

Beloit Memorial Hospital Adopts Bar Code Medication Administration System and Error Rate Plummets

Overview

Beloit Memorial Hospital has recently instituted a new medication administration system in its OB/GYN/nursery that utilizes wireless bar code scanning and identification technology to improve patient safety. Equipped with a Symbol mobile PDA loaded with wCareMed™, nurses at Beloit Memorial's Family Care Center ensure delivery of the correct medication and dosage by scanning each patient's wristband along with all medications. Nurses will also be able to input patient information and access medical records from this handheld computer — further enhancing their ability to provide superior care without leaving the patient's bedside.

Beloit Memorial Hospital is a community hospital affiliated with the University of Wisconsin Hospital system serving a primary population of approximately 175,000 residents. The hospital and its four, offsite clinics provide personalized service while retaining a leadership position in using the latest technologies to enhance patient care. Since instituting the wCareMed solution this 175-bed hospital in Beloit, Wisconsin has experienced a dramatic decline in medication errors in their Family Care Center and, as a result, is expanding the use of this system throughout the hospital.

Organization:	
Application:	Bar code medication administration
Solution:	Care Fusion's wCareMed software on a Symbol PPT 2800 mobile computer (with integrated bar code reader)
Environment:	Family Care Center (expanding throughout the hospital in 2004)
Key Benefits:	<ul style="list-style-type: none"> › Fewer medication administration errors › Immediate access to and dissemination of critical patient information › More time for bedside care › Flexibility to use system for other tasks, including expanded patient documentation
Partner:	

The Challenge: Improve Medication Administration while Keeping the Nurse at the Bedside

At Beloit Memorial, as in hospitals throughout the country, their mission is to offer the highest quality care and the utmost in patient safety. After medication administration was identified as a key area where improvements could enhance safety, a task force was formed to study information technology solutions for reducing medical errors. In 2002, Beloit Memorial Hospital began its search for a technology-based system that would meet their primary goals of improving patient safety and ensuring positive patient identification. The department selected to pilot this technology was Beloit's Family Care Center, their OB/GYN/delivery ward, due to the manageable volume of medications administered there. In searching for the optimal solution for their medication administration needs, the hospital had a number of key goals:

- › a medication administration system that reduced the likelihood of errors
- › an interactive and immediate method of positive patient identification
- › a mobile solution that enabled nurses to access critical information from the bedside
- › a rugged device that was sealed from the hospital elements and able to endure drops and tumbles without sacrificing critical data
- › hardware that could be used to assist in a wide variety of tasks beyond medication administration
- › a solution that would not increase (and would ideally decrease) nurse workloads

Administering medication to patients is, traditionally, a cumbersome process that entails checking kardex systems at a centralized nursing station, transcribing information by hand, comparing this against the patient chart, visually checking the wristband to confirm patient identity, and finally transcribing patient information back into the kardex system. By its nature, this process takes caregivers away from their patients in order to perform outdated administrative processes. Improving productivity by replacing these inefficient tasks with a time-saving, bedside approach is increasingly desirable in light of the long-term, nationwide shortage of nurses. The traditional medication administration system is also relatively prone to human error, which occasionally results in misidentification of patients and delivery of incorrect medications and/or dosages. In 1993 medication errors alone contributed to an estimated 7,000 deaths¹.

The only solution Beloit Memorial found to offer complete mobility and a clear path to enhance a wide variety of additional tasks (such as bar code specimen and blood collection) was the winning combination of wCareMed software from Care Fusion on the durable Symbol mobile PDA.

The Solution: Symbol Wireless Mobile Computers with Built-in Bar Code Scanner Running wCareMed Software

In September of 2003, Beloit Memorial's Family Care Center began using wCareMed to ensure the accuracy of medication administration including allergy warnings, safety alerts and complex IVs. The new solution equipped approximately 60 nurses with a lightweight handheld computer with integrated bar code reader and a tethered stylus for data entry. Caregivers and support staff were trained in the system and the hospital reported a relatively easy transition without any unscheduled downtime related to implementation.



Beloit nurses welcomed the simplicity of this completely mobile solution. With the Symbol mobile PDA in hand, they merely scanned the wristband to confirm the patient's identity; reviewed the list of medications ordered that automatically displays on the handheld; and scanned the medication dispenser to reconfirm the medication, dosage and schedule — and to automatically record the medication as administered.



Implementation included an interface to an upgraded Meditech system for optimal integration with patient records. Patient information entered or scanned into the Symbol mobile PDA is immediately sent to a secure server over a wireless local area network from where it can be accessed by caregivers throughout the facility. As departments throughout the Beloit Memorial adopt the wCareMed solution, along with several other recently ordered Care Fusion applications, real-time access to comprehensive patient information will enable Beloit's caregivers to provide superior, on-the-spot patient care with greater ease than ever before possible.

The Results: A Dramatic Decrease in Medication Errors

The driving force in Beloit Memorial Hospital's decision to implement the wCareMed/ Symbol solution was their patient safety initiative and therefore the most important determining factor in evaluating how successful the system has been is its impact on medication errors. "We have been up and running for several months and the early data shows that we are meeting our goals and have dramatically decreased medication errors," notes Doris Mulder, RN, Vice President of Nursing at Beloit Memorial Hospital. After the first four months of use, as compared to the prior eight months, the hospital reported a decrease of 67% in the average monthly medication administration error rate. (The types of medication errors that had been reported in 2003 by the Family Care Center included wrong dosage, doses missed, incorrectly labeled medications, incorrectly identified allergies, and medications hung at the wrong time.)

Monthly Medication Administration Errors Reported by the Family Care Center at Beloit Memorial Hospital Prior to and Following the Implementation of the wCareMed™ Bar Code Solution

	Time Period	No. Mos.	Medication Errors Reported	Average Monthly Error Rate
Before Bar Code Use	Jan. - Aug. 2003	8	18	2.25
After Bar Code Use	Sept. - Dec. 2003	4	3	.75
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It should be noted that this error reduction was experienced during the first months of usage when caregivers may be experiencing a period of adjustment and therefore the actual long-term error-rate reduction may prove to be higher.

Based on early qualitative feedback, nurses as well as patients have been pleased that the hospital is now utilizing bar code-enabled technology as a patient safety precaution. The hospital is beginning to experience a host of secondary benefits as a result of this new technology including:

- Increased productivity resulting from bar code implementation and the use of an electronic Medication Administration Record
- Increased patient satisfaction
- Increased employee satisfaction, which is expected to help attract and retain staff
- Cost savings resulting from implementation of bar code systems in areas such as materials management
- Reduced time to generate reports required by JCAHO and other regulatory bodies as well as internal reporting and documentation

Further evidence of the experienced and anticipated benefits of the wCareMed/Symbol mobile PDA solution is the ongoing proliferation of these and additional Care Fusion/Symbol Technologies solutions within Beloit Memorial Hospital. "We are currently planning to apply this same technology to lab collections, radiology exams, blood administration, and dialysis. Our overall goal is to increase safety for our patients to the highest possible level," says Mulder. By mid-February 2004, the same system should be operational in the Oncology Special Care Unit, which administers a very high volume of medications. Beloit Memorial expects to institute wCareMed in all inpatient units by the end of 2004.

Partner Profile: Care Fusion

Care Fusion is a leading provider of wireless mobile clinical solutions with a growing suite of medical point-of-care solutions including wCareMed™, wCareCollect™ and Trade,;

wCareAssist™ and Trade,; wBloodCare™, wCareView™ and wCareCapture™. Founded in 2001 and based in McLean, Virginia, Care Fusion is comprised of a seasoned team of professionals including registered nurses and technology experts. Its customers range from small community hospitals to large medical centers to Veterans Administration hospitals throughout the country.

To learn more about Care Fusion, visit .

To learn more about Symbol's rugged mobile handhelds used in healthcare today, please visit us at .

1. Bates, D.; Spell, N.; Cullen, D.; The Cost of Adverse Drug Events in Hospitalized Patients, JAMA, 227: 307-311, 1997

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