Going Mobile:
Integrating Mobile to Enhance Patient Care and Practice Efficiency

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Executive Summary

Mobile health—using smartphones and other mobile devices in the health care setting—will be a significant factor as we move toward patient-centered care and value-based reimbursement. Mobile health promises to enhance care and improve efficiency. However, health care leaders need solutions for protecting patient information shared on mobile devices, ensuring the interoperability of mobile devices with EHRs, and determining which apps are safest and most effective.

Mobile devices are becoming as ubiquitous in the health care setting as they are in the rest of our lives. The 2014 HIMSS Analytics Mobile Technology Survey reported that 83 percent of physicians use mobile technology to provide patient care.[1] Clinicians—including physicians, nurse practitioners, nurses, and physician assistants—use mobile technology to update patient records, search for clinical information, and connect to colleagues. Patients use mobile technology to track health indicators, communicate with their providers, and search for health information.

Health care executives and leaders need a thoughtful approach to integrating mobile health technology, addressing issues such as:

- **Clinical decision support:** Evaluating and selecting the best apps to support clinical decisions;

- **Workflow efficiencies:** Using mobile-enabled devices, services, and software to optimize data retrieval and documentation, as well as health care transactions;

- **Communication and coordination:** Appropriately connecting and sharing information among providers to better coordinate care;

- **Patient engagement:** Supporting population health, improving compliance, and engaging patients in their care; and

- **Security:** Maintaining the security and privacy of health information in a mobile environment.

How Are Clinicians Using Mobile Technology?

In a 2014 HIMSS report, 83 percent of physicians reported using mobile technology to provide patient care.[2] Sixty-nine percent of providers have used a mobile device to view patient information and 36 percent used mobile technologies to collect data in the exam room.[3]

In another study, more than three out of four clinicians reported professional usage of smartphones. In 2014, 41 percent of clinicians qualified as "digital omnivores," defined as those who utilize a tablet, smartphone, and computer routinely in a professional capacity.[4]

This study also reported that EHR management ranked as the top tablet-related task. But it is important to note that only one-third of clinicians said their EHR was optimized for tablet or smartphone use. In addition, clinicians use smartphones and tablets most often to:
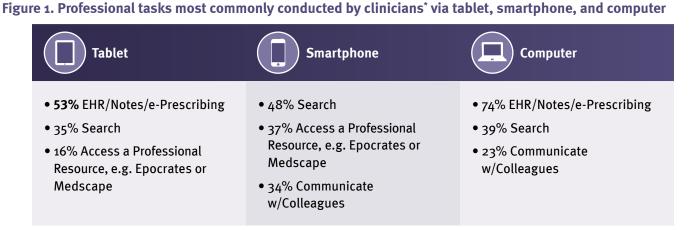
- Perform searches

- Access professional clinical reference tools such as Epocrates or Medscape

- Communicate with colleagues

> **Eighty-three percent of physicians use smartphones, tablets, and other mobile technology to provide patient care.**
>
> *Source: HIMSS Analytics Mobile Technology Survey, February 2014.*

> In 2014, 41 percent of clinicians were "digital omnivores," those who routinely use a tablet, smartphone, and computer in a professional capacity, and 74 percent said they would be utilizing all three within the next year.
>
> *Source: 2014 Epocrates Mobile Trends Report*

Figure 1. Professional tasks most commonly conducted by clinicians[*] via tablet, smartphone, and computer

Tablet	Smartphone	Computer
• **53%** EHR/Notes/e-Prescribing	• 48% Search	• 74% EHR/Notes/e-Prescribing
• 35% Search	• 37% Access a Professional Resource, e.g. Epocrates or Medscape	• 39% Search
• 16% Access a Professional Resource, e.g. Epocrates or Medscape	• 34% Communicate w/Colleagues	• 23% Communicate w/Colleagues

** **Clinicians** are defined as physicians, nurse practitioners, and physician assistants.*
Source: 2014 Epocrates Mobile Trends Report

With the proliferation of mobile health, however, come significant challenges:

- How should health care organizations evaluate and select the mobile health solutions that best support clinical outcomes, coordinated care, workflow efficiency, patient engagement, and population health?

- How should health care organizations protect the security of information shared on mobile devices?

Considerations for Integrating Mobile Technology

Mobile health can support the practice workflow to optimize efficiency and outcomes. Here are several considerations to use as guidelines for successfully integrating mobile health into your organization.

Support clinical decisions

Clinicians need to be able to access up-to-date clinical reference tools quickly and easily in and around the moments of care.

Clinicians use clinical reference apps to:

- Check drug recommendations for drug prescribing and safety information

- Check for potential drug-drug interactions

- Diagnose and treat conditions

- Understand current clinical practice guidelines

In the Modern Healthcare survey for the Most Important Mobile Medical Applications, most clinicians said they relied on established, trusted apps. In all, respondents identified 83 apps and devices performing 46 primary functions. Epocrates was their top choice as the most important app, for the second year in a row.[5]

Who Approved that App?

The U.S. Food and Drug Administration (FDA) released much-debated guidelines in 2013 to help mobile app developers determine whether their product would require oversight. The agency does not scrutinize all health apps, just ones used as accessories for a regulated medical device or those that "transform a mobile platform into a regulated medical device." As of July 2014, the FDA had reviewed about 100 health apps, while hundreds of apps continue to appear on the Apple iTune store and Google Play store each month, potentially avoiding federal regulation.

Source: PBS Newshour. Available at: http://www.pbs.org/ newshour/rundown/fda-regulation-unable-keep-pace-new- mobile-health-apps/

What makes a good app? A critical factor is whether it offers timely and immediate access to clinical intelligence— whenever and wherever it is needed. Clinicians likely use a mix of apps at any given time, based on specialty, patient population, and individual preference. But even good clinical reference apps require navigation among multiple programs. The best apps—and the ones most likely to optimize patient care—offer "one stop shopping." They empower clinicians with confidence and information with a minimum of maneuvering and tapping.

For example, with a few taps in the Epocrates app, clinicians can:

- Confirm prescribing decisions, ensuring they prescribe the correct dosages and avoid medications that could cause adverse events;

- View disease monographs, including symptom evaluation, differential diagnoses, lab recommendations, therapy options by patient type, and guidance on complications and follow-up;

- Identify medications a patient may already be taking based only on a description of the pill;

- Get an overview of recommended lab tests and prep/collection methods; and

- Get content on alternative medicine for when a patient describes an herbal remedy with which a clinician may be unfamiliar.

Good clinical apps are actively curated. The most trusted apps set editorial standards to ensure content is accurate, current, unbiased, relevant, essential and readily consumable during the moments of care.

Using a mobile device to input data and update patient charts allows the clinician to focus more on the patient, and less on the computer. In fact, studies have shown patients respond favorably to their physician using a tablet during office visits.[6]

However, make sure clinical apps that capture patient data are seamlessly connected to the EHR, eliminating the extra step of updating patient charts from a desktop station.

Enhance practice workflow

The power of mobile technology is bringing the right work to the right person in the right place. Mobile devices, especially those connected to a clinician's EHR, can help clinicians use time more productively in and out of the office. Much of the work that clogs clinicians' inboxes can be handled appropriately, conveniently, and efficiently out of the office. With mobile applications in place, clinicians can use their mobile devices anytime and anywhere to:

Look for Mobile Health Apps That:

- ☑ Empower clinicians with confidence and information

- ☑ Provide essential, digestible clinical content

- ☑ Provide multiple layers of seamless clinical content for "one stop shopping"

- ☑ Are actively curated to ensure accurate, current, relevant, unbiased content

- ☑ Allow clinicians to receive and review the clinical information—whether in the form of clinical reference content or informal advice from colleagues—they need, when and how they need it

- Work their inbox. (Frequent users of mobile health have as much as 25 percent lower inbox stock.)[7]

- Document patient encounters

- View schedules

- View patient charts

- Prescribe medications

- Complete dictation, and speech to text/transcription

> **To fully optimize productivity, mobile apps need to be integrated with the EHR.**

To fully optimize productivity, however, mobile apps must easily and accurately exchange information with other systems, especially the organization's EHR. While the industry has made good progress in the construction of a nationwide health care IT infrastructure, only one-third of clinicians cite their EHR as being optimized for tablet or smartphone use.[8]

Cloud-based HIT systems are strong enablers of interoperability among a wide range of systems, including mobile devices, because: (1) all information is stored in a secure site and accessed via the Internet, (2) the cloud vendor can harmonize data from multiple sources (e.g., EHRs and mobile devices), enabling a single

source of truth for appropriate users on the network. Clinicians can choose to work on the device that is best for them, anywhere and anytime, while accessing secure, up-to-date administrative and clinical information.

Some health technology vendors go a step beyond: they evaluate and integrate a range of innovative and thoroughly vetted mobile solutions into an organization's EHR. A cloud-based services solution, for example, can easily integrate solutions as such as mobile check-in and mobile appointment setting into clinical and administrative workflows. This helps organizations incorporate the most viable and high value mobile health solutions while focusing on patient care.

On the administrative side, smartphones and other mobile devices can be a valuable tool in the payment collection process, particularly at the point of care, with the potential to increase receivables while reducing costs. For example, mobile charge capture technology helps clinicians document care provided in different settings. Mobile charge capture extends the practice to the hospital and the hospital back to the practice, so clinicians can stay on top of everything in real time and communicate efficiently from their smartphones and tablets. This helps increase revenue, reduce administrative work, and transition smoothly to the ICD-10 code set.

> **Mobile charge capture, which enables clinicians to document patient visits from mobile devices, is an important part of successfully transitioning to the ICD-10 code set.**

Collaborate and coordinate with care teams

With the growing focus on costs, care coordination, and patient outcomes, care teams need to know when patient events occur (e.g., when medications have been adjusted, tests and procedures performed, or whether a patient was seen at an emergency department). Today, this involves a disconnected series of individual phone calls, EHR messages, and even faxes—if it happens at all.

Text messaging is a popular, familiar, and efficient means of communicating within and outside the health care organization, instantly connecting a care team and eliminating the lag time of phone calls and email. But health care organizations need to keep protected patient information (PHI) secure in a mobile health environment.

One conundrum for health care systems is that employees want to use personal mobile devices at work, known as BYOD, or "bring your own device." In fact, nearly 89 percent of U.S. health care workers use their personal smartphones for work purposes. However, when it comes to security, 41 percent of health care employees' personal devices are not password protected, and 53 percent of health care employees access unsecured wireless networks with their smartphones.[9] Organizations need procedures consistent with HIPAA standards for the confidentiality, integrity, and availability of electronic protected health information.

Health care executives should understand what kinds of mobile and remote devices are operating in their organizations and whether these devices are putting private health information at risk. Efforts to protect health information must go beyond telling employees what they can and cannot do. A more effective approach is to use privacy and security platforms that are integrated into the workflow, rather than creating barriers or hindering adoption.

Secure Text Messaging (STM) is a platform for securely exchanging text and picture messages among a variety of mobile devices and office workstations in a manner compliant with HIPAA and HITECH requirements for the protection of PHI. Messages (text and pictures) that are sent and received with STM are encrypted while they are being transmitted to and from a device or workstation.

Secure Text Messaging (STM) Solutions: What to Look For

- Developed for health care industry

- Meets HIPAA security standards

- Has an active network of caregivers

- Maintains national directory of clinicians

- Integrated with an EHR

Providers and staff can use STM to request and share clinical information on a patient, close the loop on referrals, schedule future care, and document care. Ideally, an STM solution can "light up" a patient's care team, instantly connecting the providers and staff involved in caring for a particular individual while protecting the privacy of the patient's health information.

Security awareness and training can be one of the most effective ways to prevent security breaches. An organization may want to consider what kinds of security awareness and training its staff should receive associated with the use of mobile devices with PHI. Such training could cover topics such as an organization's mobile device policies and procedures, risks with mobile devices, how to safeguard access to mobile devices and the STM application, proper use of mobile devices in providing health care, and potential penalties should HIPAA be violated.

When considering STM for your organization, it is important to look for solutions that have been developed specifically for the health care industry. This ensures that using STM is a time-saver for clinicians, and can be layered into the clinical workflow. This also helps with adoption, since clinicians want to minimize the extra taps and passwords required to send and receive secure messages.

In addition, STM solutions should offer a clinician directory that contains contact and other profile information for verified providers across the U.S. Caregivers should be able to quickly and easily manage their own identity as well as find their colleagues. STM directories need to provide clinicians with certainty that they are sending a message to the right person.

STM solutions should also be integrated with the organization's EHR. This ensures important information isn't lost or buried but is captured in complete clinical records that are in compliance with guidelines for storing, sharing and accessing patient data. Like good clinical apps, it also ensures that clinicians can use a single workflow to securely send and receive messages to coordinate care, without the extra step of entering information on a desktop EHR.

Engage patients

Patients increasingly expect to engage with their providers through their mobile devices. Pew Internet reported that 90 percent of U.S. adults own a cell phone and 58 percent of U.S. adults own a smartphone. Thirty-one percent of cell phone owners and 52 percent of smartphone owners have used their phone to look up health or medical information. Young people, Latinos, and African Americans are significantly more likely than other groups to have mobile Internet access.[10]

> **Low-income patients may have greater access to smartphones than computers, which makes mobile technology a good option for engaging vulnerable populations.**

Patient engagement is a goal of major health care reform initiatives including Meaningful Use, Patient-Centered Medical Homes (PCMH), and Accountable Care Organizations (ACOs). In 2014, Meaningful Use Stage 2 requires providers to enable patients to view online, download and transmit their health information. Providers must

Case Study: Using Mobile to Enhance Efficiency and Prevent Hospitalizations

Raymond Zakhari, NP is a triple board certified nurse practitioner in adult health, family practice, and family psychiatry. He provides medical care for adults and senior citizens in Manhattan, including house calls for a comprehensive range of acute and chronic illnesses. He frequently uses a mobile device at or around the point of care—usually his smartphone or tablet.

During an exam, Zakhari might use one of the eight or so apps on his smartphone to confirm drug interactions or look up unusual symptoms. He can also quickly check coverage for certain medications and update patient records.

While he has been an early and enthusiastic adopter of mobile health technology, he says some of his colleagues have concerns about mobile health. Some clinicians are reluctant to add another device or more data entry to an already hectic workflow. Some are concerned about the security of health information on mobile devices.

For Zakhari, the benefits of using mobile are clear. During exams, he can get clinical information instantly, without returning to his desk or using a computer. He can receive secure faxes on his mobile phone, which is particularly helpful when waiting for a lab result at the end of the day. He can research and anticipate labs that a consult might require, and order those before the exam.

One of the most critical functions of mobile health for Zakhari's practice is using texting and virtual visits to connect with patients. Because many of his patients are elderly or have psychiatric illnesses, they are at risk for repeated hospitalizations. He uses secure texting and web camera consults to confirm symptoms, make diagnoses and even prescribe treatment when there are concerns that can be resolved without hospitalization.

For example, one of his patients is a woman with dementia residing in an assisted living facility. She called to complain about a rash. He asked her to take and send a picture of it, and based on the photo and his conversation with her, diagnosed shingles. He prescribed treatment that day. She didn't have to wait for an office visit. And he helped her avoid a costly and difficult trip to the hospital. In another case, he set up remote virtual monitoring for a quadriplegic patient to determine whether occasional episodes of breathing difficulty were due to anxiety attacks or trouble with his CPAP machine, helping this patient avoid multiple trips to the ER.

His advice to clinicians considering mobile health: consider *why* using mobile devices can be a benefit in the practice. For him, mobile health is a powerful tool to improve efficiency and patient care, especially during times he can't physically be with his patients.

also use secure electronic messaging to communicate with patients. Failure to meet these measures will result in penalties; practices that achieve the threshold for these measures will be eligible for incentives.

Having the right technology and support is key to successful patient engagement. Patient portals that are mobile-enabled can enhance patient-provider communication and allow patients to check test results, refill prescriptions, review their medical record, view education materials and even check in for appointments from their mobile devices. This can streamline administrative tasks such as registration, scheduling appointments, and patient reminders, and empower patients to easily and securely connect with their providers.

Another goal of health reform is better population health management. According to the CDC, in 2012 about half of all adults—117 million people—had one or more chronic health conditions.[11] And 84 percent of all health care spending in 2006 was for the 50 percent of the population who have one or more chronic medical conditions. Chronic diseases require long-term monitoring and management, lifestyle changes, and adherence to treatment regimens. It is estimated, however, that only 50% of patients with chronic diseases in developed countries follow treatment recommendations.[12]

Recently, there has been increased interest in using mobile phones and wearable sensors for remote health monitoring and to improve patient compliance with treatment recommendations. Apple, Google, Adidas, Samsung, Verizon, Sprint, Garmin and others are developing products that measure biological factors (such as blood pressure, weight, and glucose) and behaviors (such as mobility and taking medication), then uploads that information to a database accessible by clinicians.

In addition, researchers have analyzed the efficacy of SMS reminders on patients, and the results are generally positive. For example, studies indicate text messaging is a promising adjunct therapy to support the management of chronic diseases such as asthma and diabetes.[13]

This is an emerging area that holds much promise. For now, mobile phones and wearable devices offer frequent monitoring of patient health and compliance, with real-time reporting to clinicians and rapid feedback to the patient. Ultimately this could result in fewer office visits, procedures, and hospitalizations, although reimbursement for these kinds of interactions needs to be worked out.

Along with the monitoring and treatment of chronic conditions using mobile devices, there has been explosive growth in the volume of patient-generated health data. There are over 40,000 health-related apps available. Pew Foundation researchers found that 19 percent of smartphone owners have downloaded an app specifically to track or manage health.[14] A report from Juniper Research forecasts that over the next five years there will be 96 million users of app-enabled mobile health and mobile-fitness hardware devices, up from 15 million in 2013.[15] Apple, Google and Microsoft are all trying to position products that bring health data from fitness trackers like Fitbit or Nike+ Fuel Band and other patient-generated data into a central repository that can be accessed by clinicians.

How should clinicians evaluate the effectiveness and safety of apps designed for patients? In a review of health and medical apps, the IMS Institute for Healthcare Informatics found that only about 10,000 provided information; less than half of those also provided instruction, and only 20 percent captured user-entered data. The authors concluded that with no objective assessment of the utility and value of apps, "patients and physicians must navigate a maze of apps with little guidance."[16]

In the meantime, health care organizations could develop a quarterly list of apps for clinicians to consider using with patient populations. While collecting patient-generated fitness data may not contribute
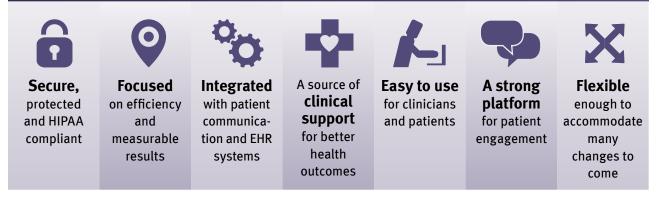
significantly to your practice's efficiency and outcomes, offering secure texting for diabetes patients or virtual check-ups with clinicians may reduce the need for office visits, procedures, and hospitalizations.

One place to start is by ensuring that your organization offers a full range of patient communication services. A fully integrated patient communication system can offer practices automated appointment and bill reminder services, and can provide secure messaging in the patient's preferred format. Practices can free up valuable staff time by using widely accepted automated calls, emails, and text messages to specific patient groups. Automated, secure messaging can be used as a medical appointment reminder, to deliver test results, remind patients of a medication schedule, alert them in the event of a weather closure, or promote an upcoming immunization clinic or other population health event.

> **A fully integrated patient communication system can offer mobile patient portals. From any mobile device, patients can exchange secure messages with physicians, view upcoming appointments, and get automated appointment and bill reminders in their preferred format.**

Making the Move to Mobile

The mobile health industry is in a period of rapid adoption and evolution. Health care organizations need to integrate mobile device use into their broader efforts around health care reform, but without sacrificing the privacy of patient information, workflow efficiency, clinical outcomes, and patient satisfaction and engagement.

To make the most of this promising transformation in health care, make sure your mobile health technology is:

Secure, protected and HIPAA compliant	**Focused** on efficiency and measurable results	**Integrated** with patient communication and EHR systems	A source of **clinical support** for better health outcomes	**Easy to use** for clinicians and patients	**A strong platform** for patient engagement	**Flexible** enough to accommodate many changes to come

The athenahealth difference

athenahealth is a leading provider of cloud-based, Best in KLAS services and mobile tools and medical groups and health systems.

Epocrates®

Epocrates, an athenahealth service, is the nation's #1 medical reference app, trusted by more than one million health care professionals to help them make confident and efficient decisions in the moments of care. With Epocrates' mobile suite of drug and disease information at the ready, caregivers not only save time—they can also improve patient safety. In fact, 1 in 4 drug lookups in Epocrates have helped a clinician avoid an adverse drug event.[†] In 2013, Modern Healthcare named Epocrates the "Most Important Mobile App" of the year for the second year in a row.

athenaOne®

athenaOne combines EHR, practice management, and care coordination into a single cloud-based offering, keeping you productive each day and focused on patient care. athenaOne is fully mobile-enabled, helping providers manage essential parts of the workflow whenever it's convenient, with a sleek, simple app that taps directly into our cloud-based Best in KLAS[*] EHR. Whether you want to e-prescribe from home, view patient data on the go, or access a drug lookup at the point of care, you get intelligent, easy-to-use tools that streamline your workflow—and your day. The athenaClinicals mobile app was ranked #1 overall in the 2013 KLAS report on EMR usability, and athenaClinicals also received the top ranking for enabling caregivers to accomplish tasks via mobile device.[**] The app is available for iPhone and iPad, with a trial launch for Android phones scheduled for 2015. Just as the athenaClinicals app delivers mobile convenience to providers, the mobile patient portal does the same for patients. From any mobile device, patients can exchange secure messages with physicians at your practice and view upcoming appointments. It's a level of ease that keeps you connected with patients beyond the exam room, and can improve patient engagement and drive down no-show rates.

athenaCoordinator® Enterprise

athenaCoordinator Enterprise is a complete population health service, connecting every step of the care continuum for hospitals and health systems. This cloud-based service identifies and engages patients, seamlessly transitions them across care settings, and uses analytics to optimize results, driving success under any payment mix.

athenaText℠

athenaText is a secure text messaging service designed for health care providers to exchange information instantly and securely, and collaborate across care teams. Providers can share text and photo images via their mobile device while staying HIPAA compliant, bringing a new level of care coordination to health care organizations.

More Disruption Please

athenahealth's More Disruption Please (MDP) program puts practice performance first: we carefully evaluate, select, and partner with the most forward-thinking entrepreneurs in health care to deliver top-flight mobile functionality, all seamlessly integrating with our cloud-based services. Each offering (most mobile-enabled) integrates directly into our cloud-based services with no charge for interfaces—so providers can optimize performance without the hassle of working multiple systems.

Here's a sampling of MDP technology partners that help caregivers thrive via mobile capabilities:

- **The Entrada Solution:** Dictation options designed to enhance clinical documentation workflow

- **iTriage® Appointment Setting™:** Convenient appointment scheduling that connects patients to providers

- **M*Modal Fluency for Transcription™:** Optimized documentation workflow via speech recognition and transcription tools

- **Epion Health:** Digital Check-in uses tablets at the point of care to check patients into their appointments.

Our mission is to be the most trusted service to medical caregivers, helping them do well by doing the right thing. We develop, select, and integrate mobile applications that help caregivers and practices deliver more efficient, higher quality care. To learn how our services can help your practice, contact us at **800.981.5084** or **athenahealth.com**.

†*Epocrates 2012 Specialty Survey*

*Ambulatory EHR (1-10 physicians), as reported in the 2012 Best in KLAS Awards report

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Notes

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athenahealth is a leading provider of cloud-based Best in KLAS electronic health record (EHR), practice management and care coordination services to medical groups and health systems. Our mission is to be the most trusted service to medical caregivers, helping them do well by doing the right thing.