

## Case Study



# Northeast Medical Center Uses Bar Coding to Increase Patient Safety

**Challenge:** Since 2000, Northeast Medical Center, a 457-bed acute-care hospital in Concord, North Carolina, has been concerned by the need to improve patient safety, a problem dramatically illustrated in reports issued by the Institute of Medicine, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and others, in which medical errors were cited as a central factor in the deaths of between 44,000 to 98,000 U.S. hospital patients annually. Northeast considers itself an early adopter of healthcare technologies, and quickly identified technology as a key element of its renewed commitment to address patient safety.



Larry Hinsdale, Northeast's CEO, championed an initiative to address patient safety quickly. After considering several alternative solutions, including computerized physician order entry (CPOE) and electronic medical records (EMR), Northeast decided a bar code system would be the most cost effective, manageable patient safety solution, and would yield a collateral benefit to the hospital's marketing efforts. Northeast began work on a bar code system directed at reducing errors in both phlebotomy specimen collection and in medication administration.

Specimen labels had been printed in batch by printers that were shared and that frequently malfunctioned or produced unreadable bar codes. Batch-printed labels were sometimes applied to the wrong sample. "Each unit had a single printer that was shared between all nurses—a situation that invariably led to errors in labeling," said Vicki Cooke, Northeast's expert on nursing information technology systems

**Solution:** The system went live less than eight months after planning began. The Northeast Medical Center IT department advocated a switch from batch to on-demand printing for specimen collection. Compact Zebra printers are now mounted on a cart along with a laptop. Nurses bring the cart to the patient and produce bar code identification labels when samples are drawn. The labels are applied to the specimen collection tubes, which are color-coded to correspond to the appropriate lab tests.

To boost patient safety in medication administration, Northeast now individually packages and bar codes drugs in its pharmacy. Using a laptop mounted on a cart, the nurse scans a bar code on the patient's identification wristband to pull up the list of drugs to be administered to that patient. The nurse then scans the bar code on the drug to verify that the correct drug is about to be given to the correct patient. The patient's drug administration record is then electronically updated.

**Results:** The bar coding system was such an immediate success that all 26 nursing units were equipped with the bar code technology by March 2003.

"The flexibility and functionality of the Zebra printers has vastly reduced specimen mislabeling and collection errors, and the nurses love it," said Cooke.

In addition to helping to improve patient safety by allowing a "second check" before medication administration, bar coding replaced the hospital's subjective, manual error-reporting system—allowing near-misses and previously non-reported errors to be captured electronically. It also ensured that data was traceable, accurate, and more up-to-date.

(continued)

The bar coding system has yielded additional benefits, including improved nursing satisfaction (nurses appreciate the "second check" feature of the bar code system), fuller census (from community recognition of Northeast's leadership position regarding patient safety), and a more efficient pharmacy. Northeast hopes to add blood administration soon as part of its bar coded patient safety initiative, added Vickie Davis, director of lab services at Northeast.

An untapped opportunity to derive even greater patient safety dividends from the bar code program is to mine the data being scanned at bedside to provide feedback loops that uncover care trends, treatment patterns, and utilization.

In the spring of 2005, Northeast began linking bar coding with smart pump technologies and devices, which allows nurses to scan patient data with the smart pump to confirm the rate of medication administration, the type of drug administered, and other "second check" functions. Northeast will also serve as a beta site for Bridge Medical's blood product administration bar coding system.

**i|Tech**  
Automation, Inc.

**Call Toll Free: 1-888-510-9668**



**HEADQUARTERS** Zebra Technologies International, LLC **T:** +1 847 793 2600 or +1 800 423 0442 **F:** +1 847 913 8766  
**ADDRESS:** 333 Corporate Woods Parkway, Vernon Hills, IL 60061-3109 U.S.A. **WEB:** www.zebra.com

**OTHER LOCATIONS** **USA:** California, Rhode Island, Wisconsin **EUROPE:** France, Germany, Italy, Netherlands, Poland, Spain, Sweden, United Kingdom **ASIA-PACIFIC:** Australia, China, Japan, Singapore, South Korea  
**LATIN AMERICA:** Florida (USA), Mexico **AFRICA/MIDDLE EAST:** South Africa, United Arab Emirates



An ISO 9001 registered company  
GSA#: GS-35F-0268N  
©2005 ZIH Corp. Printed in U.S.A.  
#13907L-001 (8/05)