February 10, 2022 ▪ Volume 27 Issue 3

ISMP An ECRI Affiliate

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

Three new Best Practices in the 2022-2023 Targeted Medication Safety Best Practices for Hospitals

ISMP has released its ***2022-2023 Targeted Medication Safety Best Practices for Hospitals*** (www.ismp.org/node/160). The purpose of these *Best Practices* is to identify, inspire, and mobilize widespread, national adoption of consensus-based *Best Practices* in hospitals to address recurring problems that continue to cause fatal and harmful errors, despite repeated warnings in ISMP publications. The *Best Practices*, which are reviewed by an external expert advisory panel and approved by the ISMP Board of Directors, represent high-leverage error-reduction strategies, many of which have already been successfully adopted by hospitals. While the *Best Practices* might be challenging for some organizations to achieve, they are all practical and realistic, and their value in reducing medication errors is grounded in scientific research and/or expert analysis of medication errors and their causes. Their implementation can vastly improve medication safety and reduce the risk of significant patient harm. Keep in mind, while these *Best Practices* were created for hospitals, they are often applicable to other healthcare settings.

Three New *Best Practices* for 2022-2023

Initially introduced in 2014 with six *Best Practices*, the ***Targeted Medication Safety Best Practices for Hospitals*** are updated every 2 years. The 2022-2023 list now comprises 19 *Best Practices*, including the three new *Best Practices* described below.

New *Best Practice* 17 Safeguard against errors with oxytocin use.

a) Require the use of standard order sets for prescribing oxytocin antepartum and/or postpartum that reflect a standardized clinical approach to labor induction/augmentation and control of postpartum bleeding.

b) Standardize to a single concentration/bag size for both antepartum and postpartum oxytocin infusions (e.g., 30 units in 500 mL Lactated Ringers).

c) Standardize how oxytocin doses, concentration, and rates are expressed. Communicate orders for oxytocin infusions in terms of the dose rate (e.g., milliunits/minute) and align with the smart infusion pump dose error-reduction system (DERS).

d) Provide oxytocin in a ready-to-use form. Boldly label both sides of the infusion bag to differentiate oxytocin bags from plain hydrating solutions and magnesium infusions.

e) Avoid bringing oxytocin infusion bags to the patient's bedside until it is prescribed and needed.

New *Best Practice* 18 Maximize the use of barcode verification prior to medication and vaccine administration by expanding use beyond inpatient care areas.

a) Specifically target clinical areas with an increased likelihood of a short or limited patient stay (e.g., emergency department, perioperative areas, infusion clinics,

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SAFETY briefs

Clinolipid container label issue. Supply chain issues are impacting the availability of many products, including fat emulsion products for parenteral nutrition (PN). One hospital pharmacist reported that she had recently switched from the pharmacy's usual supply of lipid injectable emulsion (ILE) to Baxter's **CLINOLIPID** 20% product. Although the hospital has not experienced any errors, a potential safety issue was identified that prompted proactive education of the pharmacy team and reporting of the issue to ISMP. The total volume of the product is 250 mL, but the concentration that is most prominently displayed is 20 g/100 mL (**Figure 1**). The product is often prescribed in terms of percent concentration (20%) and volume. However, the way the total volume and concentration are presented could lead practitioners to incorrectly assume that the bag contains a total volume of 100 mL and 20 g. As a result, this could contribute to a dispensing or dosing error.

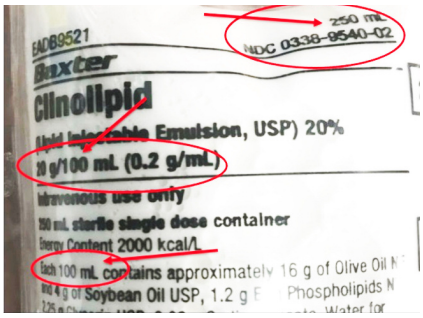

Figure 1. Clinolipid concentration is expressed as 20 g/100 mL while the container volume is 250 mL (containing 50 g), which appears in the upper right corner of the bag and might be overlooked.

We believe that displaying the total amount per total volume (i.e., 50 g/250 mL) would minimize the risk for confusion and error. Incidentally, the label for the 1,000 mL Clinolipid container lists the amount per container volume (200 g/1,000 mL), not 20 g per 100 mL, so the concentration expression on the 250 mL bag is inconsistent. ISMP has contacted Baxter about the label on the 250 mL product. Baxter reports

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dialysis centers, radiology, labor and delivery areas, catheterization laboratory, outpatient areas).

b) Regularly review compliance and other metric data to assess utilization and effectiveness of this safety technology (e.g., scanning compliance rates; bypassed or acknowledged alerts).

New *Best Practice* 19 Layer numerous strategies throughout the medication-use process to improve safety with high-alert medications.

a) For each medication on the facility's high-alert medication list, outline a robust set of processes for managing risk, impacting as many steps of the medication-use process as feasible.

b) Ensure that the strategies address system vulnerabilities in each stage of the medication-use process (i.e., prescribing, dispensing, administering, and monitoring) and apply to prescribers, pharmacists, nurses, and other practitioners involved in the medication-use process.

c) Avoid reliance on low-leverage risk-reduction strategies (e.g., applying high-alert medication labels on pharmacy storage bins, providing education) to prevent errors, and instead bundle these with mid- and high-leverage strategies.

d) Limit the use of independent double checks to select high-alert medications with the greatest risk for error within the organization (e.g., chemotherapy, opioid infusions, intravenous [IV] insulin, heparin infusions).

e) Regularly assess for risk in the systems and practices used to support the safe use of medications by using information from internal and external sources (e.g., The Joint Commission, ISMP).

f) Establish outcome and process measures to monitor safety and routinely collect data to determine the effectiveness of risk-reduction strategies.

Survey to Measure Baseline Implementation of New *Best Practices*

ISMP is conducting a **short survey** to obtain a baseline measurement of the current level of implementation of these three new *Best Practices*. We would sincerely appreciate your participation in this survey, regardless of whether you have implemented the *Best Practices*. Please complete the online survey by **April 1, 2022**, by visiting: www.ismp.org/ext/847. The survey questions are provided on pages 5 and 6 for your review prior to taking the online survey.

Additional Changes for 2022-2023

In addition to updating the references to newer ***ISMP Medication Safety Alert!*** newsletter publications where more information can be found for each *Best Practice*, the following supplemental information was included in the Rationale section of *Best Practice* 1: Dispense vin**CRIS**tine and other vinca alkaloids in a minibag of a compatible solution and *not* in a syringe (additional information italicized below):

*In 2020, the US Food and Drug Administration (FDA) changed the prescribing information (package insert) to call for dilution in a minibag only (www.ismp.org/node/18548). The labeling for vin**CRIS**tine now states: To reduce the potential for fatal medication errors due to incorrect route of administration, vin**CRIS**tine sulfate injection should be diluted in a flexible plastic container and prominently labeled as indicated "**FOR INTRAVENOUS USE ONLY—FATAL IF***

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that its regulatory team has initiated a label change for the 250 mL bag with the US Food and Drug Administration (FDA).

Do not dilute gray-capped Pfizer-BioNTech COVID-19 vaccine! ISMP is concerned about the potential for practitioners to accidentally dilute the new prediluted form (gray cap) of the Pfizer-BioNTech coronavirus disease 2019 (COVID-19) vaccine (**COMIRNATY**) ever since we received word about its availability late last year. We mentioned the risk of further diluting this prediluted vaccine most recently in our January 27, 2022 newsletter. Soon afterwards, we received a report in which normal saline was erroneously added to the gray-capped Pfizer-BioNTech COVID-19 vaccine vial. Fortunately, a pharmacist caught the mistake before syringes of the vaccine were dispensed from the pharmacy.

The purple-capped vaccine (available under an emergency use authorization [EUA] and as the brand product, Comirnaty) requires dilution prior to use. Now that practitioners are accustomed to diluting the purple-capped vaccine, and both the gray- and purple-capped vaccines are simultaneously available, it is predictable that the prediluted form (gray cap) and the vaccine that requires dilution (purple cap) will be confused during preparation. This will result in erroneously diluting the gray-capped vaccine or not diluting the purple-capped vaccine.

We understand that Pfizer-BioNTech intends to eventually supply only the gray-capped prediluted vaccine for ages 12 years and older. To avoid dilution errors, we recommend switching entirely to the gray-capped prediluted vaccine vials as soon as possible so you do not have both purple- and gray-capped vaccines in stock. Be sure that labels and preparation instructions do not provide directions to dilute the gray-capped vaccine. If you stock prediluted vaccine (gray cap) simultaneously with purple-capped vaccine vials that requires dilution, do not store them together in the refrigerator during or after thawing (e.g., use separate shelves). Require an independent double check of the preparation process. Educate pharmacy and vaccination staff regarding this type of error and provide those who prepare the vaccines with an updated

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GIVEN BY OTHER ROUTES. *" Preparation and administration of the drug in a syringe has been removed from the package insert.*

Three *Best Practices* have been archived with the 2022-2023 update, joining another previously archived *Best Practice* (#6, Eliminate glacial acetic acid from all areas of the hospital):

Archived ***Best Practice*** **4** Ensure that all oral liquid medications that are not commercially available in unit dose packaging are dispensed by the pharmacy in an oral syringe or an enteral syringe that meets the International Organization for Standardization (ISO) 80369 standard, such as ENFit.

Archived ***Best Practice*** **5** Purchase oral liquid dosing devices (oral syringes/cups/droppers) that only display the metric scale.

Archived ***Best Practice*** **10** Eliminate all 1,000 mL bags of sterile water (labeled for "injection," "irrigation," or "inhalation") from all areas outside of the pharmacy.

ISMP created a *Best Practice* "archive" designation in 2020. While archived *Best Practices* are still important and may not be fully implemented in all US hospitals, the "archive" designation signals that focus can be directed toward new and other existing *Best Practices* that have lower adoption rates. Archived *Best Practices* maintain their original *Best Practice* numbers.

Prior Survey Results

Prior to releasing the ***2022-2023 Targeted Medication Safety Best Practices for Hospitals***, ISMP conducted a survey between May and June 2021 to measure the progress with implementing the existing 2020-2021 *Best Practices*. These results were presented at the American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting on December 8, 2021. In case you missed that presentation, we have provided an overview of the survey findings in **Table 1** (page 4).

Most of the respondents who participated in the 2021 survey were from large US hospitals with more than 100 beds (82%), and nearly two-thirds (61%) had employed one or more full- or part-time medication safety officer(s) (MSO[s]). Comparing the 2021 survey findings to previous survey findings in 2019 (for *Best Practices* 1 through 14) and 2020 (for *Best Practices* 15 and 16), the percentage of respondents reporting full compliance with the *Best Practices* increased, stayed the same, or only went down a few percentage points. However, there was one exception. Between 2019 and 2021, full compliance with *Best Practice* 8 (Administer medication infusions via a programmable infusion pump with a DERS) decreased from 85% (2019) to 72% (2021). The decrease in full compliance might be due to the fact that, in 2020, this *Best Practice* was expanded to include all medication infusions, while in 2019, the *Best Practice* was limited to high-alert medication infusions.

Conclusion

Hospitals and health systems should focus their medication safety efforts over the next 2 years on these 2022-2023 *Best Practices*. The rationale for recommending the *Best Practices*, along with related ISMP publications and guidelines for additional information, can be found in the full document (www.ismp.org/node/160). Related documents that might be helpful to hospitals include Frequently Asked Questions (FAQs) (www.ismp.org/node/14369) and an Implementation Worksheet (www.ismp.org/node/1506) that can help hospitals identify gaps in implementation of these *Best Practices* and develop an action plan to address vulnerabilities. Also, please do not forget to complete our **short survey** (www.ismp.org/ext/847, pages 5 and 6) on the three new *Best Practices* for 2022-2023.

Table 1 appears on page 4 — ***Best Practices*** >

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Fact Sheet for the EUA vaccines (www.ismp.org/ext/842, www.ismp.org/ext/813) or the package insert for Comirnaty (www.ismp.org/ext/843). Also verify the competency of each practitioner involved in vaccine preparation.

Tubing spikes drop from IV bags in use.

HIGH-ALERT

QuVa, and possibly other 503B outsourcers, have been using Douglas Medical Products (DMP) intravenous (IV) bags to prepare medications as a replacement for other IV bags that are in short supply due to supply chain issues. ISMP and ECRI recently investigated a report about IV tubing spikes falling out of these bags (product code: DMP0150) or the bags leaking during infusions. The reporting facility revealed that this has happened on five occasions. In addition, a letter shared with QuVa customers reported that this has also occurred in other facilities. The problem appears to happen with a Baxter administration set (product code: 2C8541). Some of the QuVa bags impacted contained fenta**NYL**. This could lead to patients receiving the wrong amount of medication, infusion contamination from a loosely connected spike, or patient/staff exposure to hazardous medications. The problem has also led to drug waste, therapy interruptions, and controlled substance management issues.

We understand that QuVa has stopped using these bags, but unused products that have not expired may still be available in organizations, and other 503B compounders may also be using them. If these products are available in your organization, tell nurses that the IV spike should always be inserted with a single motion that includes a firm, twisting action to achieve full insertion of the spike into the bag port. The spike should not be wiggled or removed and reinserted, as this could loosen the connection. Some IV sets contain shorter spikes, and some are lubricated with silicone. These two characteristics could lead to disconnections between the spike and the DMP IV bag. A letter from QuVa noted that DMP recommended wiping the spike off prior to insertion to remove excess silicone, which could help prevent the spike from sliding out. However, ECRI confirmed with DMP that the QuVa letter did not correctly communicate DMP's input, as DMP does NOT recommend this strategy. We also do NOT recommend this strategy due to the risk of compromising sterility and introducing foreign material (e.g., cloth fibers).

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Table 1. Implementation of the ***Targeted Medication Safety Best Practices for Hospitals****

	Best Practice	Implementation (%) 2021 Full	Implementation (%) 2020/2019 Full	Common Enablers (E) or Barriers (B)
1	Dispense vin**CRIS**tine and other vinca alkaloids in a minibag	94	85	E: Remove vials/syringes from order entry system
2	Use a weekly dosage regimen default for oral methotrexate orders	75	68	E: Build for specific days of the week
	Require a hard stop verification (or clarification if hard stop not possible) of an appropriate indication for daily orders	52	45	B: Physician resistance, only soft stops available
	Provide education to patients discharged on oral methotrexate	52	37	E: Auto-populate discharge education
3	Weigh patients as soon as possible on admission/encounter (avoid stated, estimated, historical weights)	43	43	B: Lack of stretcher scales
	Measure and document patient weights in metric units only	54	50	E: Scales that lock out pounds
4†	Oral liquid medications not commercially available in unit dose packaging are dispensed by pharmacy in an oral/ENFit syringe	70	61	B: Drug shortages
5†	Purchase oral liquid dosing devices (oral syringes/cups/droppers) that only display the metric scale	82	78	B: Devices not purchased through the pharmacy
6‡	Eliminate glacial acetic acid from all areas of the hospital		85	
7	Segregate, sequester, differentiate neuromuscular blocking agents from other medications, wherever they are stored	81	75	B: Challenging in ambulatory surgery centers
8	Administer medication infusions via a programmable infusion pump with a dose error-reduction system (DERS)	72	85	B: Cost, not a mandate for anesthesia
	Maintain a compliance rate of greater than 95% for the use of DERS	33		E: Interoperability B: Pandemic
9	Appropriate antidotes, reversal agents, and rescue agents are readily available with directions for use	74	44	E: Include in order sets B: Drug shortages
	Protocols/coupled order sets permit emergency administration of antidotes, reversal agents, and rescue agents	53		E: High usage of order sets B: Not inclusive of all antidotes
10†	Eliminate 1,000 mL bags of sterile water (for injection, irrigation, inhalation) from all areas outside the pharmacy	71	74	E: Purchase in bottles B: Drug shortages
11	Independently verify the ingredient(s) and amount/volume *prior* to adding them to compounded sterile preparation containers	34	36	E: Compliance high for specific high-alert drugs
12	Eliminate the prescribing of fenta**NYL** patches for opioid-naïve patients and patients with acute pain (now in *Best Practice* 15)			
13	Eliminate injectable promethazine from the formulary	37	32	B: Anesthesia resistance
14	Seek out and use information about medication risks and errors that have occurred in external organizations and take action	68	58	E: Having a medication safety officer (MSO)
15	Verify/document a patient's opioid status and pain type before prescribing/dispensing extended-release or long-acting opioids	19	15	B: Not required in the medical record, undefined for children
	Default order entry systems to the lowest starting dose and frequency for extended-release and long-acting opioids	29	23	B: Not possible with some order entry systems
	Eliminate the prescribing of fenta**NYL** patches in opioid-naïve patients and patients with acute pain	57	41	E: Implement order restrictions and use order sets
	Eliminate the storage of fenta**NYL** patches in ADCs/unit stock on units where acute pain is primarily treated	72	71	E: Conduct a medication-use evaluation
16	Limit the variety of medications that can be removed from an ADC via override	75	59	E: Vet the list through the P&T committee
	Require a medication order prior to removing any medication from an ADC, including those removed via override	47	50	B: Policy allows emergency overrides without an order
	Monitor ADC overrides to verify appropriateness	56	53	E: Monthly dashboard
	Periodically review the list of medications available via override	79	67	E: Include nurses in the review

*Results from three surveys: N=156 (2021), N=164 (2020), N=206 (2019) †*Best Practice* archived in 2022 ‡*Best Practice* archived in 2020

Special Announcements

FREE webinars on drug diversion

Drug diversion in healthcare can significantly impact both patient and staff safety, but the full extent of the problem is rarely known because it may go unreported or undetected. Join us in April for three **FREE** webinars, each sponsored by Fresenius Kabi, as we explore how to manage drug diversion, quantify the costs of controlled substance waste, and mitigate the risk of diversion in the operating room (OR) and other procedural areas. For information and to register, click on the links below.

April 6: ***Diversion is a Threat to Patient Safety: Adopting Best Practices for Safe Management of Controlled Substances*** (www.ismp.org/node/29575)

April 13: ***Quantifying the Holistic Costs of Controlled Substance Medication Waste*** (www.ismp.org/node/29576)

April 28: ***Engaging the OR and Procedural Areas to Mitigate Risks with Controlled Substance Medications*** (www.ismp.org/node/29577)

Become an ISMP Fellow

ISMP is now accepting applications until **March 13, 2022**, for three unique Fellowship programs that will begin in the summer of 2022. For descriptions of the Fellowships, candidate qualifications, brochures, program outlines, and to apply online, please visit: www.ismp.org/node/871.

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

ISMP Medication *Safety Alert!* Acute Care (ISSN 1550-6312)

Report medication and vaccine errors to ISMP: Call 1-800-FAIL-SAF(E) or visit our website at: www.ismp.org/report-medication-error. ISMP guarantees the confidentiality of information received and respects the reporters' wishes regarding the level of detail included in publications.

 ISMP, 200 Lakeside Drive, Suite 200, Horsham, PA 19044. Email: ismpinfo@ismp.org; Tel: 215-947-7797; Fax: 215-914-1492.

ISMP Survey on the Three NEW *2022-2023 Targeted Medication Safety Best Practices for Hospitals*

ISMP is conducting a short survey to obtain a baseline measurement of the current level of implementation of the three new ***2022-2023 Targeted Medication Safety Best Practices for Hospitals*** (#17, #18, and #19). We would greatly appreciate your participation in this survey regardless of whether you have implemented the new *Best Practices*. Please complete this online survey by **April 1, 2022**, by visiting: www.ismp.org/ext/847. The survey questions are provided below for your review prior to completing the online survey. For a detailed description and exact wording of the three new *Best Practices*, visit: www.ismp.org/node/160.

General Demographics

1 Please select the one category that best describes the number of licensed inpatient beds in your hospital.

☐ Up to 25 beds ☐ 26-99 beds ☐ 100-299 beds ☐ 300-499 beds ☐ 500 beds and over

2 Please select the location of your facility.

☐ US state/US territory ☐ US military foreign country/territory ☐ Other foreign country/territory

3 Does your organization employ one or more full-time or part-time medication safety officer(s)?

☐ Yes ☐ No ☐ Don't know

Survey

4 Please select the best option that reflects the status of the three new 2022-2023 *Best Practices* in your hospital using the KEY that follows. Also please provide comments about any enablers or barriers to implementation of the *Best Practices,* including how you addressed any barriers, if applicable.

KEY

None: This *Best Practice* has not been implemented
Partial: Not all components of the *Best Practice* have been implemented, and/or the *Best Practice* has not been fully implemented in all areas or for all applicable patients or orders
Full: This *Best Practice* has been fully implemented in all areas and for all applicable patients and/or orders
NA: This *Best Practice* is not applicable in our hospital because we do not provide that service and/or prescribe, dispense, or administer that medication

New *Best Practices* (2022-2023) (continued)	None	Partial	Full	NA	Enablers or Barriers to Implementation
#17: Safeguard against errors with oxytocin use.					
■ Require the use of standard order sets for prescribing oxytocin antepartum and/or postpartum that reflect a standardized clinical approach to labor induction/augmentation and control of postpartum bleeding.					
■ Standardize to a single concentration/bag size for both antepartum and postpartum oxytocin infusions (e.g., 30 units in 500 mL Lactated Ringers).					
■ Standardize how oxytocin doses, concentration, and rates are expressed.					
■ Communicate orders for oxytocin infusions in terms of the dose rate (e.g., milliunits/minute) and align with the smart infusion pump dose error-reduction system (DERS).					
■ Provide oxytocin in a ready-to-use form.					
■ Boldly label both sides of the infusion bag to differentiate oxytocin bags from plain hydrating solutions and magnesium infusions.					
■ Avoid bringing oxytocin infusion bags to the patient's bedside until it is prescribed and needed.					
#18: Maximize the use of barcode verification prior to medication and vaccine administration by expanding use beyond inpatient care areas.					
■ Expand barcode verification prior to medication and vaccine administration to clinical areas with an increased likelihood of a short or limited patient stay.					
■ What is the level of barcode verification implementation in these areas? (select "Full" only if compliance with barcode scanning is 90% or higher)					
■ Emergency department					
■ Operating rooms					
■ Procedure rooms					
■ Preoperative holding area					

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New *Best Practices* (2022-2023) (continued)	None	Partial	Full	NA	Enablers or Barriers to Implementation
■ Post-anesthesia care unit					
■ Radiology					
■ Labor and delivery areas					
■ Infusion clinics					
■ Dialysis centers					
■ Catherization laboratories					
■ Other outpatient areas (please specify)					
■ Regularly review compliance and other metric data to assess utilization and effectiveness of this safety technology (e.g., scanning compliance rates; bypassed or acknowledged alerts).					
#19: Layer numerous strategies throughout the medication-use process to improve safety with high-alert medications.					
■ For each medication on the facility's high-alert medication list, outline a robust set of processes for managing risk, impacting as many steps of the medication-use process as feasible.					
■ Ensure that the strategies address system vulnerabilities in each stage of the medication-use process (i.e., prescribing, dispensing, administering, and monitoring) and apply to prescribers, pharmacists, nurses, and other practitioners involved in the medication-use process.					
■ Avoid reliance on low-leverage risk-reduction strategies (e.g., applying high-alert medication labels on pharmacy storage bins, providing education) to prevent errors, and instead bundle these with mid- and high-leverage strategies.					
■ Limit the use of independent double checks to select high-alert medications with the greatest risk for error within the organization (e.g., chemotherapy, opioid infusions, intravenous [IV] insulin, heparin infusions).					
■ Regularly assess for risk in the systems and practices used to support the safe use of medications by using information from internal and external sources (e.g., The Joint Commission, ISMP).					
■ Establish outcome and process measures to monitor safety and routinely collect data to determine the effectiveness of risk-reduction strategies.					