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SPECIAL EDITION COVID-19

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Acute Care ISMP Medication Safety Alert!®

Educating the Healthcare Community About Safe Medication Practices

Considerations for ADC usage during COVID-19

The surge in hospitalized patients with COVID-19 has required substantial changes in protocols and workflow, including those related to the use of automated dispensing cabinets (ADCs). We asked Omnicell and BD Pyxis to help outline some considerations for ADC usage amid the pandemic. Their tips are listed below. Omnicell provided suggestions for preventing cross-contamination, securing COVID-19 medications (and personal protective equipment [PPE]), returning medications to the pharmacy, and maintaining safe practices. BD Pyxis provided a suggestion for relocating and redeploying ADCs in auxiliary patient care units, satellite locations, and field hospitals. (See an associated feature about refilling and cleaning ADCs in COVID-19 *Frequently Asked Questions* on page 3.)

Accessing the ADC

- When removing or filling medications at the cabinet, practitioners should follow a "clean hands" approach, performing hand hygiene before and after accessing the ADC. If gloves (only clean, never contaminated) are worn when accessing the ADC, they may interfere with the fingerprint scanner. You may want to consider disabling the fingerprint requirement (if state regulations permit) on specific cabinets or for specific users who might be wearing gloves, and instead require retinal scanning or entry of a username and password until biometric fingerprint identification can resume. If clean gloves are used when accessing the cabinet, they should be doffed and discarded before leaving the location, and hands should be washed.

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Need for standardizing critical care drug infusions has never been greater

PROBLEM: Several errors occurred with a norepinephrine infusion that was administered to a COVID-19 patient via a smart infusion pump positioned outside the patient's room. The smart pump was set up with a standard administration set plus three attached extension sets, with tubing running from the pump, under the door, and to the patient. Before the event, a pharmacist responded to the patient's intubation and assisted with medications from outside the patient's room. The patient was hypotensive, so the pharmacist prepared the standard norepinephrine infusion containing 4 mg/250 mL (16 mcg/mL) and applied a handwritten label to the bag.

The first two mistakes occurred when programming the initial norepinephrine infusion. The smart infusion pump asked the nurse to indicate whether the norepinephrine dosing was weight-based or not since both mcg/kg/minute and mcg/minute dosing were available for the medication. The nurse chose the weight-based dosing option and, thus, programmed the pump to deliver the infusion as mcg/kg/minute instead of the verbally prescribed infusion rate of mcg/minute. The nurse also mistakenly selected the maximum concentration in the library of 32 mg/250 mL (128 mcg/mL) instead of the prepared concentration of 4 mg/250 mL (16 mcg/mL). However, since the vasopressor was being titrated to effect for hypotension, neither programming error adversely affected the patient.

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COVID-19 *Collaboration*

Poisoning risk increases as children are home around the clock

As families "shelter-in-place," young children and teenagers are home from school. Please remind parents, grandparents, and caregivers of children to store all medications up and away and out of reach and sight of children. Remind them about medications that may be easily accessible on counters, tables, and nightstands, as well as in purses. The US Food and Drug Administration (FDA) recently received a report about a child, home from school, who took two doses of his mother's medication after finding it in a drawer. Also, warn parents to keep hand sanitizers up and away from children. The pleasant smell and brightly colored bottles may be appealing to children. If a child drinks even a small amount of hand sanitizer, it could cause alcohol poisoning. Between 2011 and 2015, US poison control

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Share your stories of support

During the COVID-19 pandemic, healthcare workers often place the needs of others above their own. Yet, they face unimaginable anxiety, stress, and depression caused by the burden of such a profound illness. The constant vigilance of caring for incredibly sick patients is exhausting. Add in taxing workloads, resource challenges, and the fear of infecting loved ones, and the impact on healthcare workers is substantial.

We have heard a few stories about how healthcare workers are supporting each other through this turmoil and how communities and families are rising to the challenge. Whether it's hearing Journey's *Don't Stop Believin'* throughout the hospital as COVID-19 patients are discharged, or a simple text message from a grateful family member, we want to hear about your stories of support. Just send us a quick email (ismpinfo@ismp.org) and let us know how you are doing!

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- Store a container of the appropriate cleaning disinfectant nearby to allow those accessing the ADC to disinfect common touch points.

Decreasing traffic and limiting cross-contamination

- Consider temporarily increasing medication par levels (days of stock) to decrease the frequency of restocking and thereby reduce traffic to the ADC.
- Stock medications in multiple ADC bins with fewer doses per bin to minimize touch contamination of the bin by practitioners removing medications. To facilitate this change, review inventory reports to determine which medications are not currently used and remove them to make space for fast-moving medications.
- Secure as many medications as possible in locked-lidded bins or pockets, as this may reduce the risk of cross-contamination of other stock in the ADC.

Secure storage of critical items

- Consider keeping PPE locked in ADCs (or other locked storage containers) to control access and keep track of inventory.
- Consider placing medications in high demand, short supply, or requiring tighter control in locked-lidded bins; require periodic countback of those medications.

Returning medications

- To minimize the risk of errors and cross-contamination, never allow medications removed from the ADC to be returned to the specific bin or pocket from which they came. A common secure, one-way return bin should be used for returning unadministered medications to the pharmacy (including controlled substances), as long as they have not entered a patient's room. (See additional details in a feature about returning medications to the pharmacy in **COVID-19 *Frequently Asked Questions*** on page 3.)

Maintaining safe practices

- Require a documented (e.g., witness) independent double check by another practitioner when removing certain facility-defined high-alert medications from an unprofiled ADC or via override (bypassing the pharmacist's review of a medication order to obtain a medication from the ADC when assessment of the patient indicates that a delay in therapy would harm the patient).
- Use ADC dispensing alerts to provide practitioners with critical information about new or unfamiliar medications, given that many practitioners may be working outside of their normal clinical practice area.

Redeploying ADCs

- When moving ADCs to a different location within the hospital or to a satellite location or field hospital, manufacturer-specific guidelines may need to be followed, depending on where the cabinet will be deployed. Contact your ADC vendor prior to moving a cabinet to ensure that any necessary guidelines are followed (BD Pyxis COVID-19 customer support: www.ismp.org/ext/439; Omnicell COVID-19 customer support: www.ismp.org/ext/438). Remember to rename the redeployed ADC to match the new location, and to stock it with carefully assessed and selected medications and par levels appropriate for the new area.

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centers received nearly 85,000 calls about hand sanitizer poisonings among children. Teenage children may also drink hand sanitizers to become drunk. If a child takes unauthorized medications or drinks hand sanitizer, advise parents to call the **Poison Help** hotline at 1-800-222-1222. Refer parents to the *Up and Away and Out of Sight* campaign (www.upandaway.org) to learn more about how to keep children safe by storing medication properly.

USP and FDA provide support for compounders

The US Food and Drug Administration (FDA) just released guidance (www.ismp.org/ext/441) for 503A pharmacies carrying out compounding during the COVID-19 pandemic. The guidance is intended to support hospital and community pharmacy compounders (not 503B outsourcers) that are experiencing severe shortages and supply challenges with personal protective equipment (PPE). The guidance touches on several mitigation strategies to reduce the risk of product contamination when an inadequate supply of PPE exists, including using PPE past the manufacturer's expressed shelf life, reusing masks during the same shift or on subsequent days, disinfecting masks, and even wearing clean fabric masks. Also, USP has published considerations for sterile compounding during the COVID-19 pandemic (www.ismp.org/ext/442). USP reiterates its support of risk-based enforcement discretion adopted by the state boards of pharmacy and other regulators for implementation of USP compounding standards during the COVID-19 crisis. It also includes guidance for assignment of beyond-use dates.

IV push of antibiotics to conserve pumps, administration sets

In our April 9, 2020 newsletter, we recommended consideration of administering medications via intravenous (IV) push instead of as secondary infusions to help manage a shortage of smart infusion pumps and dedicated administration sets (www.ismp.org/node/15489). If IV push antibiotics are being considered, we want to draw your attention to a 2018 resource that compiled available data on IV push administration of antibiotics in adults, focusing on preparation, stability, and

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Please report medication safety challenges, ideas, and errors associated with COVID-19 to ISMP via email (ismpinfo@ismp.org), phone (215-947-7797), or online at: www.ismp.org/merp.

> **Standardizing drug infusions** — continued from page 1

Soon afterwards, the patient's physician entered the order for the norepinephrine infusion, selecting the more concentrated norepinephrine infusion (32 mg/250 mL) due to significant fluid restrictions in place for the patient. The pump was already erroneously programmed for that concentration, so the nurse continued it. Barcode scanning could not be used for the medication because the bag infusing had a handwritten label without a barcode. The pharmacy prepared a new bag containing 32 mg/250 mL, which was not hung at this time.

When the nurse for the next shift inspected the original infusion bag while switching to interoperability, the error was caught. The nurse consulted a pharmacist to see what the dose was in mcg/min, hung the new bag, corrected the pump, and changed the tubing.

Over the course of the patient's stay, the patient was switched between the standard and more concentrated norepinephrine infusions several times. Multiple tubing changes occurred during the changes in concentrations, worsening the shortage of extension sets. The nurses suspected that they might have inadvertently administered some bolus doses to the patient, who experienced unexpected blood pressure changes. Also, with the low rate of infusion for the concentrated norepinephrine, nurses were not confident that the medication was reaching the patient given the volume left in the extension sets.

Safe Practice Recommendations: The pharmacist who reported this event stated that programming errors with norepinephrine have happened previously (before the COVID-19 pandemic) since both mcg/kg/minute and mcg/minute are options for prescribing, as well as choices in the facility's pump library. The organization is exploring standardizing to either weight-based (mcg/kg/minute) or non-weight-based (mcg/minute) dosing for norepinephrine to reduce the opportunities for error. The American Society of Health-System Pharmacists (ASHP) *Standardize 4 Safety* initiative recommends using mcg/kg/minute dosing units for norepinephrine (www.ismp.org/ext/446).

Also, instead of using new extension sets with each change in concentration, a better option during a shortage might have been to disconnect the existing extension tubing from the patient, flush it with the new concentration, and reattach it to the patient. However, the trade-off is an increased risk of infection with each disconnection and reconnection; thus, aseptic technique is paramount.

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administration instructions (Spencer S, Ipema H, Hartke P, et al. Intravenous push administration of antibiotics: literature and considerations. *Hosp Pharm.* 2018;53[3]: 157-69; www.ismp.org/ext/433). In addition to many beta-lactam antibiotics already approved for IV push administration, cefepime, cefTRIAXone, and ertapenem were found to have primary literature data to support IV push administration. The authors concluded that limited available data does not support this route of administration for ciprofloxacin, imipenem/cilastatin, and metroNIDAZOLE. In addition, the authors discussed practical considerations, such as IV push best practices and pharmacodynamic considerations.

To subscribe: www.ismp.org/node/10

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COVID-19 *Frequently Asked Questions*

Question: Who is refilling and cleaning automated dispensing cabinets (ADCs) in areas where known or presumptive COVID-19 patients are treated, including the emergency department (ED) and critical care units?

Answer: Some hospitals report that pharmacy technicians are still refilling the ADCs in all areas of the hospital. However, a few hospitals report that nurses have been asked to perform this task. In one hospital, redeployed perioperative nurses have been trained to refill the ADCs as well as retrieve medications from ADCs for isolation nurses sequestered in patient rooms. During the refilling process, some practitioners also disinfect the ADC and barcode scanner while wearing personal protective equipment (PPE). Cleaning guidance is available from Omnicell (www.ismp.org/ext/426), BD Pyxis (www.ismp.org/ext/427), and the Environmental Protection Agency (EPA) (www.ismp.org/ext/384).

Question: Are unused medications from COVID-19 patients being returned to the pharmacy?

Answer: Many pharmacies report that they are trying to dispense only the medications needed to minimize the volume of items that must be returned to the pharmacy. Several hospitals report that they are discarding all unused medications dispensed for presumptive and confirmed COVID-19 patients. One hospital reports that, regardless of the patient's COVID-19 status, any unused medications that need to be returned are placed in a plastic bag labeled with the date and sent to the pharmacy, where they are stored in a secure, sequestered location. Then, after at least 3 days (the elapsed time beyond which viability of any potential SARS-CoV-2 virus on surfaces should be eliminated; www.ismp.org/ext/424), pharmacists remove the medications from the bags and evaluate whether they can be restocked or should be discarded. No multiple-dose vials are returned to the pharmacy, as they are used for just one patient and then discarded. Also, no single- or multiple-dose formulations (e.g., creams, eye drop containers) of medications stored in a COVID-19 patient's room are returned to the pharmacy. They are discarded (or sent home with the patient, as appropriate).