



IV Room Barcoding and Improved Pharmacy Productivity

DoseEdge Pharmacy Workflow Manager brings big changes at Billings Clinic in Montana

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Kyle Townsend, Pharm D, BCPS,
Clinical Manager of Pharmacy Services

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OVERVIEW

Located in Billings, Montana, Billings Clinic serves patients in a catchment area covering 121,000 square miles of central and eastern Montana and northern Wyoming.

The 272-bed hospital and Level II Trauma Center strives to be a leader in providing the best clinical quality and patient safety. A not-for-profit healthcare organization, Billings Clinic has earned national recognition for its commitment to excellence, including Montana and Wyoming's only Magnet status for nursing excellence and the Beacon Award for Critical Care Excellence in the ICU.

Billings Clinic embraces technology to benefit patients. Through shared electronic medical records, primary care physicians and specialists gain insight into their patients' histories. The organization is always on the lookout for new ways to use technology.

CHALLENGE

With patient safety as their number-one objective, Billings Clinic wanted to close the loop on bedside barcode scanning. "Near the beginning of the medication-use process is a high-risk area without barcode scanning as a standard of care - the IV room," explained Kyle Townsend, Pharm D, BCPS, clinical manager of pharmacy services. "If we're barcoding everywhere else, why are we not barcoding in one of the highest risk areas? Even utilizing a pharmacist double-check is not foolproof."

There were other issues in the Billings Clinic IV room that led to Townsend's interest in seeking a solution. First, the process of manually sorting dose labels is error prone – IV doses could be sent to multiple printers, "blasted" in large print batches, or doses could be lost. Their process flow led to frequent movement between their IV room and ante room; increasing gown and glove costs and increasing the opportunity for contamination and sterility issues. Finally, frequent work interruptions required technicians to multi-task, increasing the risk of errors. Technicians also had a significant amount of idle time as they waited for prepared doses to be checked by the centralized pharmacist.

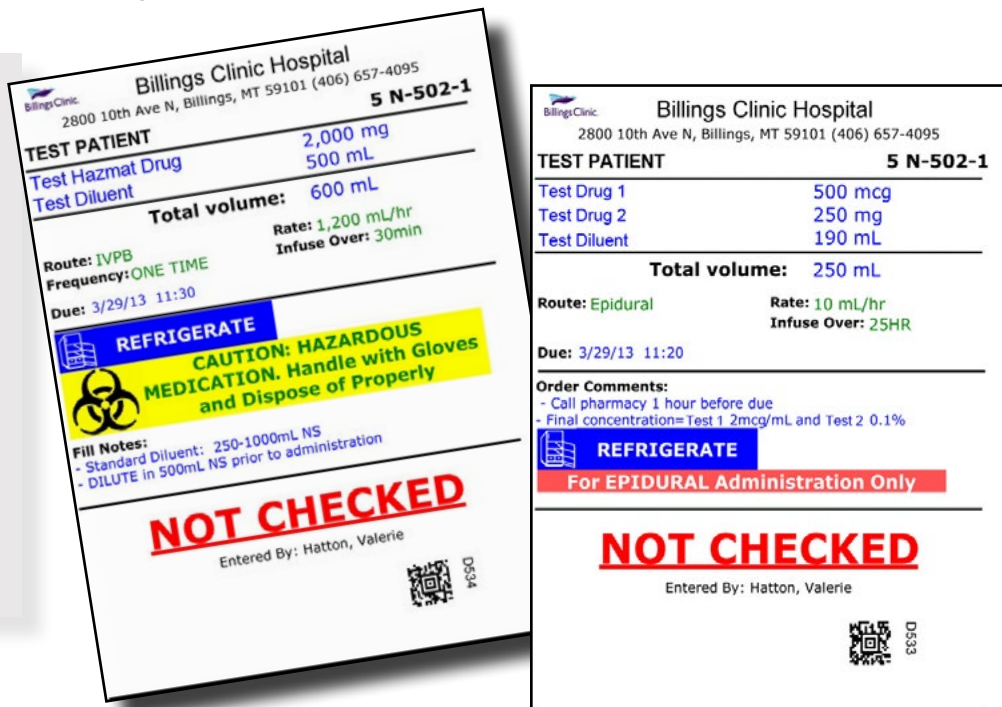
Billings also identified a number of "risk points" for safe dose preparation, including varying levels of technician training, capability and lack of instructions for ensuring process control in dose preparation.

As an organization with a history of using technology to benefit patients, Billings Clinic saw the **DoseEdge** Pharmacy Workflow Manager as a means to help them improve dose preparation safety by standardizing and streamlining compounding workflow.

Medication barcode scanning, beyond-use dating (BUD) and digital images that document the preparation process enable the Billings Clinic pharmacy to standardize and improve their workflow. Additionally, the software's "ScanEvents" feature provides tracking throughout the lifecycle of the dose – from creation to discard (including the dose storage location on the patient floor).

For Billings Clinic, one of the most beneficial features of the **DoseEdge** System was the ability to customize labels with color and symbology. By incorporating symbols and colors into their printed labels, they could eliminate the extra step of placing auxiliary labels on doses, while still ensuring that doses contained all the pertinent information and warnings. The pharmacy developed special icons to reinforce messages that were previously conveyed only by color. In doing so, they've sought to make it easier for caregivers to identify and understand the warnings. For example, when refrigeration is required, a trigger maintained on the medication in the clinical information system allows the software to automatically produce a bright blue label with a refrigerator icon.

Customized Labels



From a patient safety and cost savings standpoint, the standardized colored labels are extremely beneficial to the Billings Clinic pharmacy. Now the pharmacy staff cannot inadvertently forget to place an auxiliary label on the dose, and anyone who comes in contact with the dose will see the warnings. This process is designed to reduce the risk that the patient will receive a mishandled dose, and can save the pharmacy processing time and the cost of having to remake a dose that was not properly handled, which can range from a couple dollars to several thousand dollars each.

IMPLEMENTATION

Gaining acceptance for the **DoseEdge** System from the pharmacy staff was extremely important to Townsend. Prior to taking the system live, the team evaluated their IV room process and workflow and compared it to the steps proposed through the software. They then customized the dose preparation instructions within the **DoseEdge** System to make the flow easier to follow and more natural for their technicians. “We customized actions to combine steps for the technicians. The fewer instructions the technicians see on their screen, the easier it is for them to accept the technology,” explained Valerie Hatton, systems analyst and certified pharmacy technician. This customization not only standardized their processes across technicians and shifts, but resulted in greater compliance to procedures.

Hatton estimates that technicians need to produce 20 to 40 doses with the new system before they begin to feel comfortable. Though Billings Clinic has passed the hurdle of getting the staff to adopt the process, Townsend and Hatton continuously work to reinforce the overall benefits of pharmacy workflow management. They actively accept feedback from the technicians and work to implement changes and updates to the process based on their input.

According to the team, having a test server to beta test ideas and troubleshoot issues was one of the keys to a successful implementation. Utilizing this tool to experiment with new features, processes, software upgrades and training played an integral part in reducing staff uncertainty and improving productivity.

RESULTS

With the implementation of the **DoseEdge** System, Billings Clinic moved from an assembly-line system to a just-in-time system for dose preparation. Since the Status Board identifies first and STAT doses, the pharmacy can prepare doses based on their priority and due time. Utilizing the Wait/Hold queue allows the pharmacy to identify orders with a short expiration time that should be made later, while the Discontinued Dose Function automatically removes unneeded doses from the queue. Pharmacists can check dose images with no need to be physically present during compounding, allowing the pharmacist to be out on the hospital floor with the other clinicians performing clinical rounds. And, the system promotes parallel processes, allowing pharmacy staff to verify and sort doses at the same time as other doses are being prepared.

Of course, the efficiency that the pharmacy has experienced is important, but nothing beats the Billings Clinic Pharmacy's commitment to improving standard of care for their patients. “**DoseEdge** System has definitely improved our overall workflow. Although it does not prevent every error and still relies on human interaction, we can now have confidence that our doses are compounded correctly,” said Townsend.

Hatton added, “It has definitely improved our workflow across the board. It’s so easy for a technician to get wrapped up in the day – to just move something along.” She went on to say, “Now with the **DoseEdge** System, we can use a different concentration – and the software will adjust the volume required. If you try to use the incorrect ingredient, barcode validation will prevent it. It stops these potential errors from ever getting to the pharmacist.”

Though nothing is 100-percent foolproof, Townsend credits the **DoseEdge** System with helping them identify mistakes before they get out of the pharmacy. Thanks to the tools and the data that are available through the software, he now has visibility into potential errors, the quantity of doses that are compounded in the hospital daily, and much more. Best of all, he’s able to access this information when and where he needs it – without physically being in the IV room.

Having experienced the collective benefits of the **DoseEdge** System, Townsend believes, “Workflow management provides safeguards that do not exist with traditional compounding methods, so it helps pharmacies minimize compounding errors while, at the same time, enhancing productivity.”