

| **No.** | **Problem** | **Recommendation** | **Organization Assessment** | **Action Required/ Assignment** | **Date Completed** |
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| VYXEOS cannot be interchanged with other DAUNOrubicin- and/or cytarabine-containing products | | | | | |
| (16) | Vyxeos, a fixed-combination liposomal formulation of DAUNOrubicin and cytarabine, is different from other single entity DAUNOrubicin and cytarabine products that are often used together. Vyxeos has entirely different dosing recommendations than DAUNOrubicin hydrochloride injection, cytarabine injection, DAUNOrubicin citrate liposome injection, and cytarabine liposome injection. | Do not interchange other DAUNOrubicin and/or cytarabine products for Vyxeos. Verify the drug name and dose prior to preparation and administration. Create an order set for dosing Vyxeos based on the patient’s body surface area (BSA) and the DAUNOrubicin component (the corresponding cytarabine dose is included). Calculate the patient’s lifetime cumulative anthracycline exposure to be sure the lifetime cumulative limit has not been met. |  |  |  |
| Mix-ups between ADRENALIN (EPINEPHrine) injection and ADRENALIN chloride nasal solution | | | | | |
| (17) | Mix-ups between Adrenalin chloride nasal solution and Adrenalin injection have been reported, including stocking crash carts with the nasal solution. The errors have been related to look-alike packaging and prominence of the brand name on packages. The two solutions have different inert ingredients and are not interchangeable. When the nasal solution vial cap is removed, a pull-off tab is exposed with a rubber stopper underneath that can allow withdrawal of the topical solution with a needle/syringe, just like an injectable product. | Routine storage of 30 mL vials of EPINEPHrine outside the pharmacy should be avoided when possible. If vials of the nasal solution, which are only available in 30 mL containers, are necessary in patient care units, consider affixing a large “external use only” auxiliary label to reinforce proper use. Barcode scanning at the point-of-care can also help detect wrong product errors before they reach patients. |  |  |  |
| Opioid prefilled syringe shortage | | | | | |
| (15) | Pfizer recently released news regarding upcoming shortages for certain drugs in prefilled syringes as the company undergoes efforts to address issues at one manufacturing facility. This includes its Carpuject and iSecure products, including morphine and HYDROmorphone. The company will be unable to meet demands for some items through the first quarter of 2018. | Identify secondary options during the shortage, which may include the purchase of prefilled syringes from secondary suppliers (e.g., Fresenius Kabi) or from FDA-registered outsourcing facilities. Check that the syringes display the total amount of drug per total volume as the primary display of strength, and do not use color-coded labels. Providing ampuls or vials is less safe. FDA has extended the expiration dates for certain Pfizer drugs (www.fda.gov/Drugs/DrugSafety/ucm563378.htm). |  |  |  |
| ISMP launches high-alert medication safety self assessment | | | | | |
| (19) | A subset of medications bear a heightened risk of causing significant patient harm when used in error. These drugs, called high-alert medications, include opioids, anticoagulants, neuromuscular blocking agents, concentrated electrolytes, magnesium sulfate, insulin, chemotherapy, and lipid-based medications. Although mistakes may or may not be more common with these medications, the consequences of an error can be clearly more devastating to patients. | ISMP has launched the first high-alert medication safety self assessment for hospitals, long-term care, and some outpatient facilities (www.ismp.org/selfas sessments/SAHAM/Default.aspx) to help assess systems and practices associated with up to 11 categories of high-alert medications. Organizations that submit their assessment findings anonymously to ISMP will obtain weighted scores so they can compare themselves to demographically similar organizations nationally. |  |  |  |
| Unsafe procainamide packaging (Amphastar) | | | | | |
| (15) | Procainamide syringes from Amphastar have a luer connector, which could allow IV push of a 1 g bolus of the drug and subsequent toxicity. The label statement, FOR THE PREPARATION OF I.V. INFUSIONS ONLY, could easily be missed. Products that require further dilution prior to administration should not be packaged in containers that allow direct administration. | Use 1 g vials for preparing procainamide bolus doses as well as infusions. If your facility purchases procainamide 1,000 mg/10 mL syringes from Amphastar, stock the product only in the pharmacy for use when preparing an infusion. Crash carts and emergency supply areas should be stocked with vials. |  |  |  |
| Adapters to connect standard oral syringes and ENFit connectors are dangerous | | | | | |
| (19) | Manufacturers are temporarily distributing ENFit administration sets with transition adapters that connect to luer feeding tube connectors in case patients are not yet using ENFit feeding tubes. Other types of adapters have become available to facilitate a connection between standard oral syringes and ENFit connectors, but some of these also connect to parenteral syringes. If an oral liquid medication is drawn into a parenteral syringe, and the adapter is not applied, the medication could be administered IV. Medication also accumulates in a dead space, never reaching the patient. | As soon as possible, fully convert to feeding tubes, oral syringes, and administration sets that use only integrated ENFit connectors. Adapters *for syringes* add risk and should not be used, especially if the adapter connects to parenteral syringes. Oral liquid medications should never be prepared or administered in parenteral syringes. |  |  |  |
| Mix-up between 0.9% sodium chloride and 3% sodium chloride | | | | | |
| (16) | Pharmacy staff accidentally stocked 500 mL bags of 3% sodium chloride instead of 0.9% sodium chloride in advanced life support emergency boxes. The bags looked nearly identical, especially with light reflecting off the plastic overwrap. The errors were discovered before the wrong bags were used. | Segregate hypertonic saline solutions from all other IV solutions. When restocking emergency kits, consider using proprietary emergency kit processing software which ensures accuracy by incorporating radiofrequency identification so that only the proper medications are placed into the kits. |  |  |  |
| Address workarounds and errors related to workflow management systems | | | | | |
| (18) | Workarounds and errors associated with workflow management systems (WFMS) used when compounding sterile preparations have been reported and studied. Examples include: a reluctance to scan product barcodes due to time constraints; scanning just one vial when more than one vial is needed to compound the dose; using a spare bag and vial for scanning or image capture when batching multiple doses of the same product; and using the syringe pull-back method for image capture. | Conduct a failure mode and effects analysis (FMEA) prior to WFMS implementation. Use gravimetric analysis and barcode scanning whenever possible. Avoid syringe pull-back verification (capture images of actual volumes in syringes), and use a prospective check for certain high-alert medications. Inspect the final product, and reject untrustworthy products. Coach staff to increase their perceptions of the risk associated with workarounds, and remedy equipment problems. |  |  |  |
| Withdrawal symptoms from abrupt discontinuation of medications | | | | | |
| (14) | Drug withdrawal symptoms associated with stopping chronic opioids, antidepressants, certain anticonvulsants/neuropathic pain medications, antianxiety drugs, sedative/hypnotic drugs, antipsychotics, and various other medications are higher than previously estimated. For many of these drugs, prescribing information and consumer *Medication Guides* provide inadequate or misleading information on withdrawal symptoms. | Educate staff and patients to avoid abrupt discontinuation of opioids, antidepressants, anticonvulsants/neuropathic pain medications, antianxiety drugs, sedative/hypnotic drugs, and antipsychotics. If discontinued, monitor for potential withdrawal symptoms (e.g., nausea, dizziness, electric shock-like sensations, insomnia, anxiety, suicidal ideation). |  |  |  |
| Risk of acute hemorrhage with oral anticoagulants | | | | | |
| (15) | Harm from anticoagulants ranks as one of the highest priority problems in 2016. Adverse effects from anticoagulants account for more emergency department (ED) visits than any other drug class (17.6%), with almost half requiring hospitalization. Adverse events with the new oral anticoagulants have also raised questions regarding their safety (e.g., excess bleeding in the elderly with dabigatran; variable anticoagulation throughout the day with daily dosing of rivaroxaban; an antidote only for dabigatran). | Ensure staff are trained and prepared for anticoagulant hemorrhages in the ED. Review prescribing trends and patient risks within the cardiology/ hematology community, and establish guidelines for prescribing these medications to minimize the risk to the patient. Take steps to ensure that the ease-of-use of the direct oral anticoagulants does not lead to their overuse, especially in atrial fibrillation patients at lower risk of ischemic stroke, and in older patients with the highest bleeding risks. |  |  |  |
| Multifactorial causes of tacrolimus errors | | | | | |
| (16, 17) | Tacrolimus has been confused with tamsulosin, and mix-ups between the 0.5 mg and 5 mg strengths of tacrolimus or between the regular-release and extended-release formulations are common. The extended-release, ASTAGRAF XL, comes with a label that lists “ONCE DAILY” below the drug name, which patients have confused to mean they should take just one capsule daily when several were needed for each dose. | Include a leading zero when expressing doses less than 1 mg, and round doses greater than 1 mg to the nearest whole number. Display the brand name of extended-release formulations on computer screens to differentiate them from regular-release tacrolimus. Stock all available strengths and use the simplest single strength or combination of strengths to match the patient’s prescribed dose. Standardize the concentration of oral suspensions (1 mg/mL). |  |  |  |