Integrated Software Design, Inc.

ISD Technology Group

White Paper

Bar Code Technology Saves Money and Lives in Health Care Applications

Serious injuries due to medical errors are estimated to be in the millions, with costs in the billions. It is no wonder that visiting a hospital or a physician causes most Americans to have a certain amount of apprehension, not only about the state of their heath, but also about the quality of care that they receive. In a survey conducted in 1999 by the American Society of Health Systems Pharmacists, over half of the respondents said that when hospitalized they were very concerned with "being given the wrong medicine" (61%) and "being given two or more medicines that interact in a negative way" (58%).[1]

In a study commissioned by AmerisourceBergen in Feb., 2003, it was revealed that nearly a quarter of all Americans have received, or know a family member who received the wrong medication from a healthcare professional.[2]

The correct identification of patients and the proper dispensing of medications are critical components of patient safety. Errors in transcribing medical records, understanding physicians' orders and misidentifying patients cause countless injuries and loss of life. Experts estimate that up to 20% of medication errors may be caused by the physicians' illegible handwriting. This translates into immeasurable suffering, loss of income and wasted health care resources. ABC News recently reported on a case where a misplaced decimal point caused a hospitalized child to receive a fatal dose of morphine.[3]

Over the past several years, health care associations have joined the public in demanding that the FDA set standards for medication packaging that will improve the accuracy of medical dispensation. The Federation of American Hospitals (FAH), The National Coordinating Council for Medication Error Reporting (NCCMERP) and the American Society of Health-

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1 American Society of Health-System Pharmacists. "ASHP Patient Concerns National Survey Research Report", September, 1999. http://www.ashp.org/pr/survey.cfm?cfid=21604385&CFToken=49077124

[2] Healthcare Information and Management Systems Society, Vantage Point, Volume 1; Issue 9, May, 2004. http://www.himss.org/vantagepoint.

[3] ABC News, World News Tonight. "Fatal Medication Errors, Study: Children Often Getting Wrong Medication in Hospitals", April 24, 2004. http://abcnews.go.com/sections/wnt/WorldNewsTonight/wnt010424_medication_errors_feature.html#1

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System Pharmacists (ASHP) are among the professional associations to have independently determined that accurate dispensing of medication must be a priority.

Both the U.S. Food and Drug Administration (FDA) and The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) have identified inaccurate oral and written communication as the primary obstacle to patient safety. As a result, both have adopted plans that mandate the use of bar codes as a tool to improve patient safety.

The FDA Plan

The FDA's plan addresses the identification of medication. It requires drug manufacturers to bar code single units of most prescription drugs, certain over-the-counter drugs and biological products (such as blood) by April 2006. New medications will have to include bar codes within 60 days of their approval. The bar code must at least contain the National Drug Code (NDC) number, which is a unique identifier for the medication. Blood components that will be used for transfusion must include the facility identifier, the lot number relating to the donor, the product code, and the donor's ABO and Rh.

The FDA estimates that the implementation of these regulations will result in a 50% reduction in medication errors, prevent more than 500,000 adverse events and save $93 billion over the next 20 years. Residual rewards include decreasing malpractice litigation and insurance premiums, and increasing receipts from more accurate billing.

The FDA plan provides a concrete foundation for patient safety initiatives; however it *does* leave several issues unaddressed. The FDA plan requires bar codes on all single units of medication, though it doesn't require drug manufacturers to supply single unit doses. When drug manufacturers do not package medication in single doses, hospitals are forced to repackage them, often without bar codes. In addition, since the FDA has no authority over providers; it cannot require that health care facilities use bar codes.

The JCAHO Plan

JCAHO's proposed patient safety plan ties a hospital's accreditation to their implementation of bar coding by January 2007. It requires hospitals to implement bar coding to assure that the correct medication is given to the correct patient precisely in the dosage and manner as it was prescribed. JCAHO's plan would have hospitals issue bar coded wrist bands to each patient, which would be scanned before medication or blood is given. The American Hospital Association, the Institute of Medicine and the Federation of American Hospitals all support JCAHO's proposed plan.

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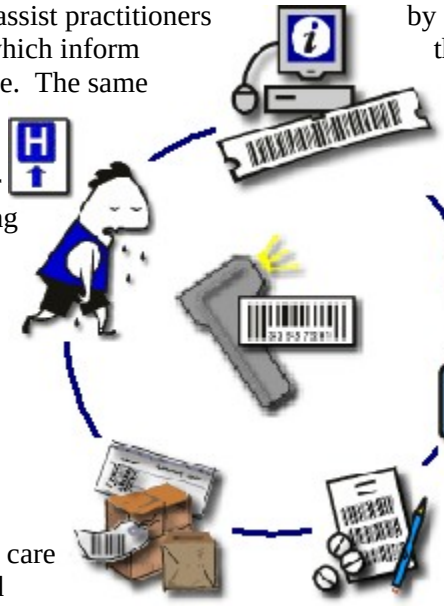
Bar codes offer many additional advantages to health care facilities. Through the use of scanners, data can be shared throughout the enterprise, saving money, improving efficiency and enhancing patient care. Automatic identification offers a means for improving administrative tasks such as ordering, inventory maintenance, document control and billing. Bedside systems can assist practitioners by providing a link to the most up-to-date patient records which inform them of allergies or changes in medication and dosage. The same systems can also be linked to pharmaceutical databases that can be programmed to sound an alert when there is a potential for drug interactions or overdosing. Bar coding systems can also generate audit trails with automatic time stamping which can be analyzed to further improve workflow efficiency, monitor trends in medication dispensation and identify system expansion opportunities.



In short, the FDA and JCAHO mandates to adopt bar coding provide health care facilities with an opportunity to review their goals and develop a long-term plan for strategic deployment and integration of auto ID. This process should include identifying bar code projects, reviewing system requirements and assessing legacy systems. For each project, research available resources, contact vendors for proposals and calculate the ROI.

ISD Technology Group and enLabel Global Technologies can assist you in each stage of your project. We have been providing superior bar coding products and services since 1982. ISD offers many cross-platform tools for the integration of printing and automatic data collection into ERP (Enterprise Resource Planning) and legacy systems on many platforms. Connectivity and expandability are essential elements in all ISD products. Sharing information with distributed hosts and databases on an Internet or Intranet supported environment is always a design consideration and a feature of all ISD solutions. In addition, ISD's solutions are peripheral independent, which gives the options to use the best input and output technologies suited for each client's application. In offering our commitment, we employ the latest IT based solutions and knowledge enabled business practices to improve your business processes.

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