MARYLAND Patient Safety CENTER

Solution: **Barcodes, Bedside Medication Verification and Beyond…Using Barcode Foundation and the Clinical Pharmaceutical Data Mining Concept for Patient Safety**

Organization: Mercy Medical Center   **Type:** Acute Care

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IDENTIFICATION:

In a 1999 study sponsored by the Institute of Medicine (IOM), it estimated that hospital medical errors kill between 44,000 to 98,000 patients every year. Medication errors alone kill an estimated 7,000 patients a year and injure at least 1.5 million a year, with nearly one-third of these errors occurring in hospitals. On average, a hospitalized patient is subject to one medication mistake a day. The extra cost of treating such injuries occurring in hospitals alone amounts to $3.5 billion a year.

Our goal is to ensure patient safety by preventing medication errors while using the hospital's existing database and the clinical pharmaceutical data mining concept in conjunction with our bar coding systems and bedside-medication-verification (BMV) scanning processing, instead of committing a huge investment on robotic dispensing hardware, which can typically cost millions of dollars.

PROCESS:

Mercy Medical Center's array of flexible solutions not only supports dispensing proper medications but also prevents critical medication errors. Coupled with bar coding technology and BMV, the utilization of existing data and clinical pharmaceutical data mining allows hospitals to analyze the appropriateness of their medication use and also supports management processes to reduce errors, improve cost of medical care and enhance the quality of care with a high standard of pharmaceutical practice.

Mercy Medical Center (MMC) has now successfully implemented the BMV system for all inpatient nursing units. However, we realize that no point-of-care scanning initiative can succeed without a properly functioning system for medication bar-coding.

SOLUTION:

Mercy Medical Center's automation solutions intrinsically reinforce the best practice for the prevention of medication errors while streamlining new levels of efficacy. Through the use of existing data, compatible hardware and software, and clinical pharmaceutical data mining, the goal of preventing medication errors that is equivalent or even superior to a robotic dispensing machine is achievable. Not only can the system prevent medication errors by providing the right

dose to the right patient, but it can also determine the **clinically right dose for the right patient** through this method. Not all institution can afford or actually need robotic dispensing, yet they can still provide enhanced patient safety through bar coding and BMV processes designed for their organization.

With over 1 million bedside-scans performed by nurses, 2 million scans performed by the pharmacy staff, and with the production of over 250,000 bar coded medication unit packages annually, it is essential to provide medication safety and pristine quality of care for our patients. Due to it being the early stages of BMV in the United States, there have not been many established standardized studies comparing the results of the various forms of bar-code administration. One report in the Pharmacy Practice News (December 2007, volume 34) stated that University of California, San Diego (UCSD) Medical Center, an institution with 531 patient beds over 2 facilities, receives 75-150 scanning difficulty messages from the nursing staff every day from one facility alone. Below are some comparisons between UCSD and MMC.

	UCSD	MMC
Number of beds	531	307
Bar-code packaging	Outsourcing + In-house	In-house only
Reported scanning difficulties	75-150 daily (27,000-54,000 yearly)	1-3 weekly (150 yearly)
Scanning difficulties/bed/yr	51.5 – 103/bed/year	0.5/bed/year

In order to achieve a successful BMV Program, MMC's pharmacy department has effectively implemented the following systems/programs:
1. MMC Automated Packaging with Bar codes
2. MMC Barcode Medication Dispensing and Error-Free Medication Cart Refill System
3. MMC Barcode Code Cart (Crash Cart) and OR Pharmacy Tray Tracking System
4. Beyond Bar Code and Bedside-Medication-Verification (BMV)
   Not Just The Right Dose, But Clinically The Right Dose …
   (Application of Pharmacokinetic Concept using same data)
5. Prevention of Controlled Substances Diversion
6. Oversight and Accountability Using Analytical Statistics.