

## TECHNOLOGY

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### Collaboration Is Key as Bar Coding Expands

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More and more hospitals and facilities are using bar coding to improve the safety of a variety of care processes and ensure the right individual receives the right treatment. Last month, *Pharmacy Practice News* highlighted how bar-coded medication verification can be extended to protect the most vulnerable patients in the hospital, those in operating rooms, pediatric units and emergency departments (“Protecting the Most Vulnerable Through Bar Coding”). This month, the focus is on helping pharmacists prepare to collaborate in cross-organizational teams and implement bar coding in additional care settings.

#### **Culture Change a Challenge**

When many pharmacy leaders plan to implement bar-code point-of-care (BPOC), they assume that ensuring medications are packaged with bar codes will be the most difficult task. After the fact, many agree that the trickiest part was collaborating with other disciplines and to make the system work. “Culture change is the most commonly overlooked, yet critical piece of implementing BPOC systems that greatly affect users and clinical workflows,” said Robert Stein, PharmD, of MemorialCare Medical Centers, Long Beach, Calif.

A BPOC project often spurs the formation of a cross-organizational team that transforms process during the initial implementation and stays together afterward to analyze system-generated data. Pharmacists play leading roles in these teams, which can then be called on when the hospital uses bar code-enabled identification to improve the safety of blood transfusion verification and lab specimen collection.

#### **Blood Administration Safety**

Giving a patient the wrong blood is a “never-event,” according to the National Quality Forum, a nonprofit membership organization in Washington, D.C., created to develop and implement a national strategy for health care quality measurement and reporting. Several payers and state Medicaid programs have joined the Centers for Medicare and Medicaid Services in refusing to pay for treatment resulting from these never-events.

The motivation to adopt bar code-enabled transfusion verification applications may increase in the near future: The Joint Commission’s proposed *2009 National Patient Safety Goals* include a provision for blood safety. Requirement 1C of the document, states: “Eliminate transfusion errors related to patient misidentification.” According to the document, this requirement may be met by “using either a two-person verification process or an automated identification technology such as bar coding.”

The International Society for Blood Transfusion (ISBT), a scientific society of professionals involved in blood transfusion and transfusion medicine, has been optimizing standards for bar coding blood products since 1994. Publication ISBT 128, which takes effect next month, outlines information standards for blood banking, including bar coding for transfer of information encoded on blood bag labels. Richard Kriozere, chief executive officer of Digi-Trax Corporation, a vendor of automated identification and data collection products, noted that “ISBT 128 compliance is required for American Association of Blood Banks accreditation. Even for those blood centers and transfusion services that aren’t accredited, it serves as a de facto standard.”

Applications that read bar codes on blood bags address several problems associated with manual blood administration, such as locating a second nurse to cosign for a blood transfusion or requiring nurses to hand

check the blood compatibility document, the donor label or the patient's wristband.

Several vendors are marketing transfusion verification applications that have received FDA 510(k) clearance. In general, these bedside applications provide patient identification by scanning the caregiver, patient and blood bag. These applications ensure a positive match among patient, unit number and ABO/Rh compatibility. They also record all data related to the transfusion, including vital signs and reactions.

Using BPOC in blood administration presents fewer hurdles than medication administration, which lacks standardization. Mr. Kriozere reports that "in comparison, blood management data standards are more internationally accepted than for medications. Global harmonization efforts are well under way, and blood bank software vendors have all incorporated ISBT 128."

### **Specimen Collection Accuracy**

Laboratory specimen errors cause treatment delays and inaccurate results, and they can increase the length of stay. Inaccurate or incomplete identification forces care providers to redraw samples, causing patient discomfort and increasing labor and material costs. BPOC systems help resolve several challenges. In a manual bedside process, phlebotomists or nurses typically take to patients labels that have been printed elsewhere, such as in the lab. Producing the labels in advance increases the potential for confusion or mismatch at the bedside. Caregivers do not have the ability to cancel requests or to add additional tests or tubes as indicated.

Several vendors offer applications that produce labels at the point of specimen collection. This automated process uses portable printers to ensure that samples are drawn with the patient's identity immediately after being drawn. Functionality varies, but typically a caregiver scans bar codes to identify himself or herself and the patient. From there the caregiver can select collections to be performed, cancel or add tests as appropriate and print the label as the sample is collected.

This automation reduces costs by eliminating the need for redraws in cases in which the tube is mislabeled. According to Patrick O'Sullivan, MS, laboratory director at Florida Hospital, Orlando, "for the last 12 months, we have experienced zero labeling errors when using automated specimen collection, as measured by incident reports. Additionally, since phlebotomists receive instant notification of new orders on their handheld, they don't need to go back and forth to the lab. Most of our instrumentation requires a bar-coded label, and the most accurate and efficient place to do that is at the bedside."

### **Safe as Mother's Milk**

A few vendors have developed BPOC applications to help avoid mismatches between infants and their mothers' expressed milk. Specialized applications allow caregivers to print collection labels and orders, and to document when feedings begin and end. Several checks ensure that the milk has been prepared according to the order, has not expired and is the oldest expressed milk available for the patient.

Users can modify medication administration applications to provide milk verification, but this requires cooperation from the pharmacy. Patient-specific labels may be printed in the pharmacy, then sent to the mother and affixed to containers when the milk is expressed. The pharmacy configures a "dummy" medication for "breast milk" in the formulary and prints a label with a composite of patient ID and order ID. The nurse then scans the label at the bedside to ensure the label is being delivered to the right patient. Another popular application is point-of-care glucose testing that associates the patient's identifier on a wristband with a glucometer's sample identifier. Most glucometers have built-in bar-code scanning capabilities. Nursing, pharmacy, admitting and information technology (IT) teams can work together to apply bar codes to patient wristbands.

### **A Multipronged Approach**

A visionary BPOC strategy involves shared infrastructure and spreads the investment over several disparate positive patient identification (PPID) initiatives. Shared infrastructure includes bar-code readers, mobile computers, wireless networks, printers and materials.

Consolidating applications on one handheld device can improve workflow. For example, when medication administration and transfusion applications are integrated, documentation for both activities becomes accessible from the same handheld device. Pharmacy can view transfusion reactions and medications administered to prevent the reactions.

Plans to improve safety must mesh with real-world budgetary constraints and IT systems plans, said Mark Neuenschwander, co-founder of the TerraPharma Project. The project operates The unSUMMIT for Bedside Barcoding, an annual meeting dedicated to the exchange of peer-to-peer BPOC expertise. "Bar

coding is no small undertaking. With medication administration being the most expensive and demanding component of an overarching bar-coding strategy, other simpler and less expensive BPOC applications might be considered first.”

Hospitals that itemize BPOC for medication administration on project plans that extend several years into the future may consider implementing specimen or transfusion applications in the interim. In fact, pharmacy leaders should actively plan on collaborating with their lab counterparts, who often see bar-coding projects as driven by pharmacy.

In any case, the trend will be to implement multiple PPID applications. Elinore Craig, manager of sales support operations for Sunquest Information Systems in Tucson, Ariz., sees “a shift in buying patterns, where hospitals are looking for both medication and specimen applications from the onset.” She noted that “early adopters of specimen collection typically used a centralized blood collection model, with phlebotomists dispatched from the lab to perform blood draws. Since the number of users was comparatively low and most of the impact was contained to one department, projects were relatively easier to begin and control.”

In this multipronged world, even if a hospital is currently contemplating only an application for medication administration, it should be assumed that other applications will be added later. Allen Flynn, PharmD, pharmacy informatics coordinator for the St. Joseph Mercy Health System in Michigan, advises that pharmacy leaders “shouldn’t be too myopic in focusing only on medication administration when considering a bar-coding technology platform, because of the impact that other uses of BPOC will have on mobile computer selection, scanners and printers and workflow dynamics at the point of care.”

Wristbands present an opportunity for bar coding that works across several applications. Adopting Health Industry Business Communications Council standards and cooperating with the software vendors involved can enhance efforts toward a common wristband.

Although many hospitals have applied bar codes to wristbands well in advance of any application that utilizes them, Mr. Neuenschwander recommends “that hospitals wait until shortly before they are ready to go live with a meaningful scanning application. The longer scanning is delayed after the wristbands are bar coded, the more likely the BPOC initiative will not be taken seriously—like Web sites that are forever under construction. Having bar codes with nothing to read them is akin to one hand clapping.”

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