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

New 2026-2027 Targeted Medication Safety Best Practices for Hospitals

ISMP has released its updated Targeted Medication Safety Best Practices for Hospitals. These Best Practices are designed to identify, inspire, and mobilize widespread, national adoption of consensus-based strategies 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 clinical 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. While these Best Practices were created for hospitals, some are applicable to other healthcare settings. ISMP also offers a version specifically for community pharmacies.

New Best Practices for 2026-2027

Initially introduced in 2014 with six Best Practices, the Targeted Medication Safety Best Practices for Hospitals are updated every 2 years. The list now comprises 25 Best Practices, including 3 new Best Practices summarized below. Refer to the full Best Practice document for additional details.

New Best Practice 23: Improve safety with use of intravenous (IV) push medications. This Best Practice focuses on optimizing the use of ready-to-administer products, minimizing unnecessary dilution and reconstitution outside the pharmacy, and eliminating the practice of diluting medications in sodium chloride flush syringes. It recommends use of infusion pumps with dose error-reduction systems (DERS) for IV push medications with rates not practical to be administered manually, ensuring medications are pushed continuously and not left unattended, and monitoring workflows for adherence to safe practices.

New Best Practice 24: Optimize use of scanning machine-readable codes (e.g., barcode, radio-frequency identification [RFID]) on patient identification (ID) bands and products to prevent medication errors. Proactively check product barcodes, establish escalation procedures for scan failures, and prevent proxy scanning of patient ID bands or medication barcodes. Regularly review compliance data, ensure scanning of manufacturer or patient-specific barcodes as appropriate, and educate staff about barcode scan alerts and their meanings.

New Best Practice 25: Improve the culture of safety. Promote reporting and learning from close calls and errors, develop and assess a medication error reduction plan, educate staff on proactive risk management, and regularly review safety culture survey data to implement effective improvements.

Additional Changes for 2026-2027

A key revision that was made to each Best Practice was to summarize the topic at the beginning of the Best Practice statements. In addition, Best Practice 3 had several additions highlighted below. Best Practice 21 had significant revisions, so we encourage you to review the full Best Practice document.

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White paper on IV push practices

Med Safety Board publishes white paper on current IV push medication practices. Since the publication of the ISMP Safe Practice Guidelines for Adult IV Push Medications in 2015, ISMP has continued to raise awareness about potential practice risks and encourage organizations to adopt recommendations for the safe preparation and administration of intravenous (IV) push medications. Despite this, risky practices continue to be reported, leading to the addition of Best Practice 23, intended to improve safety with use of IV push medications, to the recently updated 2026-2027 ISMP Targeted Medication Safety Best Practices for Hospitals (see main article).

Knowing that opportunity for improvement still exists with IV push medications, and considering potential recent trends to switch to IV push administration due to IV fluid shortages, Med Safety Board (MSB), an ISMP company, sought to reassess current practices by conducting a survey of those who dispense, prepare, and/or administer IV push medications. The survey was open from September 2 through October 15, 2025. MSB has recently published a white paper, IV Push Medication Practices: Identifying Persistent Gaps and Advancing Safety, that summarizes these survey results, with comparisons to prior survey data from 2014 and 2018. The white paper also presents findings from a recent error analysis, along with recommendations for healthcare organizations, drug manufacturers, and electronic health record vendors.

Little or no improvement was observed between 2018 and 2025 survey findings regarding: IV push medications always or often dispensed in ready-to-administer syringes (25% vs. 27%, respectively); IV push syringes are always labeled

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Additions to Best Practice 3: Ensure an accurate patient weight is obtained and used for medication dosing.

- Include a patient's weight in electronic prescriptions.
- Include a patient's metric weight on discharge and after visit summaries. Also include, as appropriate, the patient's weight in pounds/ounces in a requisite field.
- Improve decision support related to patient weight by:
  - Utilizing appropriate pediatric growth charts to trigger alerts when a recorded weight differs significantly from the distribution curve.
  - Building decision support to trigger alerts when an entered weight differs significantly from the last recorded weight from a previous encounter.
  - Building clinical decision support for weight-based dose checking.
- Define and educate staff on weight categories, such as wet, dry, and dosing, and their relationship to medication dosing. Create organizational policies and procedures to define the selection of each weight category (i.e., wet, dry, dosing).

Updated Best Practice 21: Establish organizational expectations for complete medication reconciliation at admission, at all changes in the level of care (including transitions to and from the perioperative setting), and at discharge. Please refer to the full Best Practice document for updates.

Prior Survey Results

Prior to releasing the 2026-2027 Targeted Medication Safety Best Practices for Hospitals, ISMP conducted a survey between May and June 2025 to measure the progress with implementing the existing 2024-2025 Best Practices. These results were presented at the American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting in December 2025. An overview of the survey findings is provided in **Table 1** (pages 3-7).

The number of respondents who participated in our 2025 Best Practice survey was 242. More than one-third (35%) of the respondents indicated their organization has 500 beds or more; 18% have 300-499 beds; 31% have 100-299 beds; 11% have 26-99 beds; and 5% have 25 beds or less. Overall, 63% reported having one or more part- or full-time medication safety officer(s) (MSO).

Conclusion

Hospitals and health systems should focus their medication safety efforts over the next 2 years on these new and any not fully implemented Best Practices. The rationale for recommending the Best Practices, along with related ISMP publications and guidelines, can be found in the full document. Additionally, other documents such as Frequently Asked Questions (FAQs) and an Implementation Worksheet will be available to answer questions, help hospitals identify gaps in the implementation of these Best Practices, and develop an action plan to address the organization's vulnerabilities.

Survey to Measure Baseline Implementation of New Best Practices

ISMP is conducting a brief survey to obtain a baseline measurement of the current level of implementation of the three new Best Practice statements. We would sincerely appreciate your participation in this survey, regardless of whether you have implemented the Best Practice. **Please complete the online survey by April 23, 2026.**

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immediately after preparation (50% vs. 46%); and practitioners receive education about how to administer IV push medications during orientation at their first position (56% vs. 55%). However, improvement was noted in 2025 with more participants reporting that they rarely or never use a prefilled normal saline (NS) flush syringe to dilute, measure, or administer IV push medications (42%) compared to in 2018 (28%), but more is still needed to be done to eliminate this error-prone practice.

Common themes of reported IV push safety challenges and errors that practitioners are currently facing include: unnecessary dilution; utilizing the wrong diluent or preparing the wrong dilution; use of prefilled NS flush syringes to reconstitute and/or dilute; drawing up the entire vial when only a partial vial is intended; administering medications too quickly; and lack of labeling or available labels.

Refer to the white paper for additional details. Review the recommendations provided in the white paper, along with ISMP's guidelines and the new Best Practice, to optimize safe preparation and administration of IV push medications. Thank you to all practitioners (N = 400) who participated in this survey and provided valuable insight into current practices and safety risks with IV push medications.

Special Announcement

Webinar on ready-to-administer (RTA) product safety in the OR

Join us for our webinar, ***Advancing Anesthesia Safety: The Impact of Ready-to-Administer (RTA) Injectable Solutions in the OR***, which will be held on **March 25, 2026, at 2:00 pm**. Faculty will describe risks with preparing and administering medications that are manipulated in the perioperative and procedural settings, and compare the safety profiles of traditional presentations to RTA products that can impact patient outcomes. For more information and to register, click here.

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Best Practice	Full Implementation (%)	Common Barriers (B) or Enablers (E)
Best Practice #1		
Dispense vin**CRIS**tine and other vinca alkaloids in a minibag of a compatible solution and not in a syringe.	**96**	**E:** Infusion bag is the only option in the electronic health record (EHR); pharmacy compounding formulation is prebuilt with minibag
Best Practice #2		
Use a weekly dosage regimen default for oral methotrexate in electronic systems when medication orders are entered.	**76**	**B:** EHR limitations **E:** Remove other frequency options in the indication-based order sentences
Require a hard stop verification of an appropriate oncologic indication for all daily oral methotrexate orders.	**59**	**B:** EHR does not have this functionality; an indication is not required for any medications **E:** Daily frequency can only be ordered through an oncology order set; an indication is required; pharmacy monitoring form is automated in the EHR and requires documentation of patient assessment
Provide specific patient and/or family education for all oral methotrexate orders upon discharge.	**49**	**B:** Lack of staffing to do this 24/7; pharmacists do not routinely educate patients; education printed in discharge instructions cannot be automated (EHR limitation) **E:** Provide methotrexate specific education to patients (e.g., ISMP methotrexate safety sheet)
Best Practice #3		
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.	**43**	**B:** Not a hard stop; lack of nursing time; ED staff overwhelmed; lack of beds or stretchers with scales available; stated weight is an option in the EHR **E:** Made this a priority; regularly share data with staff, and ask for feedback/barriers
Measure and document patient weights in metric units only.	**53**	**B:** EHR allows pounds to be documented; do not have scales that are kg only **E:** Purchased scales that weigh in kg only; EHR and scales locked to kg only
Best Practice #7		
Segregate, sequester, and differentiate all neuromuscular blocking agents (NMBs) from other medications, wherever they are stored in the organization.	**80**	**B:** Anesthesia team is unwilling to move these agents from automated dispensing cabinet (ADC) drawer into a locked lidded ADC pocket in case emergent airway correction is required; not separated in the operating room (OR) due to high volume of use **E:** Only stored in locked lidded bins with ADC warnings
Best Practice #8		
Administer all medication and hydration infusions via a programmable infusion pump utilizing dose error-reduction systems (DERS).	**60**	**B:** Lack of pump availability in certain locations (e.g., ED, OR, procedural areas); incomplete and inaccurate drug libraries; nurses still administer via gravity in the ED **E:** Dashboard to show trends by medication and user to facilitate discussions about barriers
Maintain a compliance rate of greater than 95% for the use of DERS.	**47**	**B:** Overuse of basic infusion; bypassing DERS; lack of reports to monitor data **E:** Made this an organizational priority; interoperability; improved compliance after nurse leaders monitored data and collaborated with staff; renamed basic infusion to "no guardrails" to deter use, built alert if user selects basic infusion: *CAUTION: Using Basic Infusion selection DOES NOT have Guardrails PROTECTION*
Monitor compliance with use of smart pump DERS on a monthly basis.	**63**	**B:** Vendor provides data in quarterly (not monthly) format; lack of time to review data monthly and make meaningful changes to drug library **E:** Monitor by drug library monthly and share data with nurse managers and administration
If your organization allows for the administration of an intravenous (IV) bolus or a loading dose from a continuous medication infusion, use a smart pump that allows programming of the bolus (or loading dose) and continuous infusion rate with separate limits for each.	**71**	**E:** Evaluated drug library and optimized DERS, switched pumps to allow for this feature
Further, implement bidirectional (e.g., autoprogramming and autodocumentation) smart infusion pump interoperability with the EHR and establish organizational expectations (e.g., compliance goals) for the use of autoprogramming and autodocumentation for medication and hydration infusions.	**29**	**B:** Financial and informatics workload barriers; no interface available with current EHR vendor **E:** Switching to a new EHR vendor that supports this; placed RFID chips on pumps to track pump location (room) and monitor compliance in real time
Best Practice #9		
Ensure all appropriate antidotes, reversal agents, and rescue agents are readily available.	**82**	**B:** Limitations due to cost of some antidotes **E:** Completed a formulary crosswalk to ensure appropriate agents are available

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Best Practice	Full Implementation (%)	Common Barriers (B) or Enablers (E)
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.	**63**	**B:** Toxicologists prefer contacting poison control for recommendations **E:** Built specific order sets (e.g., anticoagulation reversal)
Have directions for use/administration readily available in all clinical areas where the antidotes, reversal agents, and rescue agents are used.	**60**	**B:** Directions for use that are built into the order on the medication administration record (MAR) are not available when drugs are removed via override **E:** Included in rapid response bag; extensive drug information resources available via intranet
Best Practice #11		
When compounding sterile preparations, utilize workflow management systems.	**71**	**B:** Lack of leadership buy-in; only available in some pharmacy areas **E:** Utilize data from intravenous workflow management systems (IVWMS) to optimize and minimize bypasses
Best Practice #13		
Eliminate injectable promethazine from the formulary.	**55**	**B:** Provider pushback; restricted for intramuscular (IM) route only; drug shortages with limited alternatives **E:** Promethazine order in the EHR is hidden and has an alert: due to safety concern the pharmacy and therapeutics (P&T) committee has removed injectable promethazine from formulary; replaced with ondansetron/prochlorperazine; promethazine shortage and US Food and Drug Administration (FDA) labeling update helped drive formulary removal
Best Practice #14		
Seek out and use information about medication safety risks and errors that have occurred outside your facility, in other organizations, and take action to prevent similar errors.	**75**	**B:** Difficult to obtain learnings outside of the organization aside from ISMP/ECRI publications; limited resources allocated for medication safety **E:** Include on medication safety committee meeting agenda; review ISMP newsletters, action agendas, Best Practices, and FDA daily bulletin listserv
Best Practice #15		
Verify and document a patient's opioid status (naïve versus tolerant) and type of pain (acute versus chronic) before prescribing and dispensing extended-release and long-acting opioids.	**37**	**B:** Defined in policy but not built in the EHR; EHR limitation does not force this; only built for fenta**NYL** patches **E:** Built this question into orders for extended-release and long-acting opioids; provider required to document prior to prescribing; pharmacist reviews outpatient dispensing history (state controlled substance prescription database) and verifies/documents this information
Best Practice #16		
Limit the variety of medications that can be removed from an ADC using the override function.	**80**	**B:** Lack of 24/7 pharmacy results in everything on override; override still available for all drugs in select locations (postanesthesia care unit [PACU], procedural, ED) **E:** Policy restricts medication and personnel who can override it
Require a medication order (e.g., electronic, written, telephone, verbal) prior to removing any medication from an ADC, including those removed using the override function.	**57**	**B:** Orders entered afterwards as nurses prefer prescribers enter the order rather than entering a verbal order; pharmacists can remove them without orders during emergencies **E:** ADC alert that there is an active order for the drug if attempting to pull via override; signage at ADC to promote orders prior to overriding
Monitor ADC overrides to verify appropriateness, transcription of orders, and documentation of administration.	**66**	**B:** Only done for controlled substances **E:** Dashboard to view data
Periodically review for appropriateness the list of medications available using the override function.	**74**	**E:** Completed during yearly policy review and during formulary updates
Best Practice #17: Safeguard against errors with oxytocin use.		
Require the use of standard order sets for prescribing oxytocin antepartum and postpartum that reflect a standard clinical approach in your organization for labor induction/augmentation and to control postpartum bleeding.	**81**	**B:** Unable to reach provider consensus for orders **E:** EHR prompts provider to select from specific order sets; dedicated multidisciplinary team (including senior leadership) was key to success
Standardize to a single concentration and bag size for both antepartum and postpartum oxytocin infusions (e.g., 30 units of oxytocin in 500 mL Lactated Ringer's solution).	**77**	**B:** We have a single concentration for induction and postpartum but have a second concentration for the fetal demise order set because of fluid volume concerns

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Best Practice	Full Implementation (%)	Common Barriers (B) or Enablers (E)
Standardize how oxytocin doses, concentration, and rates are expressed. Communicate orders for oxytocin infusions in terms of the dose rate (e.g., dosage/time) and not by volume rate (volume/time) and align with the smart infusion pump DERS.	**76**	**B:** Successful with standardization, but nurses must manually program into pump
Provide oxytocin in a standard ready-to-administer form. Boldly label both sides of the infusion bag to differentiate oxytocin bags from plain hydrating solutions and magnesium sulfate infusions.	**71**	**B:** Since labeling of both sides of the bags is not a practice for other high-alert medications and requires manual labeling by staff it was determined not to implement **E:** Purchase from a 503B outsourcer that offers this
Avoid bringing oxytocin infusion bags to the patient's bedside until it is prescribed and needed.	**71**	**B:** Available in a kit at bedside **E:** Included in high-alert policy
Best Practice #18: Maximize the use of barcode verification prior to medication and vaccine administration by expanding use beyond inpatient care areas.		
Specifically target clinical areas with an increased likelihood of a short or limited patient stay (e.g., ED, perioperative areas, infusion clinics, dialysis centers, radiology, labor and delivery areas, catheterization laboratory, outpatient areas).	**42**	**B:** Difficult to implement in certain areas (e.g., OR, procedural, outpatient clinics) **E:** Targeted these departments through compliance data monitoring; shared past errors in the ED to justify going live
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).	**70**	**B:** Data unavailable for outpatient clinics due to EHR limitations **E:** Nurse managers monitor data and follow up for each unit, dedicated project management and capital funds
Best Practice #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.	**63**	**B:** Time-consuming to build out this list within the EHR for scope of each provider involved in the medication management process of high-risk medications **E:** Created a chart that outlines how we are managing risk for these drugs at each step of the medication-use process
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.	**57**	**E:** Added to the high-alert drug policy
Avoid reliance only 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.	**49**	**E:** Built into the MAR; layered strategies such as standardized protocols, order sets, use of checklists, technology including alerts at order entry; technology with data reported to medication safety committee
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).	**69**	**B:** Nurse hesitation to remove this despite data shared **E:** Was able to remove this for almost all high-alert drugs including IV opioids and benzodiazepines
Engage patients and family members to improve safe use of high-alert medications by providing targeted education to those receiving select, defined high-alert medications.	**35**	**B:** Done for select drugs in select care areas **E:** MAR prompts the nurse to provide patient education for first time dose of all new medications; review error report data and ask for feedback during patient satisfaction surveys
Include strategies to address health equity and literacy issues.	**32**	**E:** Translators available via phone; select patient education pamphlets available in the patient's preferred language
Establish criteria to trigger an automatic consultation with a pharmacist or patient educator, diabetes educator, social services, or home care. Specific drugs to consider for targeted education: insulin, U-500 insulin, methotrexate, oral (and injectable) chemotherapy, opioids, investigational medications, anticoagulants, any medication that has an administration device (inhalers, pens, ambulatory infusion pumps), medications that require dose sequencing or 'titration.'	**26**	**B:** Limited funding and staff; gap identified for patients being weaned off sedation/analgesia; reactive process based on reports **E:** Diabetes educator is automatically consulted for select orders; oncology pharmacist provides education to patients receiving chemotherapy; pharmacy consult is automated for select orders (e.g., warfarin, asthma drugs)

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Best Practice	Full Implementation (%)	Common Barriers (B) or Enablers (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., Joint Commission, ISMP, FDA).	**70**	**B:** Time to find this information, review and implement it **E:** Medication safety pharmacist reviews all of these and reports information and planned actions to committees
Establish outcome and process measures to monitor safety and routinely collect data to determine the effectiveness of risk-reduction strategies.	**55**	**B:** Staff are discouraged from bringing forward safety concerns **E:** Rounding tool utilized to confirm strategies are being utilized; annual analysis of reported events, EHR data and medication purchasing
Best Practice #20: Safeguard against wrong-route errors with tranexamic acid.		
Utilize point-of-care barcode-assisted medication safety checks prior to administering medications in surgical and obstetrical areas.	**38**	**B:** No barcode medication administration (BCMA) for anesthesia staff; resistance from surgical areas; not available in the OR; available in the OR but not for anesthesia **E:** Implemented barcode scanning technology for use by the anesthesia team
When appropriate, use premixed IV bags of tranexamic acid, which are less likely to result in mix-ups than vials of tranexamic acid.	**45**	**B:** Drug shortages; cost; vials used for topical and inhalation use; American Society of Health-System Pharmacists (ASHP) pediatric standards for safety recommend straight drug (100 mg/mL); used as IV push by anesthesia; concentration available is too dilute **E:** Patient-specific doses dispensed by pharmacy; completed an analysis and removed vials anywhere a premix could be replaced (e.g., ADCs)
If possible, do not store tranexamic acid in an anesthesia tray.	**67**	**B:** Stored on top of anesthesia carts during cases; anesthesia is against this **E:** Moved into a locked bin
Separate or sequester tranexamic acid in storage locations (e.g., pharmacy, clinical areas) and avoid storing local anesthetics and tranexamic acid near one another.	**61**	**E:** Collaborated with surgery pharmacists to optimize ADC/surgery tray processes in the perioperative areas
To prevent misidentifying medications by viewing only the vial caps, avoid storing injectable medication vials in an upright position, especially when stored in a bin or drawer below eye level. Store them in a way that always keeps their labels visible.	**36**	**B:** Space limitations **E:** Not stored in trays—stored in ADC in ORs; store in ADC bins that require vials lay flat with labels always visible
Conduct a review to identify any look-alike ampules or vials (including caps) and determine if the risk of a mix-up will be reduced by purchasing them from different manufacturers. If so, purchase them from different manufacturers.	**43**	**B:** Limitations to price and purchasing contracts; extreme difficulty during drug shortages **E:** Incorporated into policy; pharmacy completes a review and purchases alternative products when needed
Consider labeling vial caps with a label that states, "Contains Tranexamic Acid."	**14**	**B:** Concern for errors associated with a manual process for pharmacy staff; auxiliary label fatigue; recommend manufacturer add to vial cap
Best Practice #21: Implement strategies to prevent medication errors at transitions in the continuum of care.		
Obtain the most accurate medication list possible upon admission to the organization before the first dose of medication is administered (except in emergency or urgent situations).	**43**	**B:** Staffing barriers; lack of staff education **E:** Pharmacist consult for complex medication regimens; 24/7 clinical pharmacist coverage; medication history technicians in ED 24/7
Include asking about allergies and associated reactions, prescription, and over-the-counter medications (including herbals and dietary supplements), and non-enteral medications.	**57**	**B:** Not a great process for asking about non-prescription drugs; prompts are not embedded in the EHR; varies depending on staff **E:** Standardized education for nurses and admissions
List the drug name, dose, route, frequency, indication, and time of last dose.	**47**	**B:** Not required fields in the EHR; only done for high-alert drugs; challenges with knowing time of last dose **E:** Prompts exist in the EHR
Consider assigning dedicated practitioners to obtain medication histories.	**38**	**B:** No coverage when staff are on vacation; lack of reimbursement; difficulty hiring/keeping scribes **E:** Admissions nurses complete the medication history and pharmacy consulted for complex regimens; dedicated pharmacy technicians
Ensure the medication and doses collected and subsequently ordered are correct therapy for that patient, given their current state of health.	**47**	**E:** Clinical decision support embedded within order sets; evaluate safety reports for opportunities

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Best Practice	Full Implementation (%)	Common Barriers (B) or Enablers (E)
Designate a provider to compare the prescribed medications to those on the medication history list and resolve any discrepancies. Have providers document reconciliation and modifications made to the current therapy upon admission, with each change in level of care, and at discharge.	**41**	**B:** Staff availability and accountability; required at admission and discharge but not during transfer of care **E:** High-level quality improvement project with recommendations embedded into policy
Best Practice #22: Safeguard against errors with vaccines administered in the inpatient and associated outpatient settings.		
Utilize standard order sets to prescribe vaccines. Require an order prior to administration of any vaccine. Utilize the full generic name and brand name (if applicable) and avoid vaccine abbreviations.	**58**	**B:** Gaps in outpatient settings **E:** Built into orders and order sets
Verify a patient's immunization status (in the EHR as well as vaccine registries) prior to providing vaccines.	**54**	**B:** Staff reliance on history provided by patient/family **E:** Established process in outpatient clinics
Provide patients and/or caregivers with vaccine information (e.g., Vaccine Information Statement [VIS]) in their primary language prior to vaccination.	**77**	**B/E:** Not reported
Store vaccines in separate bins or containers based on type and formulation. Store two-component vaccines together.	**77**	**B:** Refrigerator and storage space limitations
Use prefilled syringes when available. If not available, prepare each vaccine dose immediately prior to administration and label with the vaccine name, dose, and if appropriate, the indicated age range.	**80**	**B:** Not labeled in the outpatient setting
If multiple adults and children are being vaccinated at the same time, separate them into distinct treatment areas; bring only one patient's vaccines into the treatment area at a time.	**49**	**E:** Separating patients and caregivers/siblings is not logistically possible and could cause upset to the families; difficult workflow to enter the room multiple times if vaccinating more than one patient; done for inpatient but not outpatient areas **B:** Consulted pharmacy and nursing leadership for safe strategies
Verify the patient's identity using two unique identifiers.	**89**	**B/E:** Not reported
Use barcode scanning technology to verify the correct vaccine and dose are being administered to the correct patient.	**56**	**B:** BCMA not available in outpatient areas; cost of implementation; not supported by leadership **E:** Expanding to physician offices next
Document the vaccine's national drug code (NDC) number, lot number, and expiration date prior to administration; document administration in the EHR, and ensure information is sent to the local or state vaccine registry.	**83**	**E:** Required fields in the EHR
Provide vaccinators with ongoing education and competency assessment about vaccines and their appropriate storage, selection, administration, and monitoring.	**55**	**B:** Nurse education team is limiting the amount of education each month to prevent burnout; education is during orientation only

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