surface, it might appear that one type of device might be the best approach to an extensive deployment, the reality is that multiple devices for clinicians will be the end result from mapping requirements to workflow. A common misunderstanding is that all clinicians can benefit from a single mobile device, but understanding clinician workflow and requirements is key to ensure that the best suited device or devices as well as the correct applications can be made available to support patient care. These devices and their integration into clinician workflow can and will support organizational efforts to reduce the duplication of services, improve patient care and ensuring patient safety.

The information gathered during this phase of planning will be an important source for the development of appropriate training and education materials or aides for clinicians once the mobile devices and applications are selected.
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Mapping of Device to Access to Application(s) / Patient Care Requirements

As your organization develops their respective requirements for all types of clinicians and other healthcare providers (e.g. Spiritual Care, Dietary, various types of therapist, hospice or home care, etc.) that function in both inpatient and outpatient care settings. The table below provides a concise view of how to identify each type of user, their requirements, and the most probable type of device to support their workflow:

Table 1. Mobile Technology for Clinicians: Device Utilization by Functional User

<table>
<thead>
<tr>
<th>Type of Mobile Technology User</th>
<th>Patient Care / Operational Requirements</th>
<th>Type of Mobile Device(s) (Best Suited)</th>
<th>Other Considerations (e.g. Privacy, Security, Life Span, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician Providers (includes PA, NP)</td>
<td>-Bring-Your-Own-Device (BYOD) for community-based staff</td>
<td>-Smartphone</td>
<td>-Privacy and Security -Loss / Theft</td>
</tr>
<tr>
<td>Nurse (Direct Care)</td>
<td>-Responsible for most of the patient care documentation -Easy to disinfect</td>
<td>-Combination of devices -Workstations on Wheels (WOWs) with or without medication administration capabilities -Wall-mounted Device (screen or tablet)</td>
<td>-Privacy and Security without impeding workflow -Budgeting for maintenance and repair -Contamination -Breakage</td>
</tr>
<tr>
<td>Clinicians (Rounding Care / Not Unit Based)</td>
<td>-May need storage to carry supplies/resources from floor to floor e.g. IV and Respiratory therapy</td>
<td>-Lightweight carts with or without storage, laptops/tablets depending on amount and format of documentation</td>
<td>-Connectivity -Privacy and Security -Loss/Theft -Contamination -Breakage</td>
</tr>
<tr>
<td>Other Clinicians (e.g. EMTs, VNAs, Hospice, etc.)</td>
<td>-Evaluate need for ruggedized equipment and keyboard -Weight and size will be a factor -Mandatory signature pad with laptop</td>
<td>-May use laptops or tablets -Smartphone</td>
<td>-Connectivity -Privacy and Security -Loss/Theft -Contamination -Breakage</td>
</tr>
</tbody>
</table>

Technical and Compliance Requirements

Users’ transition from a tethered, wire-centric, Internet connection to a mobile, pervasive model has profound and potentially overwhelming implications for the applications being developed and the absence of supporting policies. Smart phones, tablets and other portable medical devices are connecting to the Internet via the ubiquitous 3G and 4G networks making true “mobile
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Technical and Compliance Requirements (continued)

computing” a reality. Along with the rapid advancement of technology come the challenges to the organizational governance, policies and, in particular, privacy and security of patient data.

These challenges must be addressed early in the adoption process or we are in danger of losing control of the organization’s jurisdiction of its data and intellectual collateral. In a healthcare enterprise that can mean patient data which may have potentially serious damages and ramifications to the organization and the patients involved. HIPAA and HITECH are legislations that the healthcare industry is all too familiar with and security or data breach are terms that are taken quite seriously.

In the report, Open Mobile: The growth era accelerates, in Deloitte’s 2012 Open Mobile Survey [6] it states, “[the] Healthcare sector thought to be the most promising new mobile growth channel….biggest impact in stimulating mobile business model innovation….Of those polled, 78 percent stated that the health care/life sciences sector held the most potential…prime sectors set to benefit most from the emergence of 4G broadband technology.” What a pioneering prospect, as well as, a potentially threatening challenge that the healthcare industry has to manage!

Are the HIPAA policies and procedures for privacy and security that were implemented two years ago sufficient to handle all the new potential scenarios including the new technology? Most likely, the answer is “no”. Are there mechanisms in place that have triggered a review and update of the policies and procedures? A best practice for any organizational documentation is to have at a minimum an annual technical review of these policies and procedures. In addition, it should be periodically reviewed and performed in response to any environmental or operational change in the organization, like newly recognized risks or adoption of a new technology. The security policies and procedures should be reviewed to ensure they are still relevant and current. Any identification of a gap should initiate a group review of the policy or procedure, and then it should be updated to appropriately represent the new environment or condition. Once approved, the new policies and procedures should be incorporated into the current training program and especially incorporated into the annual training update required by law for all healthcare organizations.

Several entities have elected to allow a Bring-Your-Own-Device (BYOD) policy into the mix. This will mean
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Technical and Compliance Requirements (continued)

incorporating requirements of the HITECH legislation into the policy definition of the minimum requirements for the use of personal devices to connect to the organization’s network and potentially downloading or interacting with patient data. The Chief Information Officer (CIO) will need to determine what level of support the organization is willing to give BYODs attaching to their network(s). Does Information Technology (IT) need to incorporate VLANs (virtual local area network) into the overall network infrastructure? Will the IT department need to install any software components before it is allowed to connect to the intranet? Do the devices have anti-malware solutions on them to prevent any infection or injection of malicious code? Does the hard drive need to be partitioned or encrypted?

One requirement is that any device must have the data encrypted when at rest. Most organizations have opted for having the entire device hard drive encrypted. A policy for lost devices will be necessary as well. If a device is reported as lost or stolen and is believed to contain patient data, then the drive should have the capability to be wiped of the patient data remotely. This will require the appropriate legal verbiage to be included in a consent agreement to connect to the network with the personal device. Before data is downloaded to the device, it will require the client software for the remote wiping process to be downloaded and installed.

In some instances, it may be best to create a “sandbox” or specific partitioned area that will be encrypted and only that area will be allowed to store patient data.

Audit trails in this new pervasive environment will be significantly different than what is currently implemented. When non-approved devices connect WPA to the local wireless network (Wi Fi), how are they being tracked and mapped to their IP or MAC addresses? Just as hotel Wi Fi now requires the user to login through a landing page to require acceptance of the terms of use agreement, the healthcare organizations will need to develop a similar landing page. This page will require the basic information needed to fulfill the current audit trail requirements. It may need to include a healthcare license number and entity that the provider represents, as well as contact information such as phone number and email address. This temporary profile that is created will become part of the organization’s larger “legal” record.
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Technical and Compliance Requirements (continued)

The security and control available when a personal smart phone or tablet connects to the local Wi Fi or hotspot is much greater than on the cellular network. Unless a device is connected to your web server over the cellular network using a browser and secure socket layer (SSL) connection, then the connection is not considered secure. Some individuals have installed third party, virtual private network (VPN) client tools to allow a secure tunnel to be established or they can subscribe to a VPN service that will establish a secure tunnel when the device attaches to an unsecured network. Various emerging security implementations may meet the requirements, as well. Whether it is an enterprise device or a personally owned device, it can be more secure using best practices for user identification and authentication, encryption, tracing, data wiping, and anti-virus/anti-malware software.

All these mobile devices usually use a backup and storage solution in a Cloud solution. Most smart phones do scheduled backups at least weekly over the regular cellular connection. The data being passed across this connection needs to be secure. Because of the plethora of device models on varying operating systems, this can be a daunting and overwhelming problem. One solution to several of these problems and concerns is the implementation and deployment of a Mobile Device Management (MDM) system. An MDM will allow the enterprise to manage all of the organizational devices and the BYOB devices with the same system, and yet can implement different policies and support various platforms. MDM can 1) control and protect the data, 2) manage configuration settings of each device and multiple service providers, 3) manage and monitor devices, 4) “over-the-air” distribution of applications (push technology), 5) application testing and real-time simulation, 6) enforce a unified security policy, and 7) remotely wipe a device. With these robust capabilities an MDM can optimize the functionality and security of a mobile communications network while minimizing cost and downtime.

Development of applications must be addressed. The display of information must be redesigned to

“A November, 2011, a study surveyed 65 healthcare organization. It was conducted by the Ponemon Institute and results indicate the top three reasons for breaches are:

- unintentional employee action,
- lost or stolen computing devices, and
- third-party issues.

In addition, the economic impact of data breach incidents over a two-year period is approximately $2 million per organization. [3]
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Technical and Compliance Requirements (continued)

accommodate the various smaller sized screens for mobile devices. Users are acclimated to scrolling down with their mobile devices, but not across. The most relevant and related data need to be displayed together to allow for a meaningful use of the information. The MDM will allow the developers to perform application testing using real-time simulation. The updates to the applications can be pushed out to the devices using over-the-air distribution.

The healthcare industry is both exciting and challenging with new opportunities to expand the ways in which the continuum of care can be delivered. The proliferation of smaller, portable medical devices to be used at the bedside has significantly improved the efficiency and quality of the delivery of healthcare. It potentially can improve and enhance patient outcomes and that is definitely a win-win scenario. This opportunity has several challenges associated with the technology and is a paradigm shift in the way that healthcare is delivered. By confronting the challenges and potential issues with appropriate emerging technologies and policies that protect patients’ privacy and secure the data, then the risk can be reduced significantly.

Selection of Device(s) / On-Going Maintenance and Device Management

All devices will require on-going, scheduled maintenance, as well as an adequate number of spare devices that can be deployed in case of loss, malfunction or breakage. As a result, there should be a clear terms of use and agreement for all potentially deployed devices and their record of life-span, durability, battery life, and contamination prevention. Ensure that in the planning phase there is a defined approach for replacement of devices, as well as the approach as to how devices will be taken off-line for scheduled maintenance and/or repair. In addition, if there is breakage or loss, an established quantity of spare parts and devices, needs to be established in advance, as well as who will manage the repair / break-fix process (e.g. for some organizations engage Bio-Medical Engineering while other organizations leverage IT staff).

Service Level Agreement and Support Model

Since clinicians will depend on both devices and applications to engage in patient care delivery, the development of a Service Level Agreement (SLA) and a defined support model that is timely and sensitive to the requirements and urgency of supporting clinicians’ workflow is critical. Depending on the size of an organization, there may be difficulty ensuring support on a 24/7 schedule. As a result, secure access to replacement devices will be important, as well as notifying the designated department to repair or permanently replace a device. In terms of clinician satisfaction, an appropriate support model must be in place initially during implementation, and then during the on-going, support phase.
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Budgeting for Device Refreshment / Replacement / etc.

Devices, component parts, and/or applications will require a scheduled refreshment or replacement policy that should be defined and budgeted. The budget would include costs for labor requirements, testing, turnaround time, replacement devices deployment phase and subsequent, on-going support. In addition, the organization will want to determine whether they remain committed to introduce the latest available devices (bleeding edge) or whether there is a waiting period to ensure more stable environment and lesser risk related to new releases of devices.

Education and Training Approaches

After thorough testing, education and training for the selected devices, corresponding applications will need to be developed and potentially customized by the type of clinician user. In addition, the education and training program should incorporate workflow considerations so that each clinician type can be as productive as possible once deployment phase is completed.

Total Cost of Ownership

Develop a Total Cost of Ownership (TCO) model for the mobile technology initiative for clinicians. A few healthcare organizations have developed baseline information and tracked the level of efficiency that has been attained from a mobile technology implementation. Each organization can determine whether developing baseline information to support the TCO is relevant and should be monitored over time.

Policy Development

The drafting and approval of policies relevant to mobile technology for clinicians will be important to set expectations specific to support, privacy and security, replacement, break/fix requests, support turnaround time, and Bring-Your-Own-Device (BYOD) requirements and registration or approval. The development, as well as communication of these policies will safeguard against misunderstandings and inaccurate expectations.
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Mobile Technology in Healthcare: Managing Expectations, Managing Outcomes

As with every investment, managing expectations and managing outcomes is a component of organizational stewardship. It will also be important to ensure that clinician expectations are met or exceeded and that the mobile technology is able to support the delivery of quality patient care for these clinicians.

Beginning with the executive sponsor and the designated clinician project sponsor(s), consistent communication and thorough education with post-go-live support will provide the foundation for setting realistic expectations, as well as defining the anticipated outcomes. The investment in mobile technology for clinicians will also be an on-going commitment that will require resources be allocated indefinitely over time.

This white paper identifies some of the most relevant expectations and outcomes that may be planned for:

- Impact of mobile technology on clinicians’ efforts to care for patients,
- Clinician user expectations,
- Access to the right mobile technology,
- Setting Privacy and Security policies,
- BYOD (Bring-Your-Own-Device): friend or foe of your mobile technology strategy?,
- Balancing rate of mobile device improvements,
- Risk Management and Compliance, and
- How to factor Moore’s Law into the planning equation.

Impact of Mobile Technology on Clinicians’ Efforts

Clinician distraction has been cited by Kaiser Permanente [5] and Beth Israel Deaconess Medical Center [6] including concerns based on physician interaction with multiple mobile devices. Distractions caused by technology multitasking, especially on BYODs, may have a detrimental of less than good patient outcome.

There is also both anecdotal and documented information that other clinicians believe that they are not able to complete all their tasks such as patient documentation or discharge planning at the point-of-care in an accurate manner.

The caution to be shared with any healthcare organization is to acknowledge that mobile technology is not necessarily a panacea for efficiency in every case. Rather, “right-fitting” mobile technology to various clinicians is the better approach. Ultimately, any mobile technology functions to provide clinicians with accessibility to patient and remove the barrier of

“'I think all of us [physicians] who use mobile devices have what I will call continuous partial attention,' Dr. John Halamka argues. 'We're engaged in our work but at the same time we're checking that e-mail or we're glancing at that instant message.' The distractions might be minor for people who work in a cubicle or a storefront, but for doctors, it can be a matter of life and death.

Distracting technology isn’t new for physicians—a pager, cellphone or computer can also divert a doctor’s attention. But at least “a hospital laptop separated doctors’ personal and professional lives,” explains Halamka, who is also the co-chair of a federal committee on health information technology. “With the bring-your-own-device trend, you see the blurring of that separation.’” [5]
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Mobile Technology in Healthcare: Managing Expectations, Managing Outcomes (continued)

Impact of Mobile Technology on Clinicians’ Efforts (continued)

viewing and/or inputting patient information at the point-of-care.

Clinician User Expectations

The concept of depot maintenance to hold spare or replacement device is essential to support clinicians who provide patient care around the clock. Should a clinician adhere to the concept of BYOD, then replacement will not be the responsibility of the healthcare organization. When engaging in device selection, clinicians should fully understand the potentially limited support by vendor(s) versus internal support. An understanding of the need for on-going maintenance for batteries, regular updates to operating systems, and mandatory applications including anti-malware/anti-virus software will be an essential set of activities that clinicians should anticipate for their mobile technology.

Access to the Right Mobile Technology

By undertaking a structured assessment of potential mobile technology and the targeted clinicians who would use the technology will help to ensure the “right” option is made available to support the delivery of patient care and patient safety. In addition, the probability is high that multiple devices will be required to support a diverse, clinician community. (Refer to Table 1 for an initial mapping of clinician functional requirements to types of mobile devices.)

Setting Privacy and Security Policies

As important as the technology, the appropriate policies specific to privacy and security must be developed in collaboration with a Physician leader, Clinical leadership, Risk Management, Compliance, Legal Counsel, Health Information Management and Information Technology. The policies that are drafted will need to be approved through an internal governance committee and then disseminated across the organization so that all potential users of mobile technology are fully aware of their responsibility in complying with the defined policies for privacy and security. An annual review of these policies is a minimal requirement. Any environmental or technological change within the organization or workflow should trigger the policy review process.

BYOD (Bring-Your-Own-Device): friend or foe of your mobile technology strategy?

For those healthcare organizations that have not pursued a structured mobile technology approach or those that have been more open about personal, mobile devices being introduced into the patient care environment, the phenomenon of Bring-Your-Own-Device (BYOD) cannot
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Mobile Technology in Healthcare: Managing Expectations, Managing Outcomes (continued)

BYOD (Bring-Your-Own-Device): friend or foe of your mobile technology strategy? (continued)

and should not be ignored. There is a high level of adoption of smartphones and iPads among physicians who mix personal use and professional use with their own preferred mobile device. However, this preference creates a significantly more complex, mobile technology environment.

Balancing Rate of Mobile Device Improvements

Determining the rate by which new devices are introduced needs to be balanced with the ability of each organization to manage the Total Cost of Ownership with the allure of introducing cutting edge devices. Why is this important? The rates by which mobile devices improve and evolve have outpaced the rate by which corresponding healthcare applications are made available. We also know that the amount of data, as well as the resolution of images, does not lend themselves to interacting with devices with small footprints. This should be kept in mind as a realistic approach so guidance can be provided as to when new devices might be introduced while others may be retired.

Selecting applications that are specifically developed and supported for the devices that the organization has chosen to deploy should be tested and placed on an approved applications list. Limiting the number of applications being supported internally will create a manageable model. Defining the “boundaries” will also allow the support group to manage, train, budget and generate the appropriate knowledge base to provide adequate assistance, support and maintenance. Developing a realistic process for applications to be submitted for consideration to be tested and placed on the “approved” list should be done by a multi-disciplined committee including at least one “early adopter” clinician.

Risk Management and Compliance

From the earliest stages of consideration for mobile technology, as well as the on-going usage and deployment, both Risk Management and Compliance Officers must be involved. Mobile Technology does have HIPAA Privacy and Security implications. There are a growing number of breaches especially as a result of mobile technology being lost or stolen, most of them related to laptops and external or thumb drives today. Since the government has increased vigilance for HIPAA breaches, every healthcare organization must ensure that all pertinent safeguards are in place to protect patients from damage and organization from breach fines and the necessary reporting and advertising.

How to Factor Moore’s Law into the Planning Equation

Moore’s Law refers to the natural life cycle by which technology is released from concept to market delivery. The cycle averages eighteen months. As your organization updates its mobile technology strategy and tactical plan, taking Moore’s Law into account will be necessary to gauge the length of time by which devices may remain current in the organization and when new mobile technology should be evaluated as part of a migration approach.
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*How to Factor Moore’s Law into the Planning Equation (continued)*

For almost half a century, the concepts behind Moore’s Law has been the rule of thumb used to determine the period of time between technology refresh cycles which has typically averaged about 18 months to 2 years. However, the 2010 update to the International Technology Roadmap for Semiconductors has growth slowing at the end of 2013, after which time transistor counts and densities are to double only every 3 years. Therefore, long-term planning should use the period of 2-3 years can be used for technology refresh cycles.

**Lessons Learned**

It is important to share a number of lessons learned as we have implemented mobility solutions at numerous healthcare organizations. We believe that these lessons can help your organization to minimize or limit the risks that might arise due to these challenges.

The top ten challenges when implementing mobility solutions may include, but not be limited to:

1. Insufficient or no definition regarding what constitutes project “success” beyond “Do the clinicians like it?” Develop measurable objectives to evaluate success.

2. Lack of organizational support pre- and post- go-live (i.e. change management).

3. Inability of wireless infrastructure that cannot support mobile devices (i.e. capacity, technical incompatibility, etc.). All projects need not only an executive sponsor, but a clinician sponsor, as well. It may be quite helpful to have the clinician sponsor be the initial deployment. There is usually forgiveness within a team setting and will allow for rectification of issues before deploying to the masses.

4. Lack of training on workflow and its impact on clinicians (i.e. How do we use this in our daily work?). Document the clinician workflow using detailed flowcharts and functional charts of the manual process as well as the proposed “mobile” workflow. This will allow the most significant, potential issues and problems to be identified and hopefully mitigated.

5. Lack of definition agreement (i.e. What does Point-of-Care (POC) mean to all stakeholders?) Ensure that a facilitated session is conducted that documents and sets expectations.

6. One-size-fits-all mentality (i.e. Much of the time, clinicians will need multiple, mobile solutions.) Customization is usually necessary in any large deployment that spans multiple functional areas. This concept applies in the clinical setting as well.
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Lessons Learned (continued)

7. Focus of implementation on technology rather than people (i.e. Implementation is the main effort rather than the tailored education and support of clinicians). Identify the end users who have “advanced” skills using technology and target them to be some of your initial early success stories. They will not only be a successful example for usage and adoption, but they will become the mentors to those that need additional help and may not want to ask for the additional assistance. This is similar to the train-the-trainer method of deployment.

8. Conducting an unstructured, device fair where clinicians can choose preferred devices does not lead to the best decisions. The process of selecting appropriate mobile devices for clinicians cannot be solely based on personal preference but, rather, requires a structured, comprehensive approach that reviews all aspects of what will impact devices. Demonstrating the functional capabilities of each device and applications not only sell the “gee-whiz” factor, but it also allows the end user to “kick the tires”. This helps to form a more educated decision that the end user will be more comfortable with and gives them confidence that they will receive the most appropriate device(s) for their clinical setting.

9. Forgetting a detailed maintenance plan (For example: planning for battery replacement requires both labor and battery cost or repair of damaged devices.). Note that purchasing replacement components and units in larger quantities will usually qualify for discounts and the cost to the organization will be less over time.

10. Investing in a sufficient number of replacement units, as well as the corresponding support to deploy replacement units in a timely fashion and a policy defining service levels to clinicians.

Conclusion

Today....
Investing executive time and effort in developing a cohesive, comprehensive, mobile technology approach will provide a structured approach to ensure that resources can be effectively managed and clinician expectations can be supported within the means of the healthcare organization. Given the disparity between the adoption rate of mobile technology for personal use and its lesser level of adoption within patient care delivery environments, we continue to be challenged to
Conclusion (continued)

determine what is the right level of mobile technology that can both support clinicians effectively as well as providing the necessary service and support for patient care settings, short-term and long-term. This will not be an easy challenge to respond to, but executive involvement and sponsorship with appropriate governance in place can provide the framework to support mobile technology for clinicians. Finally, policies and procedures that are jointly developed with clinicians are imperative to ensure that patient privacy and security are safeguarded while providing clinicians with the mobile technology devices and applications to better care for patients in a timely manner.

In the Future....
The horizon of mobile technology for clinicians in the future has endless possibilities. There will be continued enhancements in the underlying technologies so that more complex, healthcare applications can be accessed, as well as allow for input with few or no limitations. In addition, the number of medical devices that support consumer management of their health as well as new devices will continue to evolve. For now, your governance committee assigned to manage the on-going, mobile technology efforts can continue to monitor new innovations and changes. This information will continue to provide your healthcare organization with an understanding of how the industry is evolving and what impacts may be considered to develop a future direction that best supports the patient population and clinicians who serve them in the community.

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**Survey**


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- Survey Finds 85 Percent of Nurses Want to Use Smartphones to Access Current Drug Information  

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**About Rubbermaid Medical Solutions, Inc.**

Rubbermaid Medical Solutions is the leading provider of clinical workstations and mobile computing solutions for healthcare facilities. Product offerings include ergonomically designed mobile computing carts, medication carts and wall-mounted work stations, which are lightweight, customizable and support multiple technologies. Rubbermaid Medical Solutions ([www.rubbermaidmedical.com](http://www.rubbermaidmedical.com)) is part of Newell Rubbermaid’s global portfolio of brands.

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The Kiran Consortium Group LLC (TKCG) is a professional services firm that provides experience and delivery excellence to our clients. We provide operational and information technology insights for the healthcare industry to accelerate processes, introduce pragmatic solutions and share our knowledge with our clients. Our services include:

- Compliance,
- Implementation of Electronic Health Records,
- Interim Executive Services (e.g. Chief Executive Officers, Chief Information Officers, etc.), and
- Strategic Planning.

How we help to address today’s healthcare challenges:

- Value for your investment
- Experience and skills to deliver results in a timely, efficient manner
- Focus on pragmatic approaches to solve bottlenecks
- Knowledge transfer to your organization.

Our team has decades of experience in executive roles as well as operational management. By identifying a targeted need, we bring our experience and skills to assist in a variety of initiatives that are time sensitive. We are committed to being productive in an accelerated manner in order that results or/and outcomes are apparent and investment capital is managed. Our focus with clients is to deliver our services and leveraging our collective knowledge and skills in each situation.

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