



**Mobile**  
Heartbeat™

CLINICAL COMMUNICATIONS

A Mobile Heartbeat Whitepaper

**Key Considerations for  
Implementing Smartphone  
Technology in a Hospital  
Environment**

## Introduction

In today's fast-paced hospital environments, things are changing by the minute. Caregivers go on and off shift. Patients are admitted, moved to other areas or discharged. Lab results continue to pour in and physicians located off site or in other facilities are constantly trying to check on patient progress. Nurses are trying to find physicians to secure updated care instructions and everyone is playing a time-wasting game of message tag. To solve this problem, many facilities have their clinical staff carry multiple devices; while others have secretaries on each floor to handle family and clinician inquiries. The result is lost time, inefficient use of expensive staff, and less time with patients.

Smartphone technology with applications specifically designed for hospital clinical teams has been proven to both directly and indirectly address many of these problems. Consolidating hospital data and communication systems onto a single mobile device reduces the reliance on desk phones, legacy VoIP phones, and overhead paging. As use of these traditional devices decreases, noise levels are reduced, making it easier for patients to rest. The smartphone devices also connect directly to hospital data and nurse call systems, which reduces lags in communication. Clinicians can respond to nurse calls faster because they are sent directly to them as opposed to a central workstation.

In addition, mobile technology improves communication between doctors, nurses, and other unit staff. Clinicians have all relevant patient data at their fingertips, allowing for ease-of-care and reduced risk by keeping clinicians informed in real time. Mobile technology also can help improve staff efficiency and job satisfaction.

While smartphones are increasingly becoming an essential component of clinical decision-making and hospital operations, there are several factors that should be considered before implementing a mobile technology solution in the hospital. This white paper will review some of those considerations.

## Growing Application of Mobile Technology in the Hospital

Information technology has become a critical factor in the delivery of healthcare services. Health information technology is also an important component in meeting current policy objectives by equipping healthcare providers with tools and information to help decrease costs, reduce medical errors, and improve the quality and coordination of care.<sup>1</sup>

Mobile devices are revolutionizing the way healthcare professionals communicate. In the recent past, a specialist would evaluate a patient and make a consult note in the patient's chart. In many cases, the attending physician wouldn't see the note for several hours or even until the next day. Now, digital communication technologies enable critical patient information to be communicated almost instantly. Physicians can use the voice and text messaging functionality of their smartphones. Nurses can send brief messages to physicians instead of relying on alphanumeric pagers. In most cases, using smartphones can improve workflow and communication among the members of the entire healthcare team.<sup>2</sup>

1. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2805554/>

2. <http://searchhealthit.techtarget.com/tip/How-smartphone-use-improves-patient-care-in-a-clinical-setting>

A report by Jackson and Coker, titled *Apps, Doctors and Digital Devices*, presented the results of several recent studies that investigated the use of smartphones, mobile computing devices and a wide variety of software apps by physicians in different specialties. The report concluded that four out of five practicing physicians currently use smartphones, computer tablets, various mobile devices, and numerous mobile apps in their medical practices.<sup>3</sup>

Healthcare market research and advisory firm, Manhattan Research, predicts that in the near future, there will be very few professional activities that healthcare professionals won't be doing on their handhelds.<sup>4</sup> They note that 81% of U.S. physicians currently own smartphones and there is strong interest in iPads and other emerging technologies. According to their new *Taking the Pulse® U.S. 2012* study, physicians' device and digital media adoption are evolving much faster than anticipated, especially when it comes to tablets. The study, which was conducted online in Q1 2012, surveyed 3,015 U.S. practicing physicians across more than 25 specialties.

Consulting firm, Arthur D. Little, noted in a white paper entitled, *Mobile Vertical Applications: driving enterprise mobility*, that "Healthcare providers are using mobile applications to make prescription management more accurate, increase information flow between paramedic teams and hospital staff, and allow easier performance tracking by management against targets." Ultimately, the firm said, these result in improved patient services. The report went on to present an example of how mobile technology could optimize clinical workflows. They noted that with a smartphone, a nursing staff member can record patient data at the point of care and send it electronically to doctors on duty. This would not only improve the efficiency of the nursing staff through a reduction in paperwork, but also speed up response times in a crisis and improve the accuracy of data.<sup>5</sup>

A report by Motorola in 2009 concluded that healthcare mobile applications attributed to a 31% reduction in manual errors.<sup>6</sup> According to the report, medication mistakes are among the most common medical errors in the U.S., harming at least 1.5 million people every year. Additionally, the extra medical costs of treating drug-related injuries occurring in hospitals alone conservatively amount to \$3.5 billion each year. The report went on to note that other commonly cited mobility benefits include increased employee productivity, increased compliance accuracy for quality reporting and increased order fulfillment accuracy.

## Key Considerations for Selecting a Mobile Communications App

Many healthcare organizations are implementing mobile communications programs with the goal of improving patient care while reducing costs and streamlining operations. Every healthcare mobile communications solution should be implemented with quality, usability, security and compliance goals at the forefront.<sup>7</sup> Here are some specific areas to look for when selecting the right mobile app for any organization:

3. <http://www.mhimss.org/news/smartphones-medical-apps-used-80-percent-docs>

4. <http://manhattanresearch.com/Research-Topics/Healthcare-Professional/Mobile>

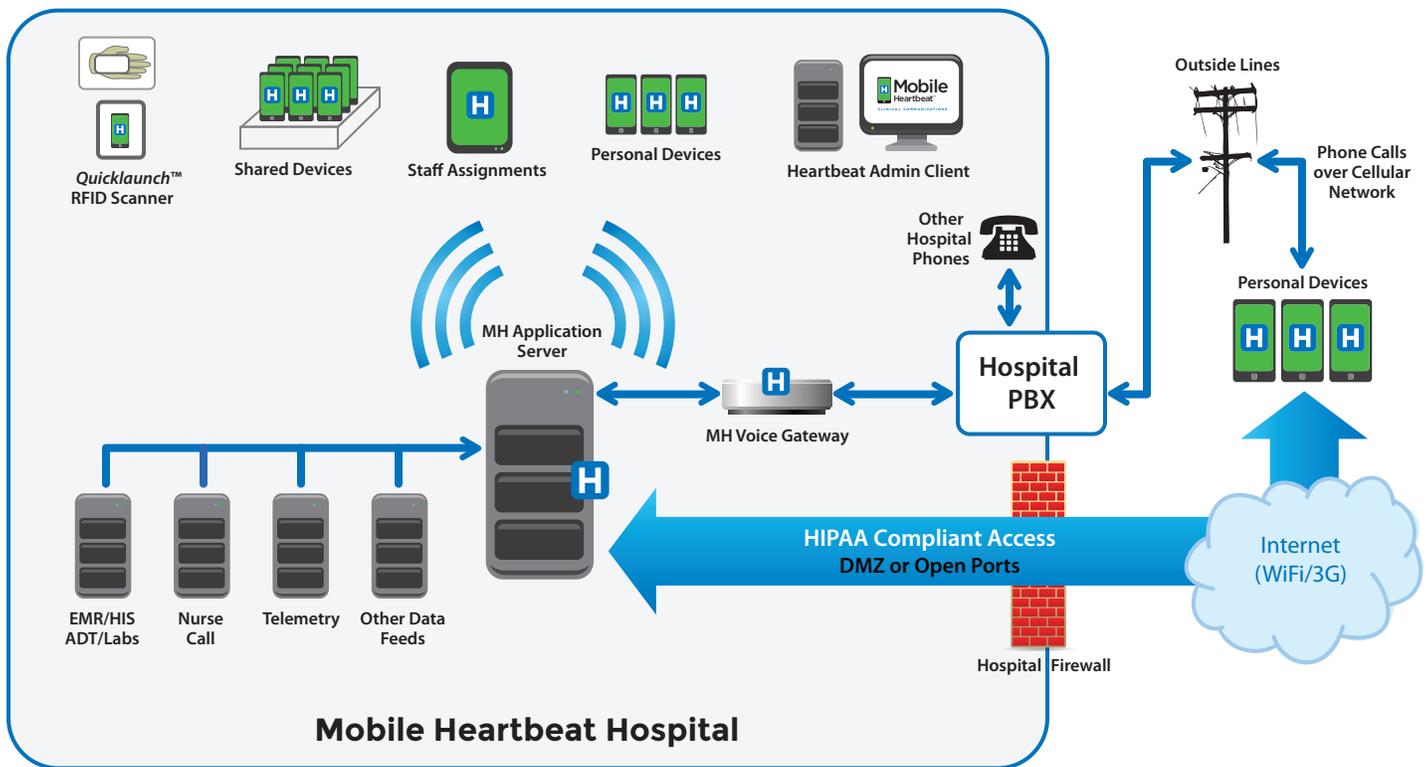
5. [http://www.adlittle.com/downloads/tx\\_adlreports/ADL\\_OBS-Mobile\\_vertical\\_Applications\\_Whitepaper.pdf](http://www.adlittle.com/downloads/tx_adlreports/ADL_OBS-Mobile_vertical_Applications_Whitepaper.pdf)

6. [http://ap3.motorola.com/partners/cn/enterprise/pdf/products/healthcare/Moto\\_Barometer\\_Health\\_WP.pdf](http://ap3.motorola.com/partners/cn/enterprise/pdf/products/healthcare/Moto_Barometer_Health_WP.pdf)

7. <http://www.govhealthit.com/blog/4-considerations-mobile-health-implementation>

**Care Team Knowledgeable** — The application should have a real-time directory of who is on the care team (and who is available) for each patient. The system needs to keep these assignments up-to-date across shifts and for staff both inside and outside the hospital. Pertinent lab data and notifications need to be routed automatically to the right clinician at the time.

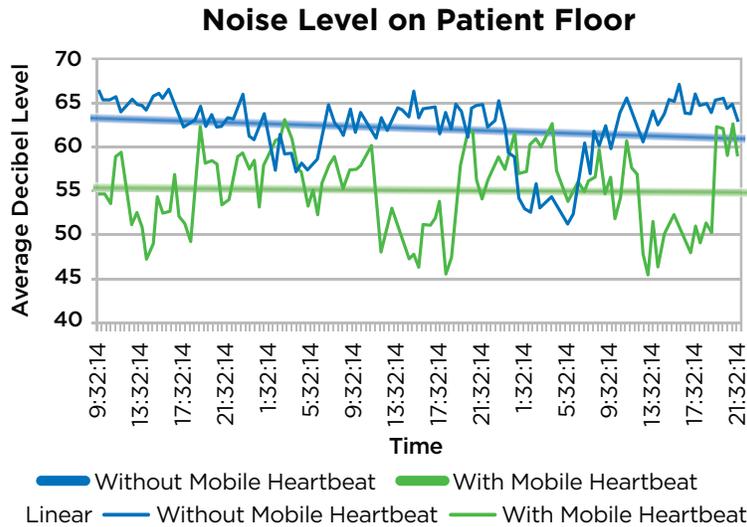
**Interoperability** — The optimum mobile solution provides much more than two-way communication between caregivers. A smartphone-enabling solution provides the ability to integrate with the hospital's healthcare information system (HIS), PBX phone system, and other 3rd party healthcare applications to provide instant access to vital patient data from anywhere in the hospital. You want to be sure that the solution is compatible with your existing infrastructure and can be integrated with your electronic healthcare applications.



*Example of a Mobile Solution that is Fully Interoperable and Easy to Implement*

**Ease of Implementation** — You want a solution that can be implemented now and deliver results quickly. Choose a device with demonstrated compatibility with existing systems to minimize implementation time.

**Noise Levels** — Select a solution that will minimize or even eliminate the need for noisy overhead paging systems. Devices should have the ability to mute the ringer and employ a silent, vibration alert. This will go a long way towards improving HCAHPS scores.

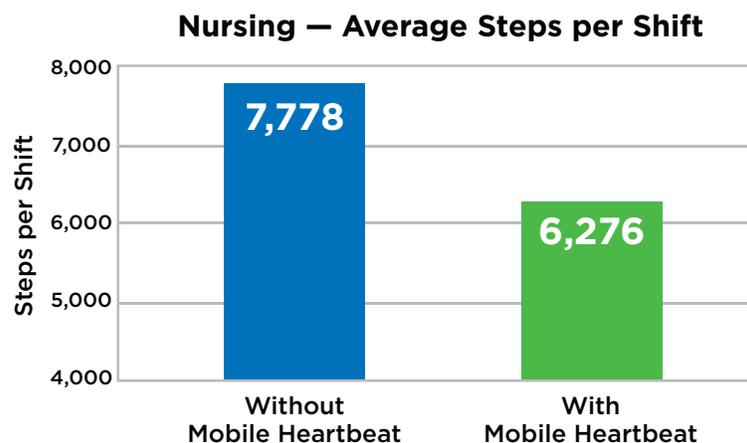


**Reduce Ambient Noise\***

*Mobile Heartbeat reduced ambient noise by over 9 dB (nearly 50% reduction in noise levels).*

**Example of a Mobile Solution that Lowers Noise Levels**

**Nurse Call Response Time** — The solution should enable nurses to receive call bell, lab results, and other patient alerts directly on the smartphone. There should be no delays in communicating the alerts, enabling the nurse to respond to the patient immediately. The solution should also provide the ability to implement a call bell escalation scheme to ensure patients’ needs are quickly addressed at all times.



**Reduce Foot Traffic\***

*Mobile Heartbeat reduced over 1,500 steps/shift (nearly 1 mile) enabling more bedside time.*

**Example of Better Care Based on Freeing Up Nurse Time**

\*Data acquired in an actual hospital situation

**Seamless Communication** — The solution should provide seamless communication between caregivers – staff/staff, nurse/staff and nurse/nurse.

**Security** — The need to protect personal health information (PHI) is of critical importance to your mobile deployment. The solution requires secure voice and text messaging both inside and outside the hospital.

**Compliance** — A successful mobility solution must address all hospital compliance requirements, including HIPAA. The solution should enable compliance monitoring with built-in, personalized audit trail and reporting.

**Usability** — The mobile device software should provide an intuitive user interface. All staff should be able to learn to use the system easily and without constant support from your IT department. If you plan to implement a system across departments with different needs, be sure that the features and functionality will meet all of those needs. Having one system that can be employed across multiple units will save costs and training time.

**All-in-One Device** — Today, clinicians have to carry multiple devices with them on a typical shift. Don't invest in a solution that creates an additional device for staff to carry around the hospital. This will negatively impact efficiency and adoption rate. The solution should replace existing systems with an easy-to-use, all-inclusive device.

**Device Support** — The system needs to support a wide variety of smartphone technology as well as shared devices for clinicians on site and personal devices for clinicians that prefer to use their own.

**Knowledgeable Vendor** — The solution should be designed, implemented, and supported by a vendor knowledgeable in healthcare applications vs. a generic mobile technology vendor. The solution will more easily integrate with your hospital workflows and will be easier to learn and to maintain.

## The Results Can Be Dramatic

Choosing the correct smartphone technology solution can deliver dramatic results. These include:

### 1. Increased Staff Efficiency

- a. Faster communications for better patient response
- b. Instant staff status and access
- c. Eliminates time lost to call-backs
- d. Consolidates multiple devices

## 2. Increased Revenue & Lower Cost

- a. Better HCAHPS scores
- b. Lowers care delivery costs
- c. Reduces communications infrastructure costs
- d. Reduces security and communications liability
- e. Improves staff satisfaction and retention

## 3. Improved Patient Care

- a. Better clinical information access
- b. More time with patients
- c. Faster responses and decision-making
- d. Lowers hospital noise levels
- e. Reduces clinical communication errors

## Summary

Mobile devices are dramatically changing the way healthcare professionals communicate in a hospital environment. Several recent studies predict that smartphones and other digital devices are becoming the primary mechanism for communication between caregivers. As a result, caregivers are increasingly pressured to improve the patient experience. Mobile technology designed specifically for hospitals has proven to positively impact many areas such as noise levels and call bell response.

While use of mobile devices within hospitals is rapidly increasing, there are many factors that need to be considered before implementing a mobile technology solution in a hospital. Some of those factors include an automated real-time clinician directory, ease of implementation, seamless communication, security, compliance and usability.

Choosing the right solution can deliver significant results including increased staff efficiency, increased revenue and lower costs, and, above all, better patient care.

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