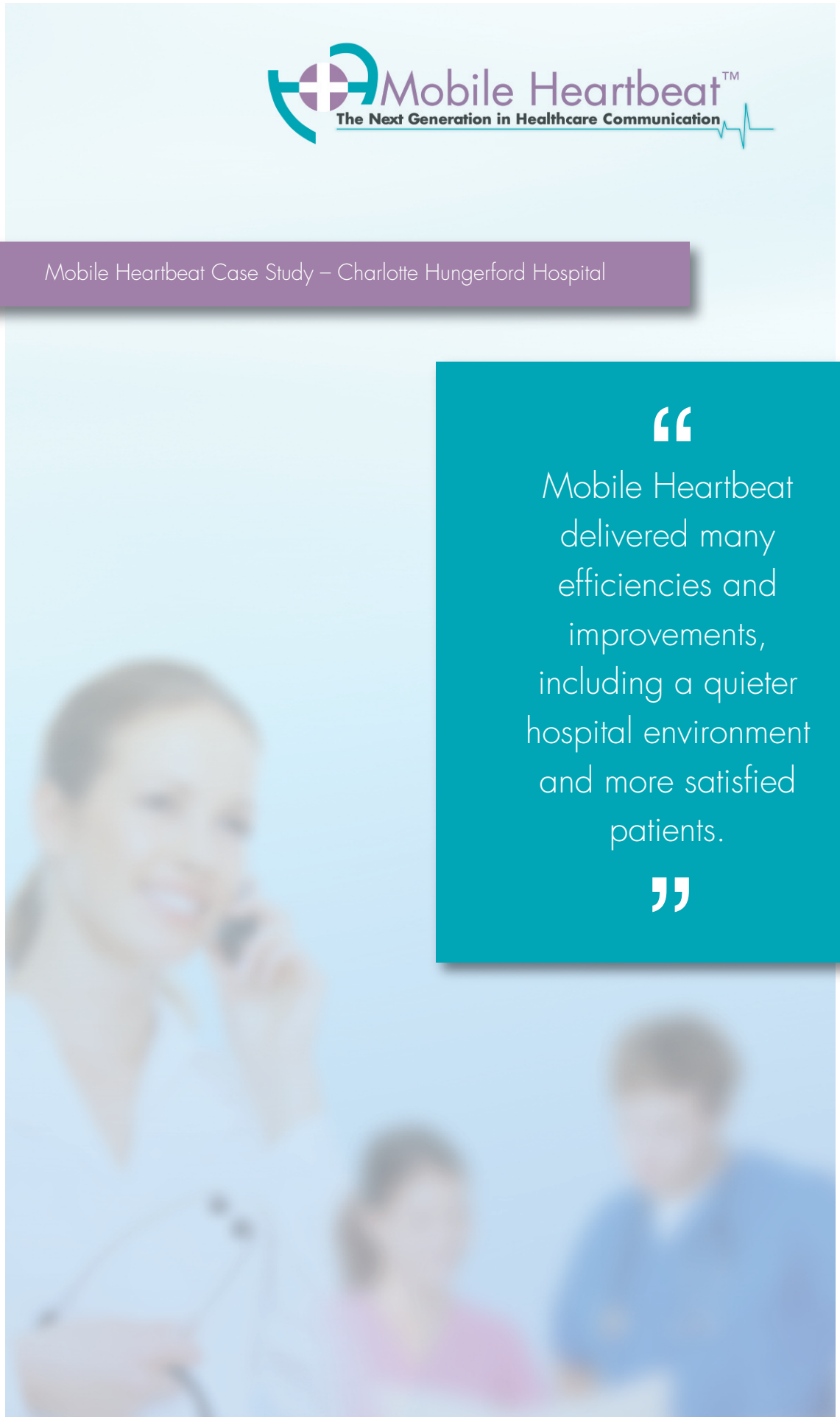
Mobile Heartbeat™
The Next Generation in Healthcare Communication

Mobile Heartbeat Case Study – Charlotte Hungerford Hospital



> “Mobile Heartbeat delivered many efficiencies and improvements, including a quieter hospital environment and more satisfied patients.”

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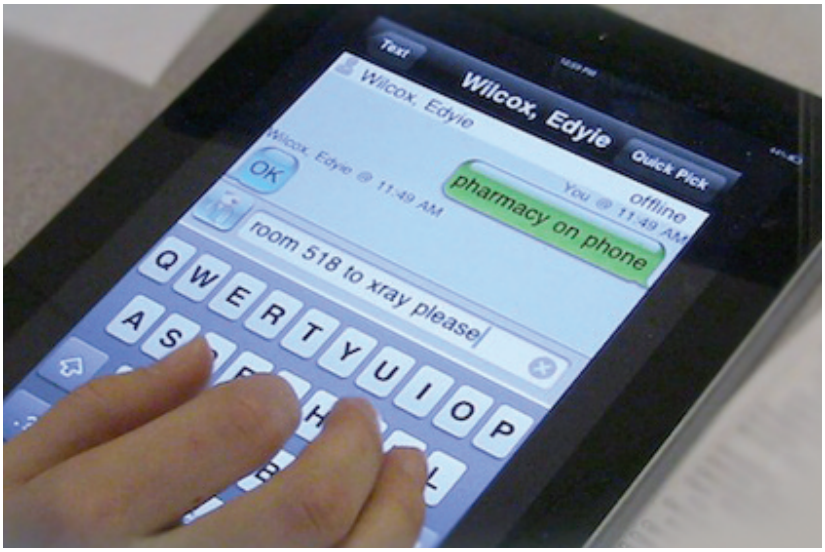
Introduction:

Charlotte Hungerford Hospital, a 109-bed critical care facility in Torrington, CT launched a "quieter hospital" initiative to improve the quality of care and overall patient satisfaction. To achieve their objectives, the hospital installed the Mobile Heartbeat mobile health care communications application on two inpatient medical-surgical units and the Emergency Department. Ultimately, the hospital hoped the mobile application would reduce noise, enable the staff to communicate more efficiently and spend additional time with patients, while improving HCAHPS scores and increasing staff job satisfaction.

The Challenge:

The Centers for Medicare and Medicaid Services (CMS) use the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey as a mechanism to determine patient satisfaction with their hospital care. Starting on October 1st, 2012, CMS will adjust funding to hospitals based on their HCAHPS survey scores. Hospitals will have to compete with one another to receive a percentage of their reimbursement funds from CMS.



HCAHPS points to noise levels as a significant factor in determining overall patient satisfaction with their care. Overhead pages, telephones ringing, and the ongoing conversations between caregivers can be a source of discomfort for patients. Noise distractions can also interfere with the concentration of caregivers and increase the potential for errors.

In addition, delays in staff response to call bells by the patient were frequently cited as a source of patient concern in the HCAHPS surveys. At Charlotte Hungerford, the call bell system was the chief mode of communication from patient to nurse. When the call bell is pushed by the patient, a message is sent to a central station and an alert is directed to the nurse by an overhead page. Without any specific information about the nature of the call, the nurse must first return to the bedside to determine the patient needs before acting upon it. If the specific patient request could be given directly to the nurse rather than via a general overhead page alert, the patient needs could be attended to faster.

The hospital considered that the flexibility, portability, and functionality of smartphone technology might enable them to better address their noise and communication issues within the hospital. The hospital IT executives agreed to evaluate a mobile communications application, but the solution had to be cost effective and work within the hospital's existing IT infrastructure. The amount of training that would be required to efficiently integrate the mobile software into their workflows was also a concern.

The Solution:

Charlotte Hungerford Hospital installed the Mobile Heartbeat application suite in their medical-surgical units and Emergency Department. The Mobile Heartbeat application is designed to enhance communications among clinicians by providing instant access to critical patient information, alerts and notifications via standard smartphones.

The Mobile Heartbeat software leverages all of the familiar smartphone text message and voice features and functionality while reducing the need for disruptive overhead paging. The goals of the program at Charlotte Hungerford were to:

- Decrease noise levels in the patient care areas
- Improve efficiency of clinician workflow
- Improve nurse/nurse, physician/nurse and staff/staff communication
- Improve call bell response time

Connect to the Existing IT Infrastructure

The Mobile Heartbeat server software was deployed on an existing server within the Charlotte Hungerford data center. The server was integrated with their MEDITECH Healthcare Information System to receive clinical data feeds including ADT, lab results, STAT orders and bed-board feeds. The Mobile Heartbeat server also was integrated with alerting systems, including the Rauland-Borg nurse call system to provide real-time and patient centric alerts to the appropriate clinician. A Mobile Heartbeat VOIP Server was integrated with the existing hospital PBX to extend voice capabilities from the smartphones to the rest of the hospital phone system.

Implement Escalation Rules for Call Bell Alerts

Escalation rules for the nurse call alarms were then added. The nurse and the patient care technician (PCT) assigned to the patient received the first notification on their smartphone, followed in two minutes by all PCTs. If the bell had not been silenced at the bedside after two minutes, the call would be escalated out to all nurses and all PCTs. The charge nurse would get the next notification if two more minutes passed. The final step in the escalation process ended with a notification sent to the unit manager. The recipient of the alert on their smartphone could simply reply with a pre-programmed text message to indicate the nurse would attend to the patient immediately or reply with a "busy" message to indicate that the nurse could not interrupt the task at hand to answer the call bell.

Establish Noise and Workflow Baseline Data

To measure the impact of the Mobile Heartbeat application on noise, a decibel meter was installed in the Emergency Department prior to implementation to collect ambient noise data and determine a standard baseline for comparison after deployment. To measure the impact of the application on workflow efficiency, data were recorded from one in-motion staff member who wore a pedometer for both six weeks prior to the pilot and during the pilot period.

Deploy Shared Smartphones to Clinical Staff

Shared smartphones were deployed using Mobile Heartbeat's Quicklaunch system. Charging racks, each holding 20 shared devices (iPod Touch), were installed at the central station on each floor along with a badge reader to verify the user's hospital credentials. The "QuickLaunch" functionality automatically logged the clinician on to the Mobile Heartbeat application when their ID badge was held near the RFID scanner.

Train the In-Motion staff

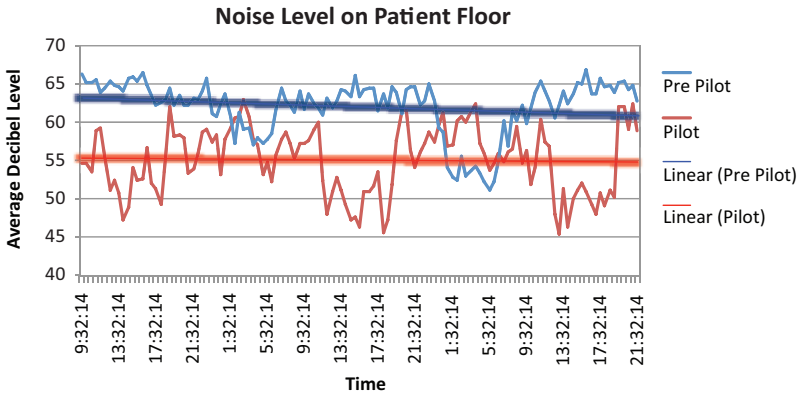
Staff participants were given iPod Touch devices. Hospitalists who did not have a smartphone of their own were supplied with iPhones 3GS'. Those who did carry their own iPhone had the application loaded onto their device. An iPad was supplied for the unit secretaries. Nurses were given a brief, 15 minute in-service training session on the functionality of the application a week before "go live". Over 250 staff members were trained including the charge nurses who handled staff assignments and performed the majority of group texts using the iPads.

Implementation with a Single Device

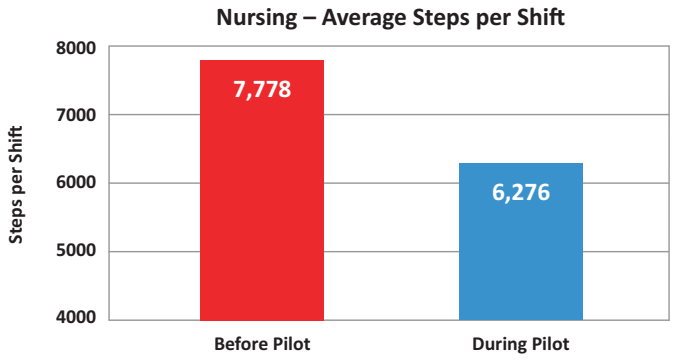
At the go live date, volume was turned down on all of the alarms and the staff performed their duties while carrying only a single Mobile Heartbeat device.

The Results:

Background noise measurements were re-taken at the exact same times and days of the week as prior to the deployment. As seen in the chart, the background noise in the Emergency Department was cut almost in half – in practical terms patients went from trying to rest in the cacophony of the average laundry room (65 dB) to the quiet of the average living room (50 dB). No longer did the Nurse Call have to ring overhead at the central station before the right careteam member could be found and then asked to attend to the patient's room.



The pedometers enumerated an additional benefit. As shown in the chart below, the distance walked by a nurse over an 8-hour shift dropped by over 1,500 steps (8/10ths of a mile). Instead of spending time walking the hallways in search of colleagues or patient data, the staff could now increase their direct patient interactions and improve the quality of care.



Call bell response times and escalation patterns were monitored. Post-implementation call bell response time averaged 73 seconds, well below the first 2 minute escalation period, and no call was ever escalated as far as the unit manager.

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Caregivers assigned to a patient could be instantly alerted on their smartphone and had the ability to call back directly from their mobile device or escalate the call to other available caregivers on the floor.

A questionnaire was distributed to the participating staff to determine their perceptions relating to functionality and usability of the Mobile Heartbeat application and its impact on their workflow efficiency, the work environment, and communication.

Following are data and anecdotal responses from the survey:

- 84% of those who responded to the survey reported that the devices made it easier for them to communicate with others in their unit
- 95% of respondents preferred the text messaging functionality, including nurses and physicians
- 84% of respondents reported that their workflow was more efficient with the devices
- The application enabled managers to monitor data regarding the frequency and timing of call bells and adjust their workflows to be more efficient

Summary

The Mobile Heartbeat application offered many efficiencies and improvements to workflows, decision making, call bell response and the overall patient experience. And, a quieter and more restful hospital environment is sure to drive higher patient satisfaction scores.

Mission Statement

Mobile Heartbeat's mission is to improve quality of care by enhancing clinical coordination and communication utilizing smartphone technology. We achieve a better patient and clinician experience through the timely delivery of pertinent patient data, notifications, and alerts to the mobile clinician, closing the last 50 feet of communication.

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