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ISMP

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

Mix-ups between epidural analgesia and IV antibiotics in labor and delivery units continue to cause harm

Problem: Within weeks of each other, two hospitals have reported mix-ups between epidural analgesia and intravenous (IV) antibiotics in labor and delivery (L&D) units. These mix-ups mimic previously published events and have similar contributing factors including look-alike infusion bags, overlooked warning labels, and a point-of-care barcode medication administration (BCMA) system that was not fully engaged. However, unlike the prior events, drug shortages also played a role in the most recent errors.

Recent Errors

Epidural fentaNYL with bupivacaine administered IV. An obstetrician prescribed IV penicillin G 5 million units for a woman in labor along with an order to "prepare the patient for an epidural." Although the patient was experiencing few contractions, the L&D nurse obtained infusion bags of IV penicillin G and epidural fenta**NYL** (2 mcg/mL) with bupivacaine (0.125%) from the automated dispensing cabinet (ADC) and placed them in the patient's room on the counter, with the pharmacy labels face down.

The pharmacy label was on the same side as the manufacturer's primary label. A red "Epidural Use Only" warning label was on the front of the fenta**NYL** with bupivacaine bag, but from the back, the bag looked nearly identical to the penicillin G bag. The epidural tubing was stored in the patient's room, but it was not near the bag of fenta**NYL** with bupivacaine. Both infusions had been prepared by the pharmacy in 50 mL-sized bags of 0.9% sodium chloride, although the penicillin G bag contained a total of 50 mL, and the fenta**NYL** with bupivacaine bag contained a total of 100 mL, so it looked a bit overfilled.

Prior to the event, the pharmacy had been purchasing larger 100 mL-sized bags of epidural fenta**NYL** with bupivacaine from an outsourcer, which had a bright yellow label. However, due to the recent drug shortage of both bupivacaine and 100 mL bags of 0.9% sodium chloride, the pharmacy had been compounding the epidural solution using bupivacaine vials taken from epidural and patient-controlled analgesia kits. The bupivacaine and fenta**NYL** were mixed in a 50 mL bag of 0.9% sodium chloride, and then additional diluent was added to reach a total volume of 100 mL. The pharmacy applied its standard white label to the fenta**NYL** with bupivacaine bags, similar to other pharmacy-prepared infusions, along with a red epidural auxiliary warning label. However, L&D nurses had not been informed about the changes in bag size and label colors. So, at the time of the event, they expected epidural infusions to be in 100 mL-sized bags with a yellow label.

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SAFETY briefs

FDA draft guidance clarifies requirements for barcodes and expiration dates. On September 20, the US Food and Drug Administration (FDA) released a draft guidance for industry that clarifies the requirements for linear and 2D data matrix barcodes and the format for expiration dates and lot numbers (www.ismp.org/ext/103).

As of November 27, 2018, the Drug Supply Chain Security Act (DSCSA) requires manufacturers to have a product identifier on the smallest individual saleable unit for certain prescription drug products. The product identifier is a standardized graphic that includes the national drug code (NDC), serial number, lot number, and expiration date in human- and machine-readable (2D data matrix barcode) formats. A linear barcode with the NDC is still required on the immediate container of most prescription and over-the-counter products dispensed pursuant to an order and commonly used in hospitals. However, the guidance allows industry to voluntarily place the 2D data matrix barcode on all levels of packaging, including the immediate container (e.g., unit dose package).

Since the 2D data matrix barcode is smaller than a linear barcode and contains the NDC, lot number, and expiration date, we encourage industry to include it on immediate prescription product containers if space permits, including oral unit dose packages, prefilled syringes, and IV bags. We hope readers will also encourage manufacturers to do this.

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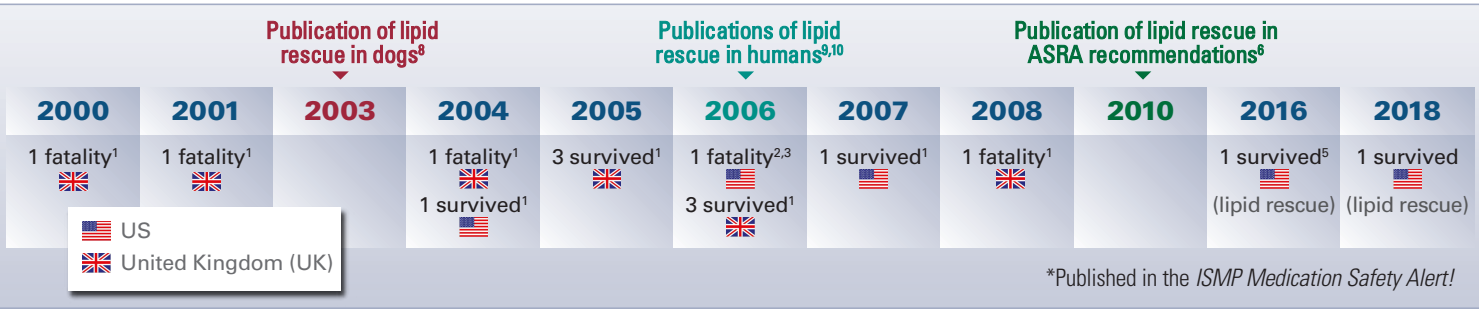
Figure 1. Timeline of IV administration of bupivacaine events in the US and UK between 2000 and 2018* and corresponding lipid rescue publications



*Published in the *ISMP Medication Safety Alert!*

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The nurse picked up the wrong bag from the counter, not realizing that she had fenta**NYL** with bupivacaine in hand instead of the intended penicillin G. Although a BCMA system had been fully implemented in other areas, information technology staff were still working with the L&D unit to implement the technology in this last patient care unit. One of the barriers to implementation had been the requirement for pharmacy to verify all medication and solution orders before the system was operational. However, epidural infusions were typically ordered and documented after anesthesia staff started the infusion.

Soon after receiving the wrong medication, the woman began having seizures and experienced respiratory arrest. A responding anesthesiologist noticed the error after reading the label on the infusing IV bag and immediately administered IV naloxone and a bolus of lipid emulsion, with an IV lipid emulsion infusion to follow. The baby was delivered via emergency cesarean section and had a low Apgar score that improved over time. Fortunately, both mother and baby appear to be without long-term adverse effects.

IV gentamicin administered epidurally. An anesthesia practitioner administered 450 mg of IV gentamicin via the epidural route to a woman in labor instead of bupivacaine (0.125%). The pharmacy-prepared gentamicin infusion had been removed from an ADC instead of the intended bupivacaine infusion. Earlier, a pharmacy technician had incorrectly loaded one bag of the IV gentamicin in the bin holding the epidural bupivacaine infusions.

Due to a drug shortage of bupivacaine, the hospital was no longer able to purchase compounded bupivacaine infusions from an outsourcer. Pharmacy staff had just begun mixing bupivacaine infusions in 100 mL bags of 0.9% sodium chloride and were also mixing gentamicin infusions (not available commercially) in 100 mL bags. Similar-looking pharmacy labels had been applied to the front of the bags, and a red "Epidural Use Only" label had been affixed to the front of the bupivacaine bag. Although barcode scanning was used when refilling the ADC, only the first product in a batch loaded into each bin was scanned. In this case, the technician scanned one of the correct bupivacaine infusions but did not notice that one of the five similar-looking bags loaded in that bin contained gentamicin. Several days later, an anesthesia practitioner removed the gentamicin bag from the ADC and did not notice the error. Although nurses in L&D employed a BCMA system routinely prior to administering medications, the technology was not used at all by anesthesia practitioners. Thus, the anesthesia practitioner administered the gentamicin by the epidural route, believing the bag contained bupivacaine.

The patient complained of significant pain during labor and delivered her baby 2 hours later. The mother was stable post-delivery, and the baby had high Apgar scores. The error was finally noticed when a nurse discontinued the epidural solution post-delivery, however, 69 mL of gentamicin had infused. The anesthesia practitioner administered normal saline via the epidural route for 10 hours to dilute the gentamicin in the epidural space.

Prior Errors

Since 2000, ISMP has described more than a dozen errors that occurred in the US and the United Kingdom (UK) involving the IV administration of epidural bupivacaine in L&D units, including 5 deaths of young mothers (**Figure 1**, page 1).[1-5] Prior errors involving epidural administration of IV antibiotics have also occurred. Most of the fatalities occurred with IV administration of epidural bupivacaine before IV lipid emulsion therapy was recommended as an antidote by the American Society of Regional Anesthesia and Pain Medicine (ASRA).[6] Events occurring before (2006) and after (2016) widespread knowledge of lipid emulsion therapy as an antidote are provided as examples.

2006 event. A 16-year-old woman in labor died after accidental IV administration of fenta**NYL** with bupivacaine instead of penicillin G.[3] The L&D workflow favored collection of all supplies at the start of labor or induction. Therefore, the epidural medication had been brought into the patient's room before it was prescribed so it was ready for anesthesia

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In the draft guidance, FDA also recommends that the human-readable expiration date on the label include a year, month, and non-zero day as YYYY-MM-DD if using only numerical characters or as YYYY-MMM-DD if using alphabetical characters for the month. If there are space limitations on the drug package, the human-readable text may include only a year and month, expressed as YYYY-MM if using only numerical characters or YYYY-MMM if using alphabetical characters for the month. FDA also recommends using a hyphen or space to separate portions of the expiration date. ISMP has published numerous cases in which nonstandard formats for expressing the expiration date led to confusion and errors.

Label format used by some outsourcers. In response to dosing errors and confusion when 503B outsourcers express the per mL strength prominently on syringe, vial, and infusion bag labels, the US Food and Drug Administration (FDA) released a communication last week recommending safer labeling practices (www.ismp.org/ext/104). FDA reviewed several case reports of labels that were confused. ISMP has published multiple articles on this topic and has called upon FDA to provide labeling guidance to 503A pharmacies and 503B outsourcers (www.ismp.org/node/998).

Per USP <7>, commercial manufacturers must label injectables with the strength per total container volume as the primary and prominent expression of concentration on the label. This is also stated in an April 2013 FDA Guidance entitled, "Safety Considerations for Container Labels and Carton Labeling Design to Minimize Medication Errors" (www.ismp.org/ext/10). However, some compounders, usually at the request of the customer, label their products using the per mL amount, with the total amount below or elsewhere on the container, or not included at all. Since healthcare practitioners are most familiar with the commercial label format, overdoses have occurred when the per mL amount was confused as the total amount in the container.

FDA and ISMP believe that the risk of dosing errors could be reduced if 503A pharmacies and 503B outsourcers follow the same stan-

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staff when needed. The bag of penicillin G was also in the room. Both infusions had been prepared in 150 mL bags, and both bags were labeled with the same orange-colored pharmacy labels. A large pink warning label, "For Epidural Use Only," was on the front of the epidural bag, and a small pink label was on the back. However, the nurse misread the pharmacy label, and the warning labels did not catch her attention. Her perception of risk was not high, as she thought she had penicillin G in hand, not an epidural infusion.

Several weeks before the event, the hospital's L&D unit had implemented a BCMA system. However, most of the L&D patients bypassed the admissions department, where identification (ID) bands were typically applied, and were admitted directly to the unit without an ID band. Therefore, the patient did not have an ID band on when the nurse was administering what she thought was penicillin G. Thus, the BCMA system was not used. Within minutes of infusing the fenta**NYL** with bupivacaine IV, the patient experienced cardiovascular collapse. Although a healthy infant was delivered by cesarean section, the medical team was unable to resuscitate the mother.

2016 event. A healthy 21-year-old woman in labor received IV fenta**NYL** with bupivacaine instead of penicillin G.[5] Shortly after epidural placement, the patient began experiencing perioral numbness and tinnitus followed by stupor, seizures, hypotension, and tachycardia. It was quickly noticed that the nurse had mistakenly grabbed and administered a 100 mL bag of epidural fenta**NYL** (2 mcg/mL) with bupivacaine (0.25%), thinking it was penicillin G. Naloxone and an IV bolus of lipid emulsion was administered, followed by a lipid emulsion infusion, with patient improvement in just a few minutes. Fetal heart rate never dropped below 130 beats per minute, and the patient delivered a healthy infant with high Apgar scores. It was prompt recognition followed by prompt administration of the IV lipid emulsion that saved this young woman and her infant.

Safe Practice Recommendations: Due to the risk of mix-ups between epidural analgesia and IV antibiotics in L&D settings, consider the following recommendations.

Prescribing

Initiate and verify orders. If a patient requires IV antibiotics and/or epidural analgesia, require the physician or anesthesia professional to initiate the required orders and have a pharmacist verify the orders before either infusion is brought to the patient's bedside.

Consider less toxic anesthetics. When appropriate, consider the use of other local anesthetics for epidural analgesia that may be less cardiotoxic than bupivacaine (e.g., ropivacaine), in case the epidural analgesia is inadvertently administered IV.[7]

Dispensing

Inform all practitioners about changes. When products or preparation processes change due to drug shortages or other reasons, let frontline practitioners (e.g., nurses, anesthesia staff) know about any differences in the appearance, labeling, container sizes, concentrations, products, or directions for administration of infusions *before* dispensing the alternative. If time permits, conduct a failure mode and effects analysis (FMEA) before making the change to identify and mitigate risks with the alternative product.

Differentiate epidural bags. If possible, use a different size or shape container, or colored overwraps, for epidural analgesia to differentiate it from IV medications and infusions.

Apply auxiliary warnings. Apply distinctive, large warning labels that state, "**For Epidural Use Only**," in a standard color on both sides of an epidural analgesia bag. Apply a warning label over the seal of the access port used to spike an infusion bag.

Dispense with epidural tubing. Have pharmacy dispense epidural analgesia along with the required yellow-striped epidural tubing to promote administration by the correct route. The analgesia bag can be spiked with the tubing only if administration is imminent.

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dard to which commercial manufacturers are held—to express the drug strength per total container volume as the primary and prominent expression on the principal display panel of the label, followed in close proximity by strength per mL enclosed in parentheses. Because labels of compounded products are not reviewed by FDA prior to marketing, healthcare providers ordering products from outsourcers should require labeling as recommended by ISMP, USP, and FDA.

FDA cautions on misuse of pen needles.

HIGH-ALERT

An FDA communication published last week (www.ismp.org/ext/105) cautioned pen users and clinicians about the misuse of pen needles by patients. This was also the subject of a National Alert Network (NAN) communication by ISMP, the American Society of Health-System Pharmacists (ASHP), and the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) on October 12, 2017 (www.ismp.org/node/44).

Standard pen needles have an outer cover and a removable inner needle cover, which both need to be manually removed before an injection. *Safety* pen needles have an outer cover that is removed, and an inner needle shield that is not removed before an injection. Most hospitals use *safety* pen needles to protect staff from needlesticks. So, hospital staff may teach patients to self-inject a medication using a *safety* needle. Patients who later purchase *standard* pen needles may not know to remove both the outer and inner covers. If the inner cover is left on, the needle will not enter the skin at the time of administration. Although some medication may leak out from the inner cover, the problem may not be realized. In such cases, the patient will not receive any of the medication.

The FDA communication lists recommendations for both patients using pens and providers who care for or treat patients. FDA also asked needle manufacturers to review educational materials to assess the need for updates to clearly explain how to use the pen needle safely. In addition, FDA requested that *standard* pen needle manufacturers consider adding a warning in the labeling regarding the need to remove both the outer cover and the inner needle cover before use.

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Scan each bag. When stocking an ADC, scan each epidural infusion individually before placing it in the correct storage location (when technology allows).

Preparing Patient for Epidural Analgesia

Define patient "readiness." Define how nurses should prepare patients for epidural analgesia. Include a timeline and checklist to guide the process (similar to an operating room [OR] readiness checklist) with steps to accomplish before calling anesthesia staff.

Administration

Limit access to epidural analgesia. Require the practitioner who will be administering the epidural analgesia to bring the medication to the patient's bedside immediately before use. This avoids a handoff between nurses and anesthesia staff, and limits the potential for confusion with other IV medications and infusions in the patient's room. If epidural analgesia and IV infusions must be brought into the patient's room together, establish separate and secure drug storage locations for each phase of the L&D process, thereby separating epidural analgesia and IV antibiotics (and other medications/infusions).

Reduce interruptions. Establish a quiet zone in the patient's room or anteroom for getting medications and solutions ready for administration. Advise the patient and family when the nurse needs to move to the quiet zone and the importance of minimizing interruptions. Require the set-up of epidural analgesia to be a separate, dedicated process conducted immediately prior to the start of the infusion. Except in urgent/emergent situations, medications should be readied in the quiet zone, not at the bedside.

Fully employ BCMA. Establish an admission process that ensures L&D patients have a barcoded ID band applied shortly after arrival and before nonemergent medications or solutions are administered. Require full use of the BCMA system by all practitioners, including anesthesia staff. Remedy any system or labeling problems that limit full compliance and run compliance reports regularly to ensure widespread use over time.

Conduct a time-out. Conduct a time-out immediately before starting the epidural infusion, which includes reading aloud the drug name and concentration from the container label to verify the epidural infusion.

Trace lines. Trace lines from their respective sources (and infusion pump) to the patient's access into the body before making connections or administering medications or solutions.

Mitigate Harm

Consider a medication error. If a patient expresses concern about a medication or experiences unexpected symptoms, evaluate the medications and solutions the patient has received and investigate the possibility of a medication error.

Establish toxicity treatment protocol. Establish a protocol to identify and treat local anesthetic toxicity.[6] Make the protocol and required medications (i.e., lipid emulsion) readily accessible on code carts or with other secured emergency supplies.

Staff Awareness and Planning

Educate staff. Alert practitioners to the risk of mix-ups between epidural analgesia and IV antibiotics in L&D settings and how to recognize and treat local anesthetic toxicity.

Plan for neuraxial connectors. All medical devices that connect to the neuraxial route will eventually use a unique neuraxial connector. Although epidural infusion bags will still be able to be spiked with IV tubing and thus misconnected despite special epidural connectors, hospitals should plan to transition to these connectors when they become available to prevent other types of neuraxial/IV misconnections. For details and helpful tools to prepare for the new neuraxial connectors, visit: www.ismp.org/ext/100.

References appear in right column ▸

Special Announcement

ISMP programs on drug shortages

Attend one of ISMP's educational sessions on ***Balancing Unpredictable Intravenous Medication Supply with the Demand for Safe Injection Practices***:

- **October 5** in San Diego
- **October 7** in Nashville
- **October 24** in Denver

For details, visit: www.ismp.org/node/23.

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Report medication and vaccine errors to ISMP: Please call 1-800-FAIL-SAF(E), or visit our website at: www.ismp.org/MERP or www.ismp.org/VERP

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ISMP Medication Safety Alert! **Action** Agenda

ISMP One of the most important ways to prevent medication errors is to learn about problems that have occurred in other organizations and to use that information to prevent similar problems at your practice site. To promote such a process, the following selected items from the July - September 2018 issues of the *ISMP Medication Safety Alert!* have been prepared for leadership to use with an interdisciplinary committee or with frontline staff to stimulate discussion and action to reduce the risk of medication errors. Each item includes a brief description of the medication safety problem, a few recommendations to reduce the risk of errors, and the issue number to locate additional information. Look for our high-alert medication icon under the issue number if the agenda item involves one or more medications on the *ISMP List of High-Alert Medications* (www.ismp.org/node/103). The Action Agenda is also available for download in a Microsoft Word format (www.ismp.org/node/1185) that allows expansion of the columns in the table designated for organizational documentation of an assessment, actions required, and assignments for each agenda item. Continuing education credit is available for nurses at: www.ismp.org/nursing-ce.

Key: ⚠ — ISMP high-alert medication

Issue No.	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Unintended delivery of residual rocuronium through intravenous (IV) tubing leads to adverse effects					
(15) ⚠	A patient was given IV **HYDRO**morphone after surgery through the same line used to administer rocuronium during the procedure. He quickly stopped breathing and lost consciousness. Anesthesia staff administered sugammadex to reverse the effects of the residual rocuronium in the tubing that had been administered with the **HYDRO**morphone.	When administering medications such as neuromuscular blocking agents, flush all residual drug from the tubing before the patient is extubated, or change the IV line. Confirm that this has happened at the point of patient handoff or transition in care. Also, flush all drugs administered IV so they reach the patient and do not linger in the IV line.			
Smart pump surveys reveal optimization challenges					
(7, 14)	Results of three recent ISMP surveys on smart infusion pumps provided a unique glimpse into the safety concerns and barriers with maximizing this technology. These included: significant limitations in pump capabilities; alarm fatigue; persistent deficiencies related to library use and updates, programming workflow, and secondary infusions; and barriers to pump data analysis, particularly limited expertise and time.	As organizations adopt bi-directional interoperability between smart pumps and the electronic health record (EHR), it is critical to ensure widespread activation of an up-to-date drug library, address alarm fatigue, and monitor basic metrics at least quarterly (e.g., number of alerts by patient care unit, drug, concentration limits; type of limit reached [soft/hard]). External resources are available to help with data analysis.			
Check for proper NUCALA (mepolizumab) dose preparation					
(18)	The Nucala label states "100 mg/vial," but each vial contains 144 mg, which includes overfill to facilitate dose preparation. The mismatch between the label and vial contents has led to numerous overdoses in which the entire amount in the vial was used for a 100 mg dose.	Educate staff about the risk of an overdose, and to refer to the prescribing information when preparing doses. Develop clear compounding instructions that emphasize the fact that only 1 mL should be withdrawn from the reconstituted vial for a 100 mg dose.			

Issue No.	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Strategies to prevent accidental daily methotrexate dosing must be implemented					
(16, 17) ⚠	Daily dosing of oral methotrexate for nononcologic indications continues to occur. A recent event involved inadvertent documentation of daily methotrexate on an admission medication history that was corrected during hospitalization. However, the home medication list, which was referenced to prescribe daily methotrexate upon discharge, was not corrected. Divided weekly doses, lack of patient education, and prescribing systems that do not require verification of the indication or default to a weekly dosing frequency also contribute to errors.	Ensure order entry systems default to a weekly dosing schedule (www.ismp.org/node/160, best practice 2). Require pharmacists to verify an oncologic indication for daily methotrexate orders. Educate patients and provide them with written instructions that specify a weekly schedule (www.ismp.org/ext/68). Update the patient's home medication list throughout the hospital stay. Create a daily list of orders and discharge prescriptions for oral methotrexate and require a pharmacist to verify the dose and frequency.			
Misconnections between IV and tracheostomy pilot balloon ports can result in fatal outcomes					
(19)	Errors in which intravenous (IV) tubing is connected to a tracheostomy pilot balloon port continue to occur. These misconnections have led to respiratory arrest and death. In a recent event, a nurse accidentally connected an IV antibiotic to the balloon port, which inflated the tracheostomy cuff, occluded the airway, and burst, causing fluid to enter the lungs, resulting in the patient going into respiratory arrest.	Evaluate products used in your organization that may lead to misconnections and take steps to mitigate the risk (see self-assessment tool at: www.ismp.org/ext/82). Affix line labels close to insertion sites, position pumps on the same side as the port, trace lines before connection, decrease the frequency of disconnecting and reconnecting tubing, and conduct independent double checks before administering certain high-alert medications.			
Caution when converting HYDROmorphone to fentaNYL					
(18) ⚠	Due to a **HYDRO**morphone shortage, a physician not familiar with fenta**NYL** dosing ordered fenta**NYL** 250 mcg IV push. A pharmacist verified the order and a nurse with access to a 250 mcg/5 mL vial in an automated dispensing cabinet (ADC) administered the dose as ordered. The patient arrested but survived after a dose of naloxone.	Develop an opioid conversion chart to guide equivalent dosing. Replace 250 mcg/5 mL fenta**NYL** vials with 100 mcg/2 mL vials in ADCs if appropriate. Add a high-dose alert during order entry and when removing vials containing 250 mcg or more from ADCs. Remove fenta**NYL** 250 mcg as a routine option in the order entry system; only allow it to be ordered through a procedural sedation order set.			

Issue No.	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Entire bottle (25 tablets) of sublingual nitroglycerin administered to a patient					
(15)	An inexperienced nurse administered the entire bottle of nitroglycerin tablets to a patient. She had scanned the bar-code on the bottle, which confirmed the correct medication without an alert. The new nurse was familiar with unit dose dispensing and thought the small bottle contained a single dose for the patient.	Include instructions to administer 1 tablet sublingually (with additional doses as prescribed) on the medication administration record and automated dispensing cabinet screens. Also place a flag label on the glass bottle with this information. Another option is putting the nitroglycerin vial in a plastic bag with a label listing the tablet strength and to administer just 1 tablet per dose.			
Confusion with the abbreviation "tPA," again					
(14) ⚠	A nurse calling the pharmacy about a STAT order for alteplase asked if the patient's "tPA" was ready. The pharmacist heard "TPN" and stated it was on its way since he was ready to deliver parenteral nutrition solutions. When the nurse called again, another pharmacist dispensed the "tPA" infusion but forgot to remove the bolus dose. This delay led to worsening of the patient's condition.	Avoid the abbreviations "tPA" or "TNK" in all forms of communication (e.g., verbal, electronic, paper) and refer to the drug only by its generic and/or brand name. Include the indication with orders. Issue an alert during order entry and on automated dispensing cabinet screens to remind staff to verify the indication.			
Results of recent high-alert medication survey lead to several changes for 2018					
(17) ⚠	According to a recent ISMP survey on high-alert medications in acute care settings, almost all inpatient settings maintain a facility-specific list but only two-thirds have special precautions in place to prevent errors with these drugs, a quarter of which were rated as somewhat or weakly effective. The medications that caused the most concern with regards to medication errors included anticoagulants, insulin, neuromuscular blocking agents, chemotherapy, and opioids.	The *ISMP List of High-Alert Medications in Acute Care Settings* was updated (e.g., narrowed oral hypoglycemics to sulfonylureas; removed IV radiocontrast agents; added all parenteral routes for promethazine). Review the updated list (www.ismp.org/node/103) to determine if changes are indicated on your list. Employ effective risk-reduction strategies, especially for anticoagulants, insulin, neuromuscular blocking agents, chemotherapy, and opioids. See the *ISMP Medication Safety Self Assessment for High-Alert Medications* (www.ismp.org/node/580) for assistance.			

Issue No.	Problem	Recommendation	Organization Assessment	Action Required/Assignment	Date Completed
Imported potassium chloride injection products can lead to errors					
(16, 17) ⚠	Due to drug shortages, two imported potassium chloride injection products are available, one from Athenex Pharmaceuticals (Galenica Senese) and the other from La Jolla Pharmaceutical (Laboratoire Aguettant). The Galenica product comes in ampules without a barcode and the labels express the concentration as "2 mEq/mL (20 mEq/10 mL)," which does not comply with USP <7>. The Aguettant product comes in plastic ampules without a barcode and is labeled in French. The company is affixing a sticker to the carton which states that each ampule contains 20 mEq/10 mL; 0,15 g/mL = 2 mEq/mL; must be diluted before use.	Store and utilize these imported ampules only within the pharmacy. Be sure pharmacy staff are aware of the differences in how the drug strengths are expressed. Alternate procedures are needed to verify product identification since there is no barcode. Please see important prescribing information if you are using the Galenica (www.ismp.org/ext/71) or Aguettant (www.ismp.org/ext/79) product.			
Grifols HYPERRAB (rabies immune globulin [human]) 1 mL and 5 mL cartons and vials look alike					
(17)	The concentration of HyperRAB was recently changed from 150 units/mL to 300 units/mL so more product can be delivered to the affected area in less volume. The new product is supplied in 1 mL (child) and 5 mL (adult) single-use vials, but both come in a 5 mL capacity vial and have very similar labeling and packaging, risking mix-ups.	To prevent mix-ups, store the products apart from one another. Use auxiliary labels to differentiate the vials and always barcode scan the products during restocking and product selection.			
Mix-ups between concentrations of Baxter's DOBUTamine premixed bags					
(14) ⚠	The overwraps for all three concentrations (250 mg/250 mL [1,000 mcg/mL], 500 mg/250 mL [2,000 mcg/mL], 1,000 mg/250 mL [4,000 mcg/mL]) of Baxter's premixed **DOBUT**amine bags look nearly identical, leading to a stocking error which was noticed when new inventory was being placed into the storage bins.	Alert staff to the potential for mix-ups and place prominent warning labels where products are stored. Utilize barcode scanning when selecting and administering these products. ISMP has notified the manufacturer about this issue.			