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ISMP

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

Common missteps with medication safety:

Rolling a single dice, ineffective strategies, and unexecuted action plans

An intravenous (IV) line mix-up in a hospital reoccurred within a few months despite what was thought to be an effective action plan after the initial event. After the first event, an interdisciplinary team had conducted a thorough investigation, identified the causal factors, and developed an action plan hoping to reduce the risk of similar errors. After the second event, the hospital team again conducted a thorough investigation of the event, and then carefully reassessed its previous action plan. In the process, the team gained significant insight into what ISMP has identified as four common missteps in the pursuit of medication safety:

1. Relying on a single risk-reduction strategy to prevent an error
2. Implementing risk-reduction strategies after an event that may not reduce the risk of a similar error
3. Failing to address all the causes of an error
4. Failing to measure the implementation and effectiveness of an action plan

The Errors and Action Plan

The initial error

A patient with gastrointestinal bleeding and hypotension was receiving continuous IV infusions of octreotide and norepinephrine. Both infusions had been compounded by the pharmacy in 250 mL bags, so they were similar in size, and both were placed in brown overwraps to protect the medications from light, making them similar in appearance. They also had similar-looking pharmacy-applied labels on the overwraps. When the volume in both infusions was nearing completion, new infusion bags were hung simultaneously but were interchanged in error. The octreotide bag was spiked with the IV administration set that was loaded into the infusion pump programmed for norepinephrine, and the norepinephrine bag was spiked with the IV administration set that was loaded into the infusion pump programmed for octreotide. As a result, the patient received an overdose of norepinephrine and a subtherapeutic dose of octreotide.

The initial action plan

After investigating the event, the hospital initiated an action plan and provided education to the nursing staff on the following new procedures to help reduce the risk of a reoccurrence:

- Label all infusion lines between the pump and the infusion bag so the label is visible during bag changes
- Trace all infusion lines from the patient, through the pump, and to the medication to verify the correct route of administration, pump, and line prior to starting an infusion or changing the bag
- Use the existing barcode point-of-care (BPOC) system to scan each infusion at the bedside prior to set-up and administration (previous practice had been to "pre-scan" the infusions upon receipt from the pharmacy)

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HIGH-ALERT

Safety of EPINEPHrine kits during prefilled syringe shortage. To deal with the current shortage of **EPINEPH**rine 1 mg/10 mL (0.1 mg/mL) prefilled disposable emergency syringes, many hospitals are preparing kits to facilitate safe injection. The kits should include a 1 mg vial or ampul of **EPINEPH**rine, along with an empty 10 or 20 mL syringe, a vial of sodium chloride 0.9% injection, and a preprinted label for the syringe that lists the final 1 mg/10 mL (0.1 mg/mL) concentration. A filter needle also should be included if an ampul is supplied, as well as clear, easy-to-follow instructions for preparing the 1 mg/10 mL solution by diluting the **EPINEPH**rine using 9 mL of the sodium chloride injection. Although the label on ampuls and vials notes these are for subcutaneous or intramuscular use, product labeling (package insert) also states that it may be given intravenously (IV) when diluted.

These kits are an alternative to commercial syringes; however, a concern has surfaced.

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ISMP survey on 2016-2017 TMSBP

ISMP is conducting a brief survey to determine the current level of implementation of the **ISMP 2016-2017 Targeted Medication Safety Best Practices (TMSBP) for Hospitals.** We are particularly interested in learning if implementation of the practices has grown since our last survey in September-October 2016, and about any barriers to implementation that you may have encountered. We'd appreciate your participation in the survey regardless of whether you have or have not implemented any or all of the practices. The survey questions appear on **pages 6-7** for your review prior to completing the survey online at: www.ismp.org/sc?id=2927. Please submit your responses online by **July 21, 2017**.

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The recurrent error

Despite these efforts, a similar error occurred a few months later. A cardiac patient was receiving continuous IV infusions of norepinephrine and **EPINEPH**rine. When new infusion bags were needed for both vasopressors after a procedure in the cardiac catheterization lab, a nurse (who was not involved in the prior event) inadvertently switched the two medications while replacing the bags. The IV lines had been labeled; however, the labels had been placed between the patient and the pump, not between the pump and infusion bag as required by the new policy. Because the labels were below the pumps, and the nurse had not traced the IV lines from the patient to the medication per policy (thus failing to encounter the labels during the tracing process), the nurse did not even notice the labels on the tubing. Like the previous error, both medications were similar in appearance, having been compounded by the pharmacy in 250 mL bags, placed in light-protective overwraps, and labeled with similar-looking pharmacy-applied labels.

The Missteps

Misstep 1 Relying on a single risk-reduction strategy (or rolling a single dice)

Prior to the first event, the hospital was primarily relying on a single risk-reduction strategy—nurse vigilance—to prevent line mix-ups. However, a single strategy, particularly one as weak as human vigilance, is rarely enough to prevent errors. Instead, ISMP has long recommended layering numerous high-leverage risk-reduction strategies to create a more robust safety system.

David Marx, a culture and system reliability expert, likens the relative safety of a system to a dice game—with each dice representing a risk-reduction strategy in the layer of the safety net.[1] Rolling a snake eye (one) represents failure; rolling anything else represents success. The more dice you roll, the less the risk of getting all snake eyes, and the safer the system will be due to the simple power of math. The problem is, safety systems are often one-dice games. As in the initial error described above, the nurse was only one unlucky roll of the dice away from making an error. And, as noted by Marx, "in no place is the single dice more deadly than that of healthcare…."[1] Roll a single dice, and harm is only a single failure away. But design the safety system to be 3, 4, or 5 dice away from harm, and you can vastly improve safety.

Misstep 2 Strategies that will not prevent similar errors

After the first event, the hospital established an action plan. Two of the planned strategies, if fully and effectively implemented, have the potential to reduce the risk of IV line mix-ups: labeling the lines and tracing the lines from the patient to the medication when changing bags or starting infusions. However, it is less likely that the third strategy—scanning the bags at the bedside—has the potential to reduce IV line mix-ups given that integration of the hospital's smart infusion pumps with the electronic health record (EHR) had not been implemented. In the absence of interoperable systems, barcode scanning immediately prior to administration can help ensure that the correct patient and medication are selected, but the right medication for the right patient can still be attached to the wrong IV infusion set, access site or port, or infusion pump, leading to the same type of line mix-up. The scanning process only helps ensure that the correct medication is in hand, not that it has been connected properly.

It is quite common to identify vulnerabilities during event investigation that are not actually causal to the event. The "pre-scanning" of infusion bags is an example, in the case cited above. While it is crucial to patient safety to design strategies to address these identified noncausal vulnerabilities, care must be taken to avoid relying on these strategies to prevent similar errors when they don't address the causal factors.

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Some hospitals are using prefilled sodium chloride flush syringes to provide the saline diluent. Once the saline and **EPINEPH**rine are mixed, the syringe that is labeled "0.9% saline flush" contains 1 mg of **EPINEPH**rine. If the syringe leaves the preparer's hands before administration or relabeling, it might be used by another practitioner as a saline flush. To avoid this risk, please use only vials or ampuls of sodium chloride for these kits, and make sure staff understand the serious risks associated with diluting drugs in prefilled flush syringes. Also be sure to use 1 mL vials or ampuls of **EPINEPH**rine, not 30 mL vials, to limit the amount of drug that can be mixed in each syringe.

Incidentally, commercially available prefilled flush syringes of saline (and heparin) are regulated by the US Food and Drug Administration (FDA) as devices, not as medications. They've been approved for the flushing of vascular access devices, but have NOT been approved for the reconstitution, dilution, and/or subsequent administration of IV push medications. Such use would be considered "off label" and has not been tested for product safety when used in this manner.

Hopefully, commercially available syringes of **EPINEPH**rine 1 mg/10 mL will soon become available. For now, consider prioritizing any limited supply of the commercially available syringes to areas where a pharmacist may not be present at the time of administration (i.e., first dose from crash carts), and limit the need for mixing the drug with a diluent to situations where a pharmacist is present.

HIGH-ALERT

Dispense a needle with that pen. A diabetic patient visited an endocrinologist at an academic medical center, where she was prescribed **HUMULIN R** (insulin regular concentrate) U-500 pens. The patient was to administer 140 units 3 times a day. The prescription was dispensed by the medical center's ambulatory pharmacy, where the patient was given the pens but no pen needles. Since she didn't have any needles for the pens, when she got home she used one of her U-100 syringes that she had used with her previous U-100 insulin to

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Misstep 3 Failing to address all causal factors

During analysis of the first event, the hospital identified similarities in the appearance of both infusions as being causal to the event. However, the action plan created after the initial event did not address this causal factor, which was also contributory in the subsequent event.

Misstep 4 Failing to measure the implementation and effectiveness of action plans

While the hospital spent considerable time educating nurses about the planned risk-reduction strategies, a structured format did not exist to:

- Motivate staff to implement the action plan (e.g., coaching around the risk associated with not labeling or tracing lines)
- Test the action plan on a small scale and revise it as necessary before spreading it throughout the hospital
- Provide support for implementation of the strategies (e.g., making them compatible with the workflow, identifying and addressing any barriers)
- Monitor the progress with implementing the strategies in the action plan
- Measure the effectiveness of the action plan to reduce the risk of line mix-ups

Recommendations

To avoid the four common missteps described above, ask yourself the following questions when working toward addressing a medication safety hazard or error:

Is there a single pathway to an error, particularly a harmful error?

To initially identify and prioritize potential hazards that may require action, look for tasks associated with the medication-use process that are just one human or equipment failure away from a potentially harmful error reaching a patient. These are the tasks that leave patients highly vulnerable to errors. Look at how many layers of safety have been established (in practice, not on paper)—how many dice are you rolling to prevent or detect the error, or mitigate patient harm? Marx notes that the number of dice you roll is a strong proxy for patient outcomes—the more dice you roll, the better outcomes you will achieve.[1] We need to make sure patients are multiple errors away from harm by implementing multiple risk-reduction strategies, and not relying on just one or two to protect patients.

Are we rolling at least three dice when building an action plan?

Build your action plan to address an identified hazard or error with multiple layers of safety—at least three very reliable strategies are suggested by Marx.[1] While the elimination of unnecessary steps that don't improve safety in a process is key to the principles of lean, and the simplification of processes is key to the principles of risk reduction, keep in mind that the layering of value-added strategies to address a hazard is key to reliable outcomes.

For example, in the events described above, additional strategies that could add layers and make the safety system more reliable may include: changing each bag independently, not simultaneously, completing the process for one bag before bringing the next bag to the pump; requiring an independent double check by a second practitioner when starting or changing infusions that contain certain high-alert medications; and making infusions that require light-protective overwraps more distinctive (e.g., large, auxiliary drug name labels) to better distinguish between them. Also, integration of a hospital's smart infusion pumps with the EHR allows for the potential to receive a

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draw her insulin dose from the U-500 insulin pen cartridge (essentially using the pen as a vial). It's possible that she may have measured and administered as much as "140" units (700 units of U-500). Her daughter found her unresponsive and called for an ambulance. When emergency medical technicians arrived, they gave the patient 12.5 g of 50% dextrose and transported her to the hospital, where she fully recovered.

Similarly, in our June 16, 2016 issue, we described a patient who was previously using insulin glargine U-100 but switched to **TOUJEO** (insulin glargine U-300). In this case, he was given pen needles to use with Toujeo, but at home, he decided to use up the remaining supply of U-100 syringes. Using the insulin pen cartridge as a vial, he drew up a dose, filling the U-100 syringe to the 100 unit mark—the same daily Lantus dose (100 units) he had been taking. This resulted in a dose of 300 units of Toujeo, not the prescribed 100 units, which led to hypoglycemia requiring hospital admission.

Plans are underway at the medical center where the most recent error was reported to give pharmacists authority to dispense pen needles without a prescription whenever insulin pens are prescribed. Perhaps insurance providers that currently require a prescription for needles should take note and allow pharmacists to dispense appropriate pen needles whenever a pen device has been prescribed. Also, it is critical for prescribers, nurses, and pharmacists to educate patients about the proper use of insulin pen devices, the importance of using the correct pen needle with the device, and to never use the insulin pen cartridge as a vial. In addition, a process should be in place prior to discharge to ensure that patients have the medications or prescriptions, equipment, and supplies needed at home to manage their insulin therapy (e.g., insulin, syringes or pen needles, blood glucose meter and strips, lancets, lancing device, glucagon emergency kit).

Med wreck? A patient with atrial fibrillation (nonvalvular) was admitted to a hospital for

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system alert if the correct medication is inadvertently placed on the wrong smart pump or channel, although the effectiveness of the technology is dependent on the workflow and sequence of scanning.

As was done by the hospital team in the event described above, also be sure to seek out safety experts and/or search the literature to learn about similar external hazards or errors that have been identified and the recommended steps to reduce their risk.

Does the action plan address all causal factors associated with a hazard or error?

Each causal factor identified during a risk analysis or event investigation should be clearly linked to one or more strategies. A clear linkage between proposed strategies and causative factors helps not only ensure that all causative factors have been addressed, but also helps staff follow the logic of the planned actions, achieves buy-in for implementation of the new strategies, and enhances perception of the risks associated with the targeted tasks. Be sure to identify all system-based causes of a hazard or error, as well as any human components, including human errors and behavioral drift. Remember, we as humans have a high propensity to drift and make unsafe behavioral choices. Even the tiniest incentive—to save time, for example—will often lead to cutting a corner if we fail to see any significant risk associated with the behavior.

Do the planned actions have the potential to prevent or detect hazards or mitigate patient harm?

Once an action plan has been identified, it is imperative to reassess whether each strategy could potentially prevent or detect the hazard or error, or at least mitigate patient harm if an error reached a patient. Regardless of their overall strength in reducing the risk of errors, if the planned strategies do not specifically address the causal factors, they will not be effective. You always need to ensure that you are rolling *reliable* and potentially *effective* dice.

How will I know if the action plan has been implemented and whether it is successful?

An action plan is only useful if it results in positive change. Realistic plans must be made for execution of the action plan, which include testing on a small scale, addressing any barriers before widespread implementation throughout the hospital, and a process for directly observing and measuring progress toward implementation of each strategy. Furthermore, the impact of the entire action plan must be measured to determine its effect and whether it has been successful in reducing risk. Even the best laid plans don't always work out; if that happens, new ways for dealing with the risks need to be developed.

Conclusion

Many healthcare providers, including those at this hospital, have put a lot of work into the pursuit of medication safety to protect patients from errors, accidents, and injuries. As a group, we've gained a lot of expertise in event investigation and identifying the causal factors associated with hazards and errors. But all that work can be for naught if the most effective risk-reduction strategies are not layered deeply to create a robust safety system, if the planned actions are not actually implemented throughout the organization, and if the actions are not measured to ensure their effectiveness in reducing the targeted risk.

Reference

1) Marx D. Play with three dice, when you can. *What We Believe.* Outcome Engenuity. 2017;1(3):1-2. www.ismp.org/sc?id=2924

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insertion of a left atrial appendage device used to prevent stroke in patients who are not good candidates for long-term anticoagulation. When preparing the patient's list of home medications, hospital staff entered **VESICARE** (solifenacin) instead of the intended product, **VESSEL CARE** (www.ismp.org/sc?id=2912), a nutritional supplement the patient was taking. VESIcare is used to treat overactive bladder with symptoms of incontinence, urgency, and frequency. However, the patient did not have this condition. Because the error was not recognized, the order was converted to oxybutynin based upon the hospital's therapeutic formulary interchange for VESIcare. A dose of 5 mg every 12 hours was ordered, which the patient received postoperatively. The patient developed urinary retention that required urinary catheterization, although it's unclear if anesthetics given during the procedure may have also caused or contributed to the problem. The error was finally discovered by a pharmacist reviewing the patient's medication list during transition-of-care rounding prior to discharge.

The reporter commented that a more robust medication reconciliation process was needed. Prescribers do not always reconcile the medication list with the patient's indications or review the home medication list with the patient, especially if the patient was admitted for an elective procedure. While a home medication list is initially compiled by nurses, the actual reconciliation process is often incomplete. One suggestion would be to have a pharmacy staff member collect and verify the medication history, and then confirm that the prescriber has reviewed and reconciled the list (if the appropriate resources for such a pharmacy service are available). Also, prescribers, pharmacists, and nurses should attempt to verify that any drug prescribed, dispensed, or administered is indicated for the patient based on his or her medical conditions. We have notified the US Food and Drug Administration (FDA) as well as Astellas, which distributes VESIcare in the US, about the look- and sound-alike name confusion.

backwards displayed are ingredients The

Problem: The order of ingredients in fixed-dose combination products should conform to the order listed in the official United States Pharmacopeia (USP) drug monograph for the product. However, some facilities are struggling with the display of multi-ingredient products in certain electronic health record (EHR) systems. Instead of listing the ingredients in the order in which healthcare professionals are accustomed (i.e., the same order as on the drug label per the established drug name), ingredients may be listed in alphabetical order.

In one report we received, **HYZAAR** was listed in the hospital's EHR as hydro**CHLORO**thiazide/losartan 100/25 mg. For this combination product, the official USP monograph lists the established name as losartan/hydro**CHLORO**thiazide. The hospital's current format also implies there is 100 mg of hydro**CHLORO**thiazide and 25 mg of losartan per tablet when the opposite is true. We have also received a report of an error in which an e-prescription listed the drug to dispense as "Norco 325/10 mg tablet." **HYDRO**codone/acetaminophen 5/325 mg was dispensed instead to the patient, who caught the mistake. The pharmacy determined that the uncustomary way of expressing the dose in the e-prescribing system (i.e., 325/10) was one factor contributing to the wrong product selection.

Safe Practice Recommendations: ISMP recommends that the order of the ingredients listed on EHR display screens and other venues where the drug name is listed (e.g., pharmacy-applied labels, automated dispensing cabinet screens) match the order on product packaging (e.g., **HYDRO**codone/acetaminophen, not acetaminophen/**HYDRO**codone). The strengths should follow the same format, matching the product packaging, to correlate with the ingredients they describe, in the same order.

With that being said, we have recently recommended an exception with the 4-ingredient combination products, **GENVOYA** and **STRIBILD** (ISMP. Worth repeating. Stribild and Genvoya mix-ups. *ISMP Medication Safety Alert!* 2017;22[10]:5). To make it easier to identify the differing ingredients and prevent mix-ups between these two products, we recommend listing the differing ingredients in the two products, tenofovir **ALAFENAMIDE** and tenofovir **DISOPROXIL FUMARATE**, first on display screens and other drug listings, rather than last. We hope the US Food and Drug Administration (FDA) will take note and change the order of ingredients on product labeling for these two drugs in the future.

You can find further discussion on how drug name displays in computerized prescriber order entry (CPOE) systems impact medication errors in the April 2017 article in the *American Journal of Health-System Pharmacy*: Quist AJ, Hickman TT, Amato MG, et al. Analysis of variations in the display of drug names in computerized prescriber-order-entry systems. *Am J Health Syst Pharm*. 2017;74(7):499-509.

Special Announcements

ISMP webinars

ISMP webinars are a convenient way for healthcare professionals to stay ahead of new trends in medication safety and gain additional knowledge in key areas. To register for our June and July webinars, visit: www.ismp.org/sc?id=349.

June 20: ***Real-Time Patient Data to Drive Safety: A Clinical Pharmacist's Workflow Redesign***

July 11: ***Safe Use of Opioids in the Acute Care Setting: Within Our Reach***
FREE WEBINAR

July 27: ***2017 Update on The Joint Commission Medication-Related Standards***

ISMP International Fellowship open to US citizens

Healthcare professionals who are US citizens are invited to apply for our new **ISMP International Safe Medication Management Fellowship** by June 30, 2017. This is an excellent opportunity to work toward improving global medication safety! To learn more, visit: www.ismp.org/sc?id=2898.

NEW Medication Safety Certificate

Pharmacy professionals, physicians, and nurses can now earn a **Medication Safety Certificate** by completing a self-guided, online course (51 CE hours) developed by ISMP and the American Society of Health-System Pharmacists. The program provides participants with the knowledge and skills necessary to identify and engage in efforts to minimize and eliminate medication errors. For more information, please visit: www.ismp.org/sc?id=2926.

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ISMP Survey on Implementation of the 2016-2017 Targeted Medication Safety Best Practices for Hospitals

ISMP is conducting a short survey to determine the current level of implementation of the **ISMP 2016-2017 Targeted Medication Safety Best Practices for Hospitals** since their release, and more specifically on the barriers encountered to implementation. We would appreciate your participation regardless of whether you have or have not implemented any or all of the practices. Please complete this survey by **July 21, 2017**, at: www.ismp.org/sc?id=2927. The survey questions are in the table below for your review prior to taking the online survey. For a detailed description and exact wording of the targeted best practices, visit: www.ismp.org/sc?id=2925.

1 Please select the one best option that reflects the status of each best practice in your hospital using the KEY below. Choose *Don't Know* if you are uncertain. For A and B answers, also provide the additional information requested in the *Comments* section.

Key

A. This best practice **has not been implemented**.
B. This best practice has been **partially implemented** (e.g., not all aspects and/or not all applicable areas of the hospital).
C. This best practice is **fully implemented** throughout the organization.
NA. Not applicable.

	Best Practices (Practices in bold, *further explanation or descriptions in italics*)	(See Key Above) A	B	C	*Don't Know*	*N/A*	Comments: Additional Information Requested For A and B: What have been the barriers to full implementation?
1	**Dispense vinCRIStine (and other vinca alkaloids) in a minibag of a compatible solution and not in a syringe.**						
2a	**Use a weekly dosage regimen default for oral methotrexate in electronic systems when medication orders are entered.**						
2b	**Require a hard stop verification of an appropriate oncologic indication for all daily oral methotrexate orders.** *For manual systems and electronic order entry systems that cannot provide a hard stop, clarify all daily orders for methotrexate if the patient does not have a documented oncologic diagnosis. Work with your system vendor and information technology department to implement this capability.*						
2c	**Provide specific patient and/or family education for all oral methotrexate discharge orders.** *Education can be provided by any healthcare professional and includes: 1) A double-check of all printed medication lists and discharge instructions to verify the correct dosage regimen; 2) Providing clear written AND verbal instructions with the dosing schedule, emphasizing the danger with taking extra doses for symptom control; 3) Requiring the patient to repeat back the instructions; and 4) Providing patients with a free ISMP consumer leaflet on oral methotrexate (www.ismp.org/AHRQ/default.asp).*						
3a	**Weigh each patient as soon as possible on admission and during each appropriate* outpatient or emergency department encounter. Avoid the use of a stated, estimated, or historical weight.** *Have metric scales available in all areas where patients are admitted or encountered. *See original best practices document for definition of "appropriate."*						
3b	**Measure and document patient weights in metric units only** *in all electronic and written formats. Modify scales that weigh in both pounds and kg/g to lock out the ability to weigh in pounds. Purchase new/replacement scales that weigh in metric units only. Ensure that computer and device screens, printouts, and preprinted order forms list or prompt for the metric weight only.*						

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	Best Practices (Practices in bold, *further explanation or descriptions in italics*)	(See Key Above) A	B	C	*Don't Know*	*N/A*	Comments: Additional Information Requested — For A and B: What have been the barriers to full implementation?
4	**Ensure that all oral liquids that are not commercially available as unit dose are dispensed by the pharmacy in an oral syringe.** *It is acceptable to dispense oral unit-dose cups from the manufacturer, a licensed repackager, or the hospital's packaging equipment. Dispensing bulk containers to the patient care units is not acceptable.*						
5	**Purchase oral liquid dosing devices (oral syringes/cups/droppers) that only display the metric scale.** *If patients are taking an oral liquid medication after discharge, supply them with (or provide a prescription for) an oral syringe to measure doses.*						
6	**Eliminate glacial acetic acid from all areas of the hospital*** *(including the pharmacy, clinics, and physician office practices), and replace it with vinegar or commercially available, diluted acetic acid (0.25% for irrigation, 2% for otic use). *Laboratory use is excluded if the lab purchases the product directly from an external source and it is stored and used only in the lab.*						
7	**Segregate, sequester, and differentiate all neuromuscular blocking agents (NMB) from other medications, wherever they are stored in the organization.** *Where needed, place NMBs in a sealed box, rapid sequence intubation (RSI) kit, or locked-lidded pockets in automated dispensing cabinets. Segregate NMBs from all other medications in the pharmacy in separate lidded containers.*						
8	**Administer high-alert intravenous (IV) medication infusions via a programmable infusion pump utilizing dose error-reduction software** *in both inpatient and outpatient areas (e.g., radiology, emergency department, infusion clinics) including anesthesia use and patient-controlled analgesia (PCA). The only exception is for small volume vesicant infusions.*						
9	**Ensure all appropriate antidotes, reversal agents, and rescue agents are readily available. Have standardized protocols and/or coupled order sets in place that permit the emergency administration of all appropriate antidotes, reversal agents, and rescue agents used in the facility. Have directions for use/administration readily available in all clinical areas where the antidotes, reversal agents, and rescue agents are used.**						
10	**Eliminate all 1,000 mL bags of sterile water (labeled for "injection," "irrigation," or "inhalation") from all areas outside of the pharmacy.** *Work with respiratory therapy and other relevant departments to establish the safest way to provide large volumes of sterile water when needed for patient care.*						
11	**When compounding sterile preparations, perform an independent verification to ensure that the proper ingredients (medications and diluents) are added, including confirmation of the proper amount (volume) of each ingredient prior to its addition to the final container.** *Eliminate use of the "syringe pull-back method" or checking a label rather than the actual ingredients. Use technology to assist in the verification process (e.g., barcode scanning of ingredients, gravimetric verification, robotics, IV workflow software).*						

2 Please select one answer in each category that best describes your hospital, the number of inpatient beds, and your professional designation.

Hospital: ☐ Non-academic, non-governmental, not-for-profit ☐ Investor-owned, for-profit ☐ Academic ☐ Government ☐ Military healthcare facility ☐ Veterans Affairs ☐ Critical access ☐ Health system ☐ Other:_____

Inpatient beds: ☐ 25 beds or less ☐ 26-99 beds ☐ 100-299 beds ☐ 300-499 beds ☐ 500 beds and over

Profession: ☐ Pharmacist ☐ Nurse ☐ Physician ☐ Administrator ☐ Other:_____