

ImageDirector Rx

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IBM **Enterprise Content Management** software

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SYSTEMS

## Expanding Access to Automated Medication Order Management





Throughout the healthcare profession and government, it is well known that medication errors are a serious, pervasive problem that endangers patient safety and drives up healthcare costs.

According to the U.S. Food and Drug Administration, medication errors cause at least one death every day and injure approximately 1.3 million people annually in the United States.<sup>1</sup> The statistics reported in the American Association for Justice February 2011 Medical Negligence Primer put the medication error deaths significantly higher at 7,000 deaths per year and reference 1.5 million preventable Adverse Drug Events (ADE).<sup>2</sup> A 2001 study in the American Journal of Health-System Pharmacy conducted by J. Phillips and his colleagues, provides further insight into this patient safety crisis by reporting that most of the common types of medication errors resulting in patient death involved the wrong dose (40.9 percent), the wrong drug (16 percent), and the wrong route of administration (9.5 percent).<sup>3</sup>

Because most of the recent studies have focused on the cause, reporting, and prevention of medication errors, it is challenging to put a dollar figure on the cost to hospitals.

However to provide an idea of such cost, The Institute of Medicine report, Preventing Medication Errors, included a reference to one study that found each preventable ADE that took place in a hospital added about \$8,750 (in 2006 dollars) to the cost of the hospital stay.<sup>4</sup>

### **Miscommunication as a Catalyst for Medication Errors**

In most hospitals, the medication order process involves a doctor writing down the medication order for a patient and giving it to the nurse. The nurse then sends it to the pharmacy by fax or pneumatic tubes or hand delivers the prescription. When it gets to the pharmacy, the typical paper-based process usually lacks a system of order prioritization based on greatest need and has few safeguards in place to prevent the loss of this time-sensitive paper order.

<sup>1</sup> U.S. Food and Drug Administration [Website] accessed March 2012  
[www.fda.gov/Drugs/DrugSafety/MedicationErrors/ucm080629.htm](http://www.fda.gov/Drugs/DrugSafety/MedicationErrors/ucm080629.htm)

<sup>2</sup> Justice.org [Website] accessed March 2012  
[http://www.justice.org/resources/Medical\\_Negligence\\_Primer.pdf](http://www.justice.org/resources/Medical_Negligence_Primer.pdf)

<sup>3</sup> National Center for Biotechnology [Website] accessed March 2012  
<http://www.ncbi.nlm.nih.gov/pubmed/11596700>

<sup>4</sup> Preventing Medical Errors, Institute of Medicine [Website] accessed March 2012  
<http://www.iom.edu/~media/Files/Report%20Files/2006/Preventing-Medication-Errors-Quality-Chasm-Series/medicationerrorsnew.pdf>



If an order is lost, a second or even third request might be submitted to the pharmacy, which means that as many as three prescriptions might be in circulation. This confusion exposes the patient to the possibility of being overmedicated and places the hospital at compliance risk for outstanding multiple orders.

The whole process from the time of the doctor's order being written to the time that the patient actually receives the medication can be as much as one to two hours. Anyone who has ever had to deal with extreme pain or discomfort personally or has had to watch their friend or family member suffer knows this situation is a less-than-desirable time frame.

While many issues during this process can contribute to medication errors, the main cause boils down to communication problems. According to Darryl Rich (PharmD, MBA, FASHP Surveyor, The Joint Commission, based on the 2011 surveys), it is "likely our number one ongoing issue involves incomplete or illegible medication orders."<sup>5</sup>

Communication problems that can lead to medication errors during the medication order process include the following:

- Failure to take into account other conditions in the patient due to incomplete patient information
- Transcription errors in spelling patient name or capturing patient number causing the medication to be given to the wrong patient
- Illegible handwriting leading to the wrong medication or wrong dosage
- Use of abbreviations for dosage and timing that cause zeroes, decimals, or metric or other dosing units to be misread
- Use of trade names that can be confused with drugs of similar names instead of using the full chemical identifier

When pharmacists encounter these problems, they might attempt to locate the doctor or nurse, but that can be an onerous process that proves unsuccessful in the immediate term. Unfortunately, the remaining options of putting the order aside or guessing can ultimately be the catalyst that causes a medication error.

Clearly real-time communication that allows for order clarification between doctors, nurses, and pharmacists would be a paradigm shifter.

<sup>5</sup> Pharmacy Purchasing and Products, TJC Compliance Challenges, November 2011  
[www.pppmag.com/article/1012/November\\_2011/TJC\\_Compliance\\_Challenges/](http://www.pppmag.com/article/1012/November_2011/TJC_Compliance_Challenges/)



### **Typical Computerized Physician Order Entry (CPOE) Systems**

As an answer to the medication order process challenges, computerized physician order entry systems have been developed with impressive results. Studies have shown that the implementation of CPOE can reduce errors as much as 55-70 percent.<sup>6,7</sup>

The majority of these systems have been developed in conjunction with medication management cabinet solutions as add-on capability to the core offerings. While these systems are effective, their one-million-dollar-plus price tag, as well as the long implementation cycles that can stretch over months and even years, has often put them out of reach financially for most hospitals. Because funds are scarce and available time is an issue, this solution simply has not been a viable option for many healthcare facilities.

Unfortunately, these solutions can also come up short when it comes to solving the real-time communication issues, and they often have no, or only limited, reporting capabilities for government compliance purposes or for addressing discovery needs for litigation, both of which are large consumers of time.

When healthcare facilities are considering automating the medication order management process, a means to alleviate the current reporting drain on resources must not be overlooked. As an example, when large hospitals need to resort to manual reporting for their daily Medication Administration Record (MAR) reporting, this method can require a 3-to-4-hour block of time each day in compilation alone when as many as 1000 records are manually transcribed into the designated reporting format.

### **Access to Low-Cost, Low-Impact Automation of Medication Order Management**

ImageDirector Rx, from Comsquared Systems and built on IBM Enterprise Content Management (ECM) suite of products, quickly automates, streamlines, and decentralizes much of the manual, paper-based medication order process. In most cases, installation and training can be completed in 10 days or less, as compared to solutions that take months to implement.

<sup>6</sup> Kelly WN, Rucker TD. Compelling features of a safe medication-use system. *Am J Health Syst Pharm.* 2006 Aug 1;63(15):1461-8

<sup>7</sup> King WJ, Paice N, Rangrej J et al. The effect of computerized physician order entry on medication errors and adverse drug events in pediatric inpatients. *Pediatrics.* 2003 Sep;112(3 Pt 1):506-9.



The solution includes interactive texting capabilities between nursing stations, the pharmacy, and healthcare professionals' mobile devices, as well as customized reporting features. The solution better equips pharmacy staff to meet the ongoing industry challenges of communication, compliance, reporting, and audit trail standards.

By removing paper from the medication management process, the solution provides improved order tracking, order archiving, and order retrieval for more efficient and safe patient care as well as timely compliance reporting and response to legal discovery orders.

The solution is designed to perform these tasks:

- Receive pharmacy orders from multifunctional printers or scanners.
- Present orders to the pharmacy, presorted for dispensation based on priority, arrival time, location origin, and other criteria.
- Integrate with HL7 data feeds to collect patient information and automatically populate key fields.
- Allow nurses to visually determine status or outstanding questions for a medication order with tracking icon.
- Streamline the communication process between nurses, physicians, and pharmacists to electronically resolve issues such as order clarifications, missing medications, etc.
- Track and report the usage of unapproved JCAHO abbreviations and nonformulary drug names.
- Maintain a complete audit trail for each order and archive orders indefinitely for search and audit purposes and regulatory compliance.

ImageDirector Rx has been shown to cut medication order processing time by up to 70 percent resulting in fewer medical errors. As a result of the increased efficiency and greater patient safety, hospitals have been able to realize an ROI in as little as five months.

With full HL7 integration, ImageDirector Rx runs seamlessly with virtually any current patient management system. It can be site-configured to meet a hospital's current and future technology requirements.

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## About Comsquared Systems

Comsquared Systems has been in the software development business for more than 35 years, as a provider of vertical market integration solutions. The company strategy has always been to innovate continuously, create value for customers, and convert need into demand.



## About IBM ECM

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