

Non-Invasive Cardiology

Case Study

Lutheran Hospital of Indiana Ft. Wayne, Indiana

MobileLink Helps Lutheran Heart Center Capture ECG Charges

Solution Overview

Profile

- 343-bed tertiary (regional) hospital serving a population base of nearly 1,000,000, including Ft. Wayne and northeastern Indiana.
- Comprehensive cardiology services, including the region's only heart transplant program.
- Performs between 2,500 and 3,000 ECGs monthly.

Project

Lutheran Hospital of Indiana was looking for a way to refine the process in which ECGs were captured, analyzed and billed. A combination of too many people involved in the process and too much paperwork delayed the billing process, causing ECG tests to go unbilled and revenue loss for the hospital. The hospital system required that GE Medical Systems Information Technologies fit the new MobileLink™ wireless ECG communication system onto their existing MAC 5000 carts and MUSE systems. Now, patient ECG data flows seamlessly – and wirelessly – between the cart, the MUSE and the hospital information system.

Key Findings

- ECG transmitted to MUSE in less than 20 seconds.
- Improved workflow by eliminating the mismatch of patient names and ID numbers by providing complete patient information at the ECG cart, prior to the exam.
- Increased income with elimination of “lost” ECG test reports.
- Enhanced clinical efficiency with reports in doctors' mailboxes before they arrive at the hospital.

At any hospital, improving workflow can result in improved healthcare while positively impacting finances. This is especially true at larger enterprises, where an abundance of paperwork – especially patient records – can bog down the clinical staff, postpone report generation and delay clinical decision time.



Lost ECG Charges

At Lutheran Hospital of Indiana, GE Medical Systems Information Technologies was faced with an interesting dilemma. Lutheran Heart Center was not satisfied with the performance of their existing ECG carts. While performing 2,500 – 3,000 patient ECGs tests monthly, the department continued to “lose” between 3 to 5 percent of the charges, due to the delay in getting the patient information to the billing department. Hospital protocol requires that ECG tests be billed within three days of patient discharge. The heart center wanted to enhance its workflow, as technicians needed to constantly return to the department to download ECGs and pick up any new requisitions that may have been ordered during the day.

GE worked with Lutheran Hospital to test MobileLink, a new wireless ECG communication solution based on an industry standard 802.11b wireless infrastructure and HL-7 interface. The MobileLink system integrates the information captured by the MAC® 5000 cart, the MUSE® system and the hospital information system (HIS) in a seamless network of patient ECG data. The MobileLink solution was designed to help staff save steps, reduce errors, expedite report generation and improve charge capture while making sound care decisions in less time. GE retrofitted the MobileLink system onto the hospital's existing carts.





Kim Scheumann,
Cardiac Group Leader
at Lutheran Hospital
of Indiana

Workflow Efficiencies

Kim Scheumann, Cardiac Group Leader at Lutheran Hospital of Indiana, says that MobileLink has provided the department with enhanced workflow efficiencies. “We begin doing patient ECGs from all care areas, except the ED, at 6:00 a.m. Previously, we delivered the reports to the doctors’ mailboxes between 11:00 and 12:00. Now they are in the boxes before they arrive to make their rounds.” She adds that in the past, the technicians could be gone for hours depending on the number of tests, which could delay report generation for the physician.

To better define the group workflow, Scheumann outlines the processes for the department, before and after the installation of MobileLink:

Before

- ECG orders downloaded from the HIS onto disks
- Orders downloaded into carts
- Technicians acquire ECGs from patients throughout the hospital
- After completion, technicians return to the office and download ECGs via the telephone line to MUSE
- MUSE prints hard copy of ECG
- Technicians match up captured patient data with original ECG requisition
- Reconciled hard copy is placed in the appropriate physician’s mailbox
- ECG billed to patient after physician has read it

“With the new wireless system, I have noticed that ECGs are getting read before the technicians return from the floor.”

After

- ECG orders downloaded from the HIS onto disks
 - Technicians pick up carts with downloaded ECG orders
 - ECGs performed on the floor are wirelessly transmitted to MUSE within 20 seconds of capture
 - MUSE prints reconciled hard copy of ECG
 - Hard copy placed in appropriate physician’s mailbox
 - Ability for integrated data to flow through HIS to accounting for immediate patient billing
- “With the new wireless system, I have noticed that ECGs are getting read before the technicians return from the floor. It’s wonderful, because the ECGs arrive in the department before the physicians arrive on-site,” Scheumann says. She adds that the hospital is moving toward wirelessly downloading the ECG orders directly to the carts, rather than loading from the HIS onto a disk.

MobileLink also has the capability to wirelessly transmit a PDF of the ECG test results from the MUSE to a physician’s e-mail system or to a cellular-enabled PDA. Scheumann says that Lutheran Hospital is investigating the use of that capability in the near future.

Lutheran Heart Center currently employs a key element of the MobileLink wireless system. They have always downloaded ECG requisitions before the morning run. Now, with the wireless system, they can use the HL-7 interface to download ECG orders from the floor, throughout

the day, whenever they are needed. “Because we can download the orders before we perform the ECG, we do not have additional problems with ID numbers being wrong or a misspelling of a patient’s name.” At the same time, it alerts the technician to perform the ECG before returning to the department, which may waste additional time.

Many Benefits

According to Scheumann, Lutheran Hospital has reaped the benefits of MobileLink in three areas:

Clinical – Turnaround time for ECG reports for physicians is greatly improved, allowing them to make faster decisions and provide better healthcare.

Workflow – Technician time to do the ECGs has been greatly reduced with the elimination of having to return to the department to download the ECG data.

Employee efficiency is enhanced, as matching up test results with the original orders has been eliminated.

Financial – Future revenue streams will be enhanced as the system will allow ECG billing immediately after physician overread.

She adds that two other hospitals in the area have been networked into Lutheran Hospital’s MUSE system. The outlying hospitals send their patient ECG information to the MUSE at Lutheran Heart Center, so that the on-site physicians can review patient ECG data even when they are not physically located at Lutheran Hospital.

Currently, seven of Lutheran Hospital’s fleet of 11 carts are utilizing MobileLink wireless communication technology. The carts are used in all care areas throughout the facility, except for the Emergency Department. Scheumann estimates that all carts will be wireless by early 2004.

“In a large facility like Lutheran Hospital, MobileLink can be a great asset,” Scheumann adds, “We needed technology like this.”

In today’s healthcare environment, a high-quality, distributed electronic medical record is key to maintaining a consistent level of care. The MobileLink wireless ECG communication system answers that challenge, while boosting cost savings and workflow efficiency.

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Next Steps

- Implementation of billing ECG’s technical component upon receipt into the MUSE system.
- Wireless carts throughout Lutheran Hospital
- Implementation of wireless ECG at remote sites.

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