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 **January – March 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/1030) 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
Medication errors during insulin administration for patients with hyperkalemia					
(3) ⚠	When treating hyperkalemia, harmful errors have occurred due to measuring IV insulin bolus doses in mL instead of units, misreading the measurement markings on syringes, delays in treatment, not using an insulin syringe to measure doses, and erroneous subcutaneous administration. In one event, a nurse withdrew insulin lispro to the first graduation mark on a 10 mL syringe, believing it represented 0.1 mL (10 units) but it measured 0.2 mL (20 units). In another case, a resident administered the contents of a 3 mL (300 units) vial of regular insulin instead of 0.1 mL (10 units).	Develop hyperkalemia treatment protocols that define interventions and monitoring. Include a threshold for treatment, and do not delay treatment due to the absence of symptoms or EKG changes. Require the use of standard order sets that automatically populate the correct insulin dose and route. Have pharmacy prepare all insulin doses or supply a hyperkalemia kit with a luer-compatible needleless insulin syringe. Require an independent double check of IV insulin doses and restrict administration to those with demonstrated competency.			
Caution advised with tamper-evident caps					
(5)	Red plastic tamper-evident caps used for oral and parenteral syringes containing controlled substances are designed in a way that can leave a small plastic ring on the syringe that may slide into a patient's mouth during administration (especially on 1 mL syringes). This poses a choking risk for children and adults with a decreased gag/cough reflex or altered mental status. A recommendation to discard the ring before administration is in printed material that is rarely seen by those administering the medication.	Educate staff to follow the manufacturer's instructions to remove the ring before drug administration. Carefully inspect any delivery device and its component parts prior to drug administration. Do not leave any syringe caps at the patient's bedside as they may be confused as oral medications or aspirated by children.			

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Errors associated with nebulized medications					
(4)	A review of errors related to nebulized medications revealed a variety of error types and causative factors, particularly omissions when respiratory therapists were unavailable or unaware of new orders; frequent mix-ups due to look-alike plastic vials with embossed labels; failing to employ a barcode scanning system since many nebulized medications and solutions lack a barcode on the immediate container; and confusing the route of administration for off-label nebulized drugs such as heparin.	Establish a reliable system for communicating orders for nebulized medications to respiratory therapy. Require nursing and respiratory staff to collaborate when assessing whether a treatment should be omitted. Evaluate respiratory therapy staffing patterns to be sure there is coverage for all necessary treatments. Store plastic vials in their original foil pouches and/or containers. Purchase unit-dose products with a barcode, or have pharmacy affix a barcode, so scanning can occur.			
Beware of dangerous yet preventable surgical fires caused by skin preps and ointments					
(5)	Most reported surgical fires involve electrosurgical units and lasers as the ignition source, oxygen-rich atmospheres as the oxidizer, and flammable medications as the fuel source, including alcohol-based surgical preps, eye lubricants, petrolatum containing ointments, tincture of benzoin or collodion, and ethyl chloride numbing agents. Recently reported fires involved **GEBAUER'S ETHYL CHLORIDE** spray and **CHLORAPREP** One-Step (2% chlorhexidine gluconate, 70% isopropyl alcohol). Warnings on these product labels are not prominent.	Take inventory of flammable pharmaceutical products used in your organization and ensure practitioners are aware of the dangers. When possible, use safer alternatives. Add auxiliary labels to flammable skin preps and numbing sprays without prominent manufacturer warnings. Use the proper skin prep applicator sizes. Ensure pooling, spilling, or wicking of the skin prep does not occur and allow adequate drying time before beginning the procedure. Avoid the delivery of supplemental oxygen as a matter of routine.			
Expression of strength per mL on BRIDION (sugammadex) peel-off label causes confusion					
(4) ⚠	Bridion has a peel-off label that expresses the strength as 100 mg/mL, but the label underneath expresses the strength as 200 mg/2 mL (2 mL vial) or 500 mg/5 mL (5 mL vial). The peel-off label has misled providers to believe the entire vial (2 mL or 5 mL) contains only 100 mg, leading to several reported overdoses.	Make practitioners aware of the risk of confusion with the Bridion peel-off label and to rely on the label underneath for the total amount of drug in the vial. While ISMP supports peel-off labels to facilitate syringe labeling, we have asked the manufacturer to either eliminate the peel-off label or express the concentration per total volume.			

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FentaNYL-SUFentanil mix-ups during shortages					
(6) ⚠	In the past, harmful errors have occurred during fenta**NYL** shortages when hospitals temporarily switched to **SUF**entanil, which is 5-10 times more potent. Several errors involved the administration of 50 mcg of IV **SUF**entanil instead of fenta**NYL** and selection of **SUFENTA** (**SUF**entanil) instead of **SUBLIMAZE** (fenta**NYL**) 50 mcg per mL after typing "su." Hospitals may be susceptible to similar errors during the current fenta**NYL** shortage.	Educate staff about the potency differences and include visual reminders wherever the drugs are stored. Design mnemonics carefully and avoid the use of "su" alone to select either medication. Develop guidelines for converting between fenta**NYL** and **SUF**entanil. Consider an independent double check prior to administering IV opioids on nursing units. Have pharmacy prepare doses of **SUF**entanil whenever possible.			
Confusion between SANDIMMUNE (cycloSPORINE) and NEORAL or GENGRAF (cycloSPORINE [MODIFIED]) capsules and oral solution					
(6)	Sand**IMMUNE** is a nonmodified form of cyclo**SPORINE** that has decreased bioavailability compared to **NEORAL** or **GENGRAF** (MODIFIED) capsules and oral solution. These are not interchangeable, yet patients often receive Sand**IMMUNE** when a cyclo**SPORINE** modified oral formulation was intended. This happened recently when a nurse did not verify the brand of cyclo**SPORINE** the patient had been taking at home, and the physician prescribed Sand**IMMUNE** but the patient had been taking Gengraf.	Indicate the brand name in orders, medication histories, and medication reconciliation records. Clarify orders for cyclo**SPORINE** if the formulation is not specified. Clearly display the different drug forms in order entry systems and create a hard stop to force verification of the correct drug form during prescribing. Monitor blood levels if a transplant patient receives the wrong formulation.			
Mix-ups between AuroMedics levoFLOXacin and levETIRAcetam					
(1)	Due to IV fluid shortages, many facilities are using premixed IV products, sometimes from the same manufacturer. Numerous mix-ups between AuroMedics levo**FLOX**acin and lev**ETIRA**cetam have been reported due to their visual similarities once removed from their overwraps and a shared 500 mg/100 mL strength. Both drug names start with L-E-V, and the strength appears on a black background, making it hard to read.	Place pharmacy-applied labels just below the drug name and strength without covering the manufacturer's barcodes. Separate the storage of these products, and employ barcode scanning before dispensing, upon automated dispensing cabinet placement or removal, and before administration. Leave the products in their overwraps until administration. ISMP has recommended label changes to the manufacturer.			

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Mix-ups between lamoTRIgine and labetalol					
(2)	More than a dozen mix-ups have been reported between oral labetalol and lamoTRIgine. The mix-ups have resulted in breakthrough seizures and hypotension in patients who received labetalol in error, and skin rashes or untreated hypertension in patients who received lamoTRIgine in error. Contributing factors include similar size bottles and label colors, overlapping strengths, side-by-side storage, and look-alike tablets.	When receiving orders for either drug, match the patient's condition to the proper indication. Use a marker to draw attention to the product's name on the bottle. In community pharmacies, ask the patient to review the labels and contents of each prescription container for accuracy. Use tall man letters when expressing lamoTRIgine. Electronic prescribing and barcode scanning helps to decrease this error potential.			
Confusing requirements for SHINGRIX (zoster vaccine recombinant, adjuvanted, GlaxoSmithKline) with those for ZOSTAVAX (zoster vaccine live, Merck)					
(4)	Different storage requirements, components/diluents, and routes of administration for the newly approved Shingrix and the more familiar Zostavax have led to errors. Shingrix lyophilized antigen and adjuvant suspension must both be refrigerated, while Zostavax lyophilized vaccine must be kept frozen, and the included sterile water diluent kept refrigerated or at room temperature. Shingrix is given IM while Zostavax is given subcutaneously.	Educate staff about the differences between Shingrix and Zostavax. Label the storage bins/shelves using the updated Centers for Disease Control and Prevention (CDC) vaccine labels, which draw attention to the differences in storage, component/diluent, and routes of administration (www.ismp.org/sc?id=3101). Store the Shingrix lyophilized component and adjuvant suspension together to reduce the risk of using the wrong diluent.			
Labeling practices by 503A and 503B compounders					
(6)	Some compounders deviate from USP <7> labeling standards and express the strength per mL as the primary expression on the label, not the strength per total volume, leading to inconsistencies. Recent examples include syringes of succinylcholine found in an anesthesia cart—one with the strength expressed per total volume (Cantrell Drug Company) and the other expressed per mL (PharMEDium). Errors occur when the per mL strength is mistaken as the total amount of drug in the syringe.	Use only compounders that follow USP <7> labeling practices. Employ barcode scanning technology when possible to verify that the correct medication has been selected prior to dispensing and/or administration.			