ISMP Institute for Safe Medication Practices
An ECRI Company

ISMP Targeted Medication Safety Best Practices

Rita K. Jew, Pharm.D., MBA, BCPPS, FASHP

President

Institute for Safe Medication Practices (ISMP)

Learning Objectives

- List the new best practices from the *ISMP Targeted Medication Safety Best Practices for Hospitals*.
- Describe the medication errors that each of these new best practices were designed to prevent.
- Describe recommended strategies related to the *ISMP Targeted Medication Safety Best Practices for Hospitals*.

ISMP Institute for Safe Medication Practices
An ECRI Company

Institute for Safe Medication Practices (ISMP)

- Founded in 1994, ISMP is the ***only*** 501c (3) ***non-profit organization devoted entirely to preventing medication errors***
- Multidisciplinary staff with pharmacists, nurses and a medical director
- Certified as a Patient Safety Organization (PSO) by Agency for Healthcare Research and Quality (AHRQ) in 2008
- Acquired by ECRI in January 2020
  - Joint forces with ECRI PSO in September 2020 to become the ECRI and ISMP PSO

ISMP Institute for Safe Medication Practices
An ECRI Company

Our Mission

Advancing patient safety worldwide by empowering the healthcare community to prevent medication errors

Collect & Analyze	reports of medication-related errors and hazardous conditions
Disseminate	timely medication safety information
Educate	healthcare community and consumers
Collaborate	with other organizations
Advocate	for the adoption of safe medication standards
Conduct Research	to provide evidence-based safe medication practices

ISMP Institute for Safe Medication Practices
An ECRI Company

Targeted Medication Safety Best Practices

- Initiated in 2014 with 6 Best Practices for hospitals
- Updated every 2 years
- Provides a source of focus for medication safety efforts
- 22 total for 2024-2025
  - four in archive status
  - one (#12) was incorporated into another (#15)
  - 3 new
- Source:
  - ISMP's National Medication Errors Reporting Program (ISMP MERP)
  - ISMP's National Vaccine Errors Reporting Program (ISMP VERP)
  - Cases from literature, ECRI, and media reports

ISMP Institute for Safe Medication Practices
An ECRI Company

Goal

To identify, inspire, and mobilize widespread adoption of consensus-based Best Practices to address recurring problems that continue to cause fatal and harmful errors, despite repeated warnings in ISMP publications.

Best Practice Development

Newsletter and Publications

Error Reports: MERP, VERP

Internal Staff Brainstorm, Review and Vote

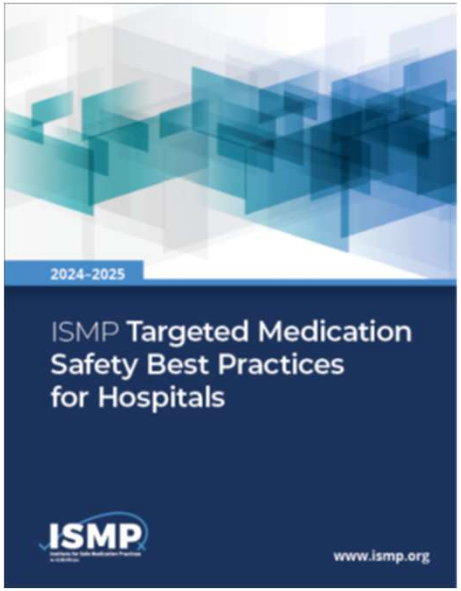
External Expert Advisory Panel Brainstorm, Review and Feedback

ISMP Board of Directors Approval

ISMP Institute for Safe Medication Practices
An ECRI Company

2024-2025 New Best Practices for Hospitals

https://home.ecri.org/blogs/ismp-resources/targeted-medication-safety-best-practices-for-hospitals



ISMP Institute for Safe Medication Practices
An ECRI Company

Problem

- Tranexamic acid is an antifibrinolytic used in a variety of hemorrhagic conditions to control bleeding.
- It prevents the breakdown of fibrin, thus promoting clotting.
- When accidentally administered via a neuraxial route, tranexamic acid injection is a potent neurotoxin.
- Mortality rate with such errors is about 50%.
- It is almost always harmful to the patient. Survivors of intraspinal tranexamic acid often experience seizures, permanent neurological injury, and paraplegia.

Palanisamy A et al. *Anaesthesia.* 2019: 74: 904-14

Problem

- ISMP is aware of numerous reports of unintended neuraxial administration of tranexamic acid.
- ISMP first published about this risk in 2015.
  - At that time, a literature search revealed nearly a dozen more foreign cases
    - Four cases involved fatalities
  - Mix-ups mostly with vials/ampules of tranexamic acid and bupivacaine or ropivacaine when selecting products prior to regional anesthesia
- Follow up reports published by ISMP in 2019 and 2023.

Case

- 67-year-old male presented for left total knee arthroplasty.
- Anesthesia plan: subarachnoid block with monitored anesthesia care; tranexamic acid requested by surgeon for intraoperative administration.
- 10 mL vial of tranexamic acid and bupivacaine removed from ADC. Drew up what was thought to be bupivacaine into a syringe labeled “Marcaine/Fentanyl”.
- 2.5 mL administered without effect. Patient reported pruritus in perineum within minutes.
- Converted to general anesthetic. After induction, patient was noted to have minor leg twitching.
- When its time for tranexamic acid administration, discovered tranexamic acid vial was opened while bupivacaine vial remained sealed.
- Patient experienced seizures after procedure. Cerebral spinal lavage performed.
- Patient had lengthy stay in neuro-ICU, with delirium due to toxic and metabolic encephalopathy, myoclonic status epilepticus requiring prolonged intubation, cognitive deficits, including short- and long-term memory impairment.
- Discharged to rehabilitation hospital, then skilled nursing care and went on to make a remarkable recovery with executive and motor functions returned to baseline ~13 months later.

Lefebvre PA et al. *APSF Newsletter*. 2024; 39: 37, 39-41.

New Best Practice

Safeguard against wrong-route errors with tranexamic acid

ISMP Institute for Safe Medication Practices
An ECRI Company

New Best Practice: Tranexamic Acid

- If possible, do not store tranexamic acid in an anesthesia tray.
  - Separate or sequester tranexamic acid in storage locations (e.g., pharmacy, clinical areas) and avoid storing local anesthetics and tranexamic acid near one another.
- Avoid storing injectable medication vials in an upright position. Store them in a way that always keeps their labels visible.
- Identify 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.
- Consider labeling vial caps with a label that states, “Contains Tranexamic Acid”.
- Utilize point-of-care barcode-assisted medication prior to administering medications in surgical and obstetrical areas.
- When appropriate, use pre-mixed intravenous (IV) tranexamic acid in sodium chloride injection, which is less likely to be confused with tranexamic acid vials.

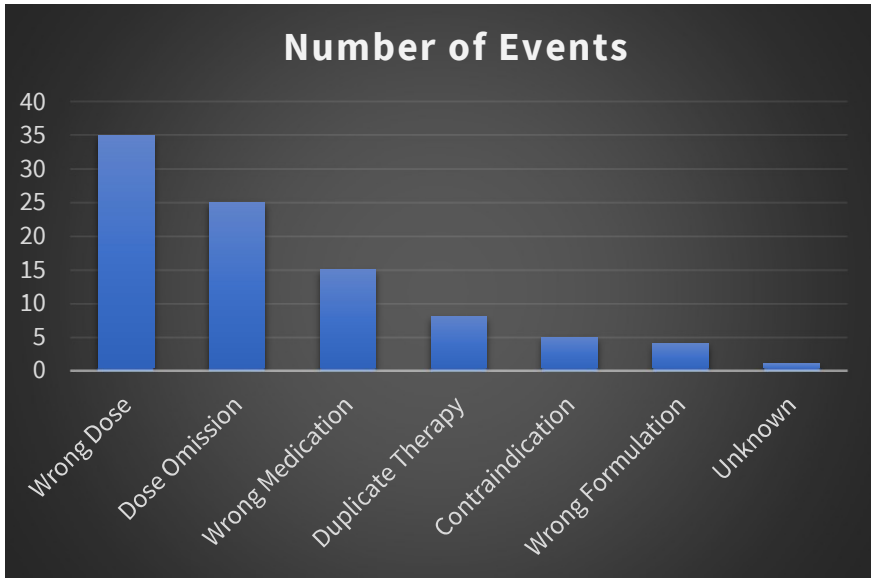
Problem

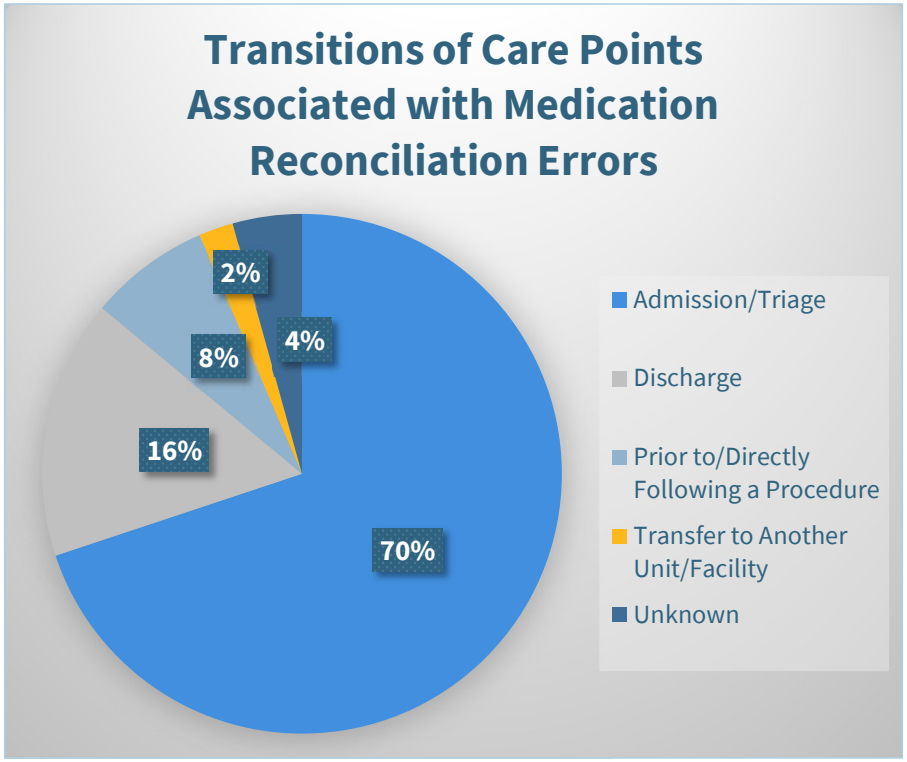
- Failed communication during transition of care have long been a source of medication error.
- Inconsistent knowledge and documentation cause up to 50% of medication errors and up to 20% or adverse drug events.
- 36% of patients experienced medication reconciliation errors at admission, mostly during history gathering.
- At least 1 in 6 patients have a clinically significant medication discrepancy on intrahospital transfers.
- Up to 91% of medication reconciliation errors are clinically significant and 1-2% are serious or potentially life-threatening.

https://www.ahrq.gov/patient-safety/settings/hospital/match/index.html
Mekonnen AB et al. *J Clin Pharm Ther*. 2016; 41 (2): 128-44

ISMP Institute for Safe Medication Practices
An ECRI Company

Problem





https://patientsafetyj.com/article/73535

ISMP Institute for Safe Medication Practices
An ECRI Company

Case

- Prescriber ordered Levothyroxine 250 mcg tablet once daily from patient's home medication list.
- RPh saw TSH was high (68.11 on 6/10/23), indicating dose was too low. Upon investigation, RPh discovered patient was on 50 mcg daily at SNF since April 2023; but later confirmed with outpatient prescriber that dose should be 250 mcg daily.
- During patient's April 2023 admission at SNF, medication reconciliation pharmacy technician only documented 50 mcg daily, when it should have been 250 mcg daily (50 mcg + 200 mcg). Outpatient prescription fill history software showed that levothyroxine 50 mcg was filled 3/31/23 and 200 mcg was filled on 2/11/23. Pharmacy technician only saw levothyroxine 50 mcg daily prescription.
- Patient was discharged to SNF on 50 mcg daily and returned in June for hypothyroidism.

Case

- 33-year-old female patient was transferred from outside hospital.
- 24 hours into her stay, she was started on pain regimen of hydromorphone and lorazepam.
- She was later found to be in agonal breathing. Rapid response, then code blue were called due to hypoxia and airway concerns. Patient became interactive after non-rebreather mask was applied and had stable vitals, except for tachycardia. No escalation of care was required.
- Later, when patient was rolled over for a bed change, a 100 mcg/hour fentanyl patch was noticed on her left shoulder. Patch was not ordered during her admission and was not noted in her pre-admission medications.
- Changes to the patient's pain management regimen were made.

New Best Practice

Implement strategies to prevent medication errors at transitions in the continuum of care

New Best Practice: Medication Reconciliation

Obtain most accurate medication list possible upon admission to organization ***before*** first dose of medication is administered.

Ensure medication and doses collected and subsequently ordered are correct therapy for patient, given current state of health.

Designate a responsible provider to resolve any discrepancies. Have providers document reconciliation and modifications upon admission, with each change in level of care, and at discharge.

ISMP Institute for Safe Medication Practices
An ECRI Company

Problem

- Errors associated with wrong vaccine, wrong dose administered, wrong diluent used for reconstitution, diluent-only administered, and expired vaccines may threaten to undermine protection immunizations provide and may leave patients inadequately protected against serious diseases.
- Analysis of events submitted to the ISMP VERP, suggest vaccine errors continue to occur.

https://home.ecri.org/blogs/ismp-resources/vaccine-bi-annual-report

ISMP Institute for Safe Medication Practices
An ECRI Company

Case

- Medical assistant administered adult hepatitis A vaccine (for patients 19 years and older) to a pediatric patient instead of pediatric hepatitis A vaccine (for children 12 months through 18 years).
- Coworker had pulled adult formulation from refrigerator, and medical assistant confirmed what they thought was the correct vaccine and administered it.

Case

- Two siblings, 10-year-old and 12-year-old, in for well-child check.
- Vaccines ordered for both patients, 10-year-old to receive Flu and HPV and 12-year-old to receive Flu, Meningococcal, and Tdap.
- Orders printed by nurse for both patients. Vaccines prepared. Vaccines taken to exam room and nurse verified HPV being administered to correct patient with mother.
- HPV administered to 12-year-old. Nurse discovered error when 12-year-old sibling stated it was 10-year-old sibling turn.
- Nurse informed provider immediately. Provider spoke with mother regarding inadvertently administering HPV and possible side effects.
- Patient monitored for 15 mins. No reactions noted.

New Best Practice

Safeguard against errors with vaccines administered in the inpatient and associated outpatient settings

New Best Practice: Vaccine Safety

Utilize standard order sets and require order prior to administration of vaccines. Utilize full generic name and brand name and avoid vaccine abbreviations.

Verify patient's immunization status (in EHR and vaccine registries) prior to providing vaccines.

Provide patients/caregivers with vaccine information in their primary language prior to vaccination.

Store vaccines in separate bins/containers based on type and formulation. Store two-component vaccines together.

ISMP Institute for Safe Medication Practices
An ECRI Company

New Best Practice: Vaccine Safety

Use prefilled syringes when available; or prepare each vaccine dose immediately prior to administration, label with vaccine name, dose, and indicated age range.

If multiple patients are being vaccinated at the same time, separate them into distinct treatment areas; bring only one patient's vaccines into treatment area at a time.

Verify patient's identity using two unique identifiers.

New Best Practice: Vaccine Safety

Use barcode scanning technology to verify correct vaccine and dose are being administered to correct patient.

Document vaccine NDC number, lot number, and expiration date ***prior to*** administration and document administration in EHR and send information to vaccine registry.

Provide vaccinators with ongoing education and competency assessment about vaccines and their appropriate storage, selection, administration, and monitoring.

Key Takeaways

- The goal of the ISMP Targeted Medication Safety Best Practices is to identify, inspire, and mobilize widespread adoption of consensus-based Best Practices in hospitals and community pharmacy to address recurring problems that continue to cause fatal and harmful errors, despite repeated warnings in ISMP publications.
- The 2024-2025 ISMP Targeted Medication Safety Best Practices for Hospitals include three new targets:
  - Safeguard against wrong-route errors with tranexamic acid.
  - Implement strategies to prevent medication errors at transitions in the continuum of care.
  - Safeguard against errors with vaccines administered in the inpatient and associated outpatient settings.

ISMP Institute for Safe Medication Practices
An ECRI Company