

Safer Patient Care: Automated Medication Verification Solutions for Hospitals and Clinics

Five Rights of Medication Administration

1. Identify right patient
2. Confirm right medication
3. Confirm right dosage
4. Confirm the right route
5. Confirm the right time

Hospitals and healthcare clinics throughout the world strive to reduce the possibility of error from medications delivered at the point of care by nursing personnel. The number of preventable deaths from adverse drug events (ADE) hovers in the thousands each year. This is further complicated by the current nursing shortage and the lack of adequate technology at the point of care, which adds to the risk of an unsuccessful patient outcome. Creating an error-free environment is mission critical to both safeguard patient health and protect the five rights of medication administration.

Direct Cost of Preventable Drug Errors = \$177 billion per year¹

The financial implications of medication errors are also very costly for hospitals, patients and the taxpayers, and it has led to nationwide attention. Studies indicate that one in every five doses delivered is erroneous and seven percent of these lead to more serious complications. Dennis S. O'Leary, M.D., president of the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO), stated: "The Joint Commission, like others, is deeply concerned that the number of serious medical errors remains unacceptably high, despite the focus of significant national attention on patient safety in recent years." The number one goal for JCAHO's National Public Safety Goals and Requirements for 2004 is to improve the accuracy of patient identification for administering medications or blood products, taking blood samples and surgical or invasive procedures.

One recent study conducted at two prestigious teaching hospitals found that about two out of every 100 admissions experienced a preventable ADE, resulting in average increased hospital costs of \$4,700 per admission or about \$2.8 million annually for a 700-bed teaching hospital.²

With the increased nationwide attention on patient safety, hospitals and clinics have addressed broader procedural concerns like computerizing order entry and pharmacy drug dispensing. Now, drug companies are required to bar code all products to improve the

accuracy and efficiency of the medical supply chain. However, the one task that involves few safety checkpoints – medication administration at the point of care – has yet to be addressed. Its devastating and costly effect on patient care is the catalyst for the surge in affordable wireless handheld mobile computing systems for hospitals and clinics.

Automated Medication Verification Applications and Wireless Mobility

Medication verification applications running on a handheld wireless mobile computer help eliminate errors at the point of care, reducing the chance of a patient receiving the wrong medication or the incorrect unit dosage. A mobile system also improves nursing efficiency and documentation, in addition to increased patient safety. And this translates to increased efficiency with the collection of fines resulting in increased revenue. It also ensures that repeat violators are held accountable by appropriate government agencies such as motor vehicle departments and courts. A real-life example of an look at how the automated medication verification application details the benefits.



During the hospital or clinic admitting process, the patient is issued a wristband with a bar code specific to his or her medical condition and treatment. At the bedside, a nurse uses a mobile handheld computer to scan in his or her identification and then scan the patient's wrist identification. Details regarding patient identification and medication, dosage, time and route are verified. Before any drugs are administered, an alert system denotes a warning if there are any discrepancies,

notifying the nurse before any errors can possibly occur.

Using an automated medication verification system, records and documentation on patient medication administration are accurate and current. Patient records are either updated at the end of each of the nurse's rounds or in real-time with wireless local area network (WLAN) connectivity that communicates directly with the hospital or clinic's database. Accurate documentation is stored for best practice assessment and a speedier claims payment process.



The procedures demonstrated in this example are easily applied to other aspects of healthcare as well, such as specimen collection at the point of care, with equally effective results.

**Medication Administration
Return-on-Investment (ROI) Model**

# beds	400
Occupancy rate	0.90
Avg. # patients	360
Meds per patient	4
Daily dose frequency	4
Meds per day	5,760
365 days/year	x 365
Meds admin. Per year	2,102,400
Error rate (1%-7%; assume best)	1%
# of medication errors per year	21,024
Cost per error (assume minor)	x \$75
Total error costs per year (best case)	\$1,576,800

Measurable Benefits of an Automated Medication Verification System

Automated medication verification systems using rugged mobile computers and wireless communications deliver measurable benefits. Patients receive timely, accurate medication administration with a reduced risk of error. Hospitals and clinics see reduced errors associated with medication errors, which in turn saves money with decreased legal and settlement costs. In addition, staff productivity improves, because nurses are able to care for more patients, more efficiently. Processing insurance claims is speedier, more accurate and less expensive. Automating the medication administration process enables hospitals and clinics to provide the right medication to the right patient at the right time via the right route at the right dose.

Benefits Summary:

- Eliminate medication administration errors
- Reduce costs associated with errors



Most research is conducted on medication errors occurring in hospitals, but this offers only a glimpse into the overall problem. Other environments that provide often complex and sophisticated care are equally at risk. These include ambulatory settings, outpatient surgery centers, medical offices, home caregivers, hospice and nursing homes.

Choosing the Right Mobility System

When developing or establishing specifications for an automated medication administration system, there are numerous factors a hospital or clinic should consider. For example, the handheld devices must be comfortable and easy for your healthcare staff to use. The devices must also be ruggedized to withstand the unique environmental conditions found in hospitals or clinics. From the handheld mobile computers to the wireless technology to the security implications and accessories, there are many critical decisions to make in the process of selecting an automated medication administration system.

Many hospitals and clinics take advantage of the knowledge, long history and global experience of companies like Symbol Technologies when considering the development and implementation of rugged mobile computing solutions.

Resources

¹ "The Regulatory Plan", Federal Register, Volume 66, No. 232, Monday, December 3, 2001

² Bates, David W.; Spell, Nathan; Cullen, David J.; "The Costs of Adverse Drug Events in Hospitalized Patients," JAMA. 277:307311, 1997.

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