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ISMP Institute for Safe Medication Practices
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Acute Care
ISMP Medication Safety Alert!®
Educating the Healthcare Community About Safe Medication Practices

Raising the bar—zoning in on barcode medication administration practices

Problem: Barcode medication administration (BCMA) systems are valuable tools that reduce medication administration errors, but only when practitioners use them correctly. Staff must know how to properly use the system, and procedures must include an escalation process for barcode scanning failures. Otherwise, practitioners may employ workarounds when a barcode is hidden or damaged, difficult to scan, or missing; when a medication has not yet been added to the system(s); or when practitioners bypass an alert that they do not understand.

In our March 21, 2024 article, Implement Strategies to Prevent Persistent Medication Errors and Hazards: 2024, we discussed how BCMA workarounds may indicate that the devices are not configured to support safe clinical workflow, that the staff have received insufficient education related to appropriate BCMA use, or lack knowledge about the risks involved and actual organizational errors that have occurred when workarounds are employed.

Examples of unsafe BCMA practices include administering a medication even though the barcode will not scan or scanning after medication administration with or without back charting. Proxy scanning, scanning barcodes from other sources rather than the medication being administered, also poses a risk to patients. This is when practitioners scan the barcode on an already hanging empty infusion bag, a barcode not affixed to the product that practitioners are administering, or scan a patient label or copy of the patient identification (ID) band rather than the band on the patient's extremity. These practices can increase the risk of patient harm due to a medication error and/or drug diversion. The following represent examples of BCMA-related workarounds reported to ISMP.

A prescriber modified a patient's norepinephrine infusion to a higher concentration due to fluid restriction. A nurse went to replace the infusion bag and inadvertently scanned the barcode on the bag that was already infusing instead of the higher concentration bag, and bypassed an alert, resulting in an overdose.

A wrong patient medication error occurred. When the event was formally reviewed, it was determined that the nurse would often print a copy of patient ID armbands for patients in isolation. The nurse would then scan the copy of the patient's armband and medications outside the patient's room. On this day, the nurse subsequently walked into the wrong patient's room and administered the medications to the wrong patient.

During routine monitoring, a nurse manager noted that one nurse had a higher number of medication barcode bypasses than their peers. When the nurse manager met with the nurse to understand barriers, they identified that there was a lack of barcode scanners available in each patient bay. As a result, leadership purchased additional scanners to facilitate BCMA.

The hospital's diversion monitoring software identified that a nurse's documentation habits were suspicious. Further review of the documentation issues revealed that the nurse was routinely back charting controlled substance administration. Due to this proactive monitoring, the organization's interdisciplinary diversion response committee was able to promptly investigate.

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Titratable infusions call for an interdisciplinary approach. An organization reported a recent Joint Commission finding related to incorrect documentation of titratable medication infusions. The organization initially approached this by focusing solely on the perspective of the nurse—how do we get nurses to better document titration? However, organizations must understand this complex process and the need for unpacking latent conditions across the medication-use process, which leads to sharp end failures, like with documentation.

The challenge is not unique to this organization. Issues with titration orders continue to be a common Joint Commission finding, such as:

- Medications not administered based on the assessed level of condition
- Titrated medications not started and/or adjusted at prescribed rates
- Titrated medications not adjusted to meet patients' targeted clinical end points

Titratable infusions are often high-alert medications that bear a heightened risk of causing significant patient harm if used in error.

Organizations should use an interdisciplinary approach to evaluate the process of prescribing, verifying, administering, documenting, and monitoring titratable infusions. Ensure your titration orders are complete and easy for nurses to follow. Instead of starting with improving nurse documentation, examine the titration orders themselves with an interdisciplinary team. Ensure order sets include specific elements for titration such as the medication name, route, a starting rate (e.g., mg/minute), incremental units to increase or decrease the rate, frequency for incremental dose rate change (e.g., every 5 minutes), maximum dose rate, and an objective clinical endpoint (e.g., Richmond

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Casting a Wider Net on BCMA Monitoring

Although workarounds are commonly reported to us, some organizations lack a proactive plan to monitor for, understand, and mitigate these at-risk behaviors. One health system, Nebraska Medicine, was able to address common workarounds related to BCMA. The Nebraska Medicine network is comprised of two hospitals that have more than 800 licensed beds with multiple specialties including trauma, transplant, oncology, and pediatric/neonatal populations. The health system also includes multiple infusion centers and ambulatory surgical sites.

Although Nebraska Medicine's data showed that nurses were scanning medication barcodes 97% of the time, the organization wanted to complete a deeper dive into the remaining 3% of medications that nurses were not scanning. They also wanted to know if the 97% scanning compliance represented safe practices with scanning, or if workarounds were occurring that could not be gleaned from the data alone. Below is an overview of how Nebraska Medicine implemented BCMA compliance monitoring along with corresponding safeguards.

Safe Practice Recommendations: We encourage organizations to apply the BCMA-related lessons learned shared by Nebraska Medicine by considering the following recommendations:

Create a BCMA dashboard. Nebraska Medicine created a dashboard that contains BCMA data by nursing unit. Custom groups were built so that nurse leaders have easy access to their areas of direct report. Data can also be determined by the end user to identify outliers for further investigation. A dashboard enhances data visibility, allowing nurse leaders to visually identify scanning trends, prompt follow-up discussions, and develop an action plan.

Review top drugs and users. Nebraska Medicine reviews the top 10 medications not scanned each month. They investigate whether there is a barcode issue (e.g., new medication barcodes not yet in the system, missing or difficult to scan barcodes) or system issue (e.g., unavailability of scanners, workflow issue). They also identify the top users who bypassed scanning, so that nurse leaders can follow up with individuals and understand barriers to scanning. This data is reviewed at their monthly medication management committee (MMC), cochaired by the system's medication safety team. The MMC reports to the pharmacy and therapeutics committee.

Observe administration at bedside. Establish standard BCMA workflows for particular challenging situations (e.g., patients in isolation, neonates), and ensure patient ID bands are directly attached to patients. To better understand bedside practices, the medication safety team at Nebraska Medicine routinely performs walkarounds to directly observe medication administration and scanning practices. Asking nurses which medications they routinely have issues scanning can help with troubleshooting issues on the spot. During one observation, a nurse attempted to scan a normal saline flush syringe to clear the medications from an intravenous (IV) line, but there was no order on the medication administration record (MAR). The observer was able to show the nurse how to access the flush order panel so the nurse could order the flush per the organizational protocol. Once ordered and verified by pharmacy, the nurse was able to scan saline flushes. Regularly observe BCMA practices within your organization to help identify and address potential workflow issues to prevent workarounds.

Understand MAR charting corrections. Although nurses may occasionally need to correct errors in charting, Nebraska Medicine emphasizes that this should be rare, and monitoring should ensure it does not become a habitual workaround. Nebraska Medicine completes an audit every other month, where the users who most commonly correct their charting are identified and are called upon to demonstrate their understanding of the workflow. Understanding why the documentation needs to be corrected can help identify workflows that need enhancement or revision. Medications that receive the highest number of corrections are also reviewed to see if there are barcode-related issues that need to be resolved.

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Agitation-Sedation Scale [RASS] score) for the infusion. Also, review The Joint Commission Standards FAQs regarding the use of block charting, an option to document multiple dose/rate changes made to an infusion over a period of time. Block charting may be used when rapid titration of medication is necessary in specific, urgent/emergent situations defined in an organization's policy. Nurse leaders and medication safety specialists should complete walkarounds to evaluate current practices and to ensure orders align with safe care standards. In addition, regularly review the documentation of monitoring parameters. Gather feedback from end users on issues and workarounds related to titratable infusions and develop mitigation strategies. If not already done, plan for bidirectional (i.e., auto-programming and auto-documentation) smart infusion pump interoperability with the electronic health record (EHR). In addition, advancements in interoperability between systems and simplifying documentation processes for nurses may ensure accuracy and reliability by "making it easy to do the right thing." Currently, much of this relies on the nurse's memory. ISMP urges vendors to pursue innovations for integrating the EHR with infusion pumps and vital signs monitors.

HIGH-ALERT

Include implantable medication pumps in patients' medication histories. A patient presented to the emergency department (ED) with abdominal pain, severe constipation, and somnolence. The pharmacist completing the medication history interviewed the patient's spouse and reviewed the patient's clinic notes and prescription history. The pharmacist documented that the patient was taking several medications, including insulin via an external pump. The prescriber placed an order to discontinue the patient's insulin pump upon admission due to the patient's somnolence and inability to self-manage the pump.

On the second day of admission, the patient's glucose became critically low at 32 mg/dL. Despite receiving an intravenous (IV) dextrose 50% injection, the patient's somnolence worsened, prompting the nurse to call a rapid response. The prescriber ordered IV naloxone, and after administration, the patient became alert. According to the medication

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Oversight of armband printing. A high volume of patient ID armband printing can be an example of at-risk behavior that may stem from an individual's choice or the culture of a nursing unit. Nebraska Medicine completes a review of an armband printing report, used to identify outliers. The report can be generated by department or user, so it is easy to identify where armbands are being reprinted. If an individual nurse is printing armbands more often than their peers, the medication safety team reaches out to the unit's nurse leader to investigate why. It is important to understand the workflow around printing copies of patient armbands. Nebraska Medicine found that in some cases, nurses needed to print armbands for direct admissions or for replacement. However, if an individual user has a high volume of printing, this could be an early indicator of a workaround that should be addressed.

Monitor for drug diversion. If a BCMA workaround seems to be related to drug diversion, ensure there is a process in place for escalation, such as reporting concerns to your organization's Controlled Substance Diversion Prevention Program or interdisciplinary diversion response committee/team. Consider implementation of software that can integrate with the electronic health record and automated dispensing cabinets to help flag suspicious activity.

Escalate the issues. Organizations must have a process for escalating issues related to barcode scanning. When issues occur, encourage staff to consider using a peer as a double check to understand why the barcode scanning failed. Ensure there is a clear process for how to handle a barcode scanning issue prior to administering the medication. At Nebraska Medicine, a practitioner fills out a Medication Troubleshooting Form and sends it to pharmacy. The form is easily accessible on the organization's intranet via a Nursing Resources page and via the Drug Information page, which is available via both the intranet and through a direct link from the MAR. Pharmacy then follows up and provides feedback to the user.

Report errors and share learnings. Educate staff on when and how to report BCMA-related workflow issues, close calls, and errors that have reached a patient. Discuss concerns and findings with pharmacy and nurse leadership to foster a culture of safety. Use internally and externally published events related to incorrect BCMA utilization to educate staff to further highlight the importance of BCMA. At Nebraska Medicine, time is devoted at each MMC meeting to share external learnings (e.g., ISMP newsletters) and internal events reported via their event reporting software.

Assume positive intent. It is important to remember that BCMA-related workarounds are typically not an indicator of intentional bad practice. Situations like proxy scanning can occur as an at-risk behavior. Staff may unknowingly create at-risk situations to increase workflow efficiency. Organizations should take the time to discuss situations where practitioners have bypassed barcode scanning to ensure they truly understand the root cause(s). Promote optimal workflow and provide opportunities for feedback from end users. Taking the time to directly observe administration and promote safe practices, along with comprehensive reporting with data review, can help organizations have a proactive approach to BCMA-related error prevention.

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administration record (MAR), the patient was last given 5 mg of oral oxy**CODONE** 13 hours prior. So, at that point, the nurse completed a physical assessment and identified that the patient had an intrathecal (implanted) pump infusing fenta**NYL** at 31.2 mcg/hour and **BUP**ivacaine at 0.31 mg/hour, with the ability to self-bolus 40 mcg fenta**NYL** and 0.4 mg **BUP**ivacaine up to 5 times/day with a 2-hour lockout. Unbeknownst to the care team, the patient's husband had been giving her boluses via a Bluetooth device.

While they had not specified that the patient had an intrathecal pump, the patient and her husband had previously mentioned she had used a "pain stimulator." The practitioners assumed that they were referring to a transcutaneous electrical nerve stimulation (TENS) machine, a small external device that is used to deliver low-voltage electrical currents near nerves to block or change the perception of pain. However, the practitioners did not ask clarifying questions to confirm this was the type of device the patient referred to as a "pain stimulator."

The ISMP Targeted Medication Safety Best Practices for Hospitals, Best Practice 21, calls for obtaining the most accurate medication list possible upon admission. This includes not only asking about prescription and over-the-counter medications but also asking about non-enteral medications such as injections and infusions, including those administered via implanted pumps. Organizations should add scripting to the medication history process to specifically prompt about implantable pumps and other devices. These devices may not be visible upon physical exam. Understand that patients and family members may use different terminology or descriptions for these devices other than what healthcare practitioners might expect. Always ask clarifying questions and physically assess patients for devices upon admission and during transitions of care.

Survey on IV push medications

Med Safety Board, an ISMP company, is conducting a short survey to reassess current practices and safety risks. Please take 5-10 minutes to complete the survey by **October 15, 2025**. Thank you!

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