Error Reduction Strategies for High Alert Medications

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1.0 CE Hour

Sara Steele, PharmD
Dr. Sara Steele earned her PharmD from the University of Nebraska Medical Center College of Pharmacy. She worked as a Clinical Pharmacist at Bryan Health for five years, spending a large portion of her time working in mental health. The position of Pharmacy Manager opened up at the Lincoln Regional Center and Dr. Steele embraced the chance to work with hospital leaders in the development of policies and procedures pertaining to medication management as well as the opportunity to focus on psychiatry. She joined the Pharmacy Technician Program Advisory Board at Southeast Community College in 2007 and has enjoyed the challenge of finding new ways to educate about safe medication practices. Dr. Steele is currently taking a break from regular pharmacy work to spend more time with her family.

Dr. Steele has no financial interests or arrangements that would be considered a conflict of interest for the presentation of this program.
Error Reduction Strategies for High Alert Medications

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DISCLOSURE

Sara R. Steele, PharmD, has no relevant financial relationships that would be considered a conflict of interest for the purposes of this program.

Objectives

Upon completion of this program, the student should be able to:
- Describe what characteristics contribute to a medication or medication class being considered high-alert
- List classes of medications frequently included on high-alert lists
- Explain the Institute for Healthcare Improvement (IHI) three general principles to reduce harm associated with high-alert medications
- Identify tools to assist in high-alert risk assessment

What does high-alert mean?

General definition: A high-alert medication is one that poses a higher risk of harm to a person even when used properly.

Institute for Safe Medication Practices (ISMP) definition: Medications that can cause “significant patient harm when they are used in error”.

What does high-alert mean?

Picture of a stop sign
What does high-alert mean?

- The Joint Commission (TJC or JCAHO) definition: “A medication that has the highest risk for causing harm when it is misused”.

- IHI definition: “A medication that is most likely to cause sufficient harm even when used as intended”.

What should be included on a high-alert list?

- Hospital Lists Should Include:
  - Concentrated electrolytes
  - Neuromuscular blocking agents
  - Opioids
  - Anticoagulants
  - Insulin
  - Epidural medications
  - Intrathecal medications
  - Chemotherapy

- ISMP also encourages adding “potentially harmful drugs used temporarily during a shortage.”

- A few examples:
  - National shortage of Lorazepam 2 mg/mL, only 4 mg/mL available
  - Any shortage of any concentration of Heparin that differs from what the hospital staff is used to having stocked
  - Any examples from the audience?
What should be included on a high-alert list?

- ISMP's Community Pharmacy High-Alert List was developed using reports of harmful medication errors from the FDA and others, as well as lawsuits from medical errors and surveys of community pharmacists.

Community Pharmacy Lists Should Include:
- Antiretroviral Agents
- Oral Chemotherapy
- Oral Hypoglycemics
- Immunosuppressant Agents
- Insulin
- Opioids
- Pregnancy Category X drugs
- Pediatric liquid medications that require measurement
- Anticoagulants

Group Activity: Developing a High-Alert List

Groups assigned one of the following practice settings:
- Large, teaching hospital with more than one campus
- Small community hospital without a 24-hour pharmacy
- Large, multistate retail pharmacy (i.e., a CVS, Walgreens, etc.)
- Small independent retail pharmacy

Groups assigned may award themselves 1 point for each medication on their list that is listed here (other points awarded at speaker discretion):
- Potassium Chloride for injection concentrate
- Potassium Phosphates injection
- Magnesium Sulfate injection
- Sodium Chloride for injection, hypertonic, greater than 0.9% concentration
- Succinylcholine
- Rocuronium
- Vecuronium
- Fentanyl
- Oxycodone
- Morphine
- Hydromorphone
- Herpergan
- Valtrex
- TPA
- Humalog, NPH, Lantus, Levemir, 70/30, etc.
- Daclizumab
- Mycophenolate
- Pimecrolimus
- Siroliimus
- Tacrolimus
- Ramucirumab
- Bosentan, Estazolam, Isotretinoin, Simvastatin, Temazepam
### Error Reduction Strategies for High-Alert Medications

#### We have our list, now what???

- Acute Care ISMP Medication Safety Alert from April 4, 2013, titled *Your High-Alert Medication List – Relatively Useless Without Associated Risk-Reduction Strategies* asserts that some hospitals "rely on low-leverage risk-reduction strategies to prevent errors, such as staff education and high-alert medication labels on pharmacy bins, to keep patients safe." It later says, "In some cases, there are no safety nets in place at all, and hospitals are relying on staff vigilance to keep patients safe when receiving high-alert medications."

#### Design processes to prevent errors and harm

- Develop standardized protocols regarding the ordering, dispensing, and administration of high-alert medications
- Implement policies that dictate that certain high-alert medications are only dispensed directly from the pharmacy (not stocked in floorstock on a nursing unit or available with an override in the automated dispensing machine)
- Require independent checks and/or double checks of high alert medications
- Implement a hard stop within the pharmacy software that requires meaningful action (more than a keystroke) to proceed

#### Design methods to identify errors and harm

- Run reports of bypassed alerts in data entry
- Check original script on refills
- Regular pharmacy staff meetings to share error and near-miss information
- Stay current on error reports through ISMP and other helpful medical literature

#### Design methods to mitigate harm that may result from an error

- Stock reversal agents in patient care areas (naloxone, flumazenil, Vitamin K, glucagon, etc.)
- Minimize or eliminate multiple drug concentrations and/or strengths

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**Group Activity**

Error Reduction Strategy BINGO
Error Reduction Strategies for High-Alert Medications

Error Reduction Strategy BINGO

- As a group, fill in your BINGO spaces with strategies to reduce errors associated with high-alert medications.
- Strategies can be applicable to hospital and/or community pharmacy.

Error Reduction Strategy BINGO

- Develop standardized protocols regarding the ordering, dispensing, and administration of high-alert meds.
- Implement policies that require high-alert meds to be dispensed from the pharmacy.
- Require independent checks of high-alert meds.
- Implement a hard stop in the pharmacy software that requires more than a keystroke to proceed.
- Run reports of bypassed alerts in data entry.

Error Reduction Strategy BINGO

- Check original script on refills.
- Conduct regular meetings to discuss errors and near-misses.
- Stay current on errors being reported.
- Stock reversal agents in patient care areas.
- Minimize or eliminate multiple drug concentrations and/or strengths.

Error Reduction Strategy BINGO

- Ensure all essential patient information is accurate in database.
- Use only the metric system.
- Minimize staff interruptions.
- List both brand and generic name in databases.
- Prevent look-alike drugs from appearing in alphabetical order when selecting medication, both in the database and on the shelf.

Error Reduction Strategy BINGO

- Use tall-man lettering to differentiate similar-looking names.
- Add the words “CONCENTRATED” or “PEDIATRIC” or “MIX” after drug name.
- Review data entry codes for entry error risk.
- Request that customers come to the pharmacy for pick up of high alert med (no drive-thru).
- Implement bar-coding systems.

Error Reduction Strategy BINGO

- Consider careful placement of high-alert meds in automated dispensing machines.
- Standardize available strengths and concentrations in automated dispensing machines, floorstock, and after-hours cabinets.
- Prohibit tablet splitting by hospital staff other than in the pharmacy prior to packaging.
- Employ standard naming for high-alert medications (i.e. generic name only).
- Require a standard insulin drip concentration.
Error Reduction Strategies for High-Alert Medications

### Error Reduction Strategy BINGO

- Require that certain auxiliary labels are placed on high-alert medication bottles.
- Have staff use a standard dosage conversion chart whenever possible with high-alert medication dosing.
- Create a culture of safety that promotes communication and minimizes blame.
- Package and store high-alert medications differently than other medications.
- Utilize the STAR technique: Stop, Think, Act, Review.

### Other things to consider

- Usually the most effective strategies for reducing errors involve layering a system of checks and a multidisciplinary approach.
- Checklists can be a helpful tool to make sure staff follow all steps with a complicated process, such as chemotherapy dose checking or preparation.
- ISMP recommends, “When implementing strategies, there must be a balance on how resources will be impacted by the change,” and “Strategies must be sustainable over time.”

### Tools and Resources for Community Pharmacies on the ISMP Website

- High-Alert Consumer Leaflets
- High-Alert Medication Modeling and Error-Reduction Scorecards (HAMMERS)
- Assessing Barcode Verification System Readiness in Community Pharmacies
- Improving Medication Safety in Community Pharmacy: Assessing Risk and Opportunities for Change
- Root Cause Analysis (RCA) Workbook for Community/Ambulatory Pharmacy
- ISMP Medication Safety Self-Assessment® for Community/Ambulatory Pharmacy

### Tools and Resources for Community Pharmacies on the ISMP Website

- ISMP Medication Safety Alert® Community/Ambulatory Care Edition
- ISMP Ambulatory Care Action Agenda
- Principles of Designing a Medication Label for Community and Mail Order Pharmacy Prescription Packages
- Asses-ERR™ Community Pharmacy Version
- America’s Medicine Cabinet “Use Medicines Safely” Campaign
- Medication Error Reporting
- Eliminating the Use of Error-Prone Abbreviations

### Why a FMEA is necessary (Hospital)

- Develop a Failure Mode Effect Analysis (FMEA) flowchart to evaluate all the potential weak points in a medication delivery system and ways to minimize the weak points with high-alert medications.
- ISMP warns that a FMEA should not be skipped when determining your error reduction strategies because, “if you can’t describe the ways that errors have happened or could happen with the drug, your strategies may not lessen the risk of an error at all.”

### Sample FMEA

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Note: The Sample FMEA image is not fully visible in the provided text.
Questions?

■ Picture of Dwight from the Office

Assessment questions

■ 1. True or False: The Joint Commission definition of a high-alert medication is: a medication that has the highest risk for causing harm when it is misused.
■ 2. List one of the three medication classes commonly included in high-alert lists.
■ 3. True or False: Once a high-alert list has been established by a facility, it should never be changed.
■ 4. True or False: Antiretroviral agents should be included on a community pharmacy high-alert list, but need not be on a hospital high-alert list.

Assessment Questions

■ 5. True or False: Staff education alone is a very effective error-reduction strategy for use with high-alert meds.
■ 6. The first of IHI’s general principles for error-reduction with high-alert meds is “Design _____________ to prevent errors and harm.”
■ 7. True or False: Checking the original script on refills of a high-alert med is an example of IHI’s second principle, “Design methods to identify errors and harm”
■ 8. True or False: Several risk-assessment tools that can be used to assist pharmacies with high-alert meds can be found on the ISMP website.

Answers to assessment questions

■ 1. True
■ 2. Any of the following: Anticoagulants, Opiates, or Insulin/Hypoglycemics
■ 3. False
■ 4. True

Answers to assessment questions

■ 5. False
■ 6. processes
■ 7. True
■ 8. True

References

References

- Preventing and Detecting Data Entry Errors (Wrong Drug, Dose, Directions) www.ismp.org/tools/HAMMERS/Appendix-C-Data-Entry-Errors/3HRC.pdf Accessed 2/16/15
- file:///Volumes/My%20Book/SampleFMEAofPCA.pdf webpage with sample FMEA from ISMP website Accessed 2/16/15
Change: What's New for Pharmacy Technicians?

Friday, April 24, 2015
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Elina Pierce, MSP, CPhT
Elina Pierce has earned her BA in psychology from the University of Nebraska, her master’s degree in Psychology from the University of Phoenix, and is pursuing a PhD in Health Psychology from North Central University. Her pharmacy technician career started at Russ’s pharmacy, and led her to Walgreens where she continues to work as a Certified Pharmacy Technician. Elina works full-time at Southeast Community College running an ASHP-accredited pharmacy technician program, and works part-time for Arts and Sciences division. She teaches college-level classes in the Lincoln high schools, works as a personal assistant to a lawyer, and is self-employed as a tutor. She is passionate about her work as an educator and as a pharmacy technician. Her goal is to propel the field forward to ensure that technicians are appreciated and respected as members of the healthcare team.

Elina has no financial interests or arrangements that would be considered a conflict of interest for the presentation of this program.
WHAT’S NEW FOR PHARMACY TECHNICIANS
Elina Pierce, MSF, CPhT

Learning Objectives
- Discuss pharmacy practice laws and how they apply to pharmacy technicians.
- Explain upcoming changes in requirements for pharmacy technician certification.
- Identify changing roles for pharmacy technicians in the work place.

Pregnancy Categories
- Labeling comparison (FDA, 2014)

Pharmacy Practice Laws and Technicians
- Pregnancy Categories
  - “Pregnancy and Lactation Labeling Rule” (PLLR or final rule) (FDA, 2014)
    - Improved assessment of benefits versus risks associated with a drug
    - Better counseling
    - Ability for patient to make a well-informed decision regarding themselves and their children
    - Removes letters A, B, C, D, and X letters

Pharmacy Practice Laws and Technicians
- Reclassification of Medications
  - Tramadol
  - Marijuana
  - Hydrocodone

Disclosure
- Elina Pierce has no relevant financial relationships that would be considered a conflict of interest for the purposes of this program. This CPE program will not include non-FDA approved medication use.

Diagram of current labeling

Photo of a sign stating full disclosure

Picture of a sign stating full disclosure

Photo of Change Ahead sign
Expansion of pharmacist role
- Vaccinations (Jacobson, 2013)
- Write / dispense prescriptions after physician diagnosis (Gorman, 2014)
- Hormonal contraceptives (Jacobson, 2013)
- Nicotine replacement medications (Jacobson, 2013)
- Prescription drugs for travelers (Jacobson, 2013)

Expansion of pharmacist role
- Help patients manage their medications (Gorman, 2014)
- MTM
- Bubble packs (McDonough, 2012)
- Compounding (McDonough, 2012)

Expansion of technician role
- Taking new prescriptions over the phone (ASHP, 2010)
- Vaccination
- MTM
- Tech-Check-Tech

PTCB (2014)
- Certification
  - By 2020, new PTCB candidates required to complete ASHP/ACPE-accredited pharmacy technician education program
  - Recertification
    - In 2014, one hour of patient safety CE
    - In 2015, twenty hours of pharmacy technician-specific CE
    - In 2016, educational hours limited from 15 to 10
    - In service types of activities decreased from 10 to 5 in 2015 and from 5 to 0 in 2018

Criminal background checks
- Decided not to go through with it due to various state issues
- Various certification programs

By 2017, all technicians working in a facility will HAVE to be certified
ExCPT

- Another option for certification
- Eligibility
  - Same requirements as PTCB exam
    - At least 18 years old
    - Have a high school diploma or a GED
    - Have completed a training program or have a minimum 12 months of pharmacy-related experience within the last 36 months

Exam Blue Print
(Barlington & Anderson, 2015)

<table>
<thead>
<tr>
<th>ExCPT (EXCPT = EXAM FOR THE CERTIFICATION OF PHARMACY TECHNICIANS)</th>
<th>PTCB (PTCE = PHARMACY TECHNICIAN CERTIFICATION EXAM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Regulations and Duties (25%)</td>
<td>- Pharmacology (13.75%)</td>
</tr>
<tr>
<td>- Drug and Drug Products (23%)</td>
<td>- Pharmacy Law and Regulations (12.25%)</td>
</tr>
<tr>
<td>- Dispensing Process (32%)</td>
<td>- Sterile and Non-Sterile Compounding (8.75%)</td>
</tr>
</tbody>
</table>

Things to Consider

- Both grant a CPhT credential
- Both are nationally recognized

... However

- Different exams offered by different entities (PTCB = PTCE, ICPT = ExCPT)
- Ask yourself which organization and/or exam is accepted in your state?
  - PTCE is more widely recognized and endorsed.

Potential Areas of Expertise

- Billing: Durable medical equipment (DME) [i.e., knowledge of and billing]
  - Training coordinator
- Drug Disposal: Superivisory role
  - Claims audit issues
- Automated dispensing machines (education, training, and maintenance): Performance improvement (future, track, success)
  - Charge prescriptions
- Inventory management: High alert medication processes
  - Sterile compounding
- Disosme procedures: Labeling of task, task, task, task, task, task
  - Workflow improvement
- Compliance adherence (i.e., marking, marking, task, task, task, task)
  - Delivery of prescriptions
  - Non-sterile compounding
- Critical: Risk management [what can go wrong]
  - Clinic
- Emergency preparedness: Customer service issues
  - Policies and procedures manual
- Immunizations: New prescriptions over the phone

Now What?

- If you are certified, great!
- If you are not certified, two options:
  - Remain not certified
  - Become certified
    - PTCE
    - ExCPT

Photo of stamp saying certified
How do we get there?

1. Education
2. Certification
3. Experience
4. Involvement
5. Soft Skills
6. Voice

What are the most helpful traits for a technician to possess?

- Anticipates needs
- Works well with people
- Self-starter
- Willing to learn
- Willing to train
- Is a role model
- Punctual
- Time conscious
- Dependable
- Interested in the area of pharmacy
- Detail oriented
- Willing to go the extra mile
- Prioritization
- Honesty
- Ethical behavior
- Moral behavior

BRAINSTORMING

- What are some issues that are occurring in the field as it pertains to pharmacy technicians and potential solutions?

NPA

- As a technician representative, how can I help?
  - What do you need from the NPA?
  - What topics would you like to see on the next year's programming?
  - How many CE offerings would you say is "ideal"?
  - Would you attend a technician breakout session?
  - If we were to have a technician competition session (mortar bowl for technicians, per se), would you participate?
  - Would you be willing to share your expertise at a future conference?

Assessment

- When does LB37 go into effect?
- What control substance schedule is marijuana classified as today?
- Name one helpful trait of a pharmacy technician?
When does LB37 go into effect?
- September 2015

What control substance schedule is marijuana classified as today?
- I

Name one helpful trait of a pharmacy technician?
- See slide 21

By ________, all technicians wanting to sit in for the PTCB exam will have to graduate from an ASHP accredited program.

Name one change in drug labeling as it pertains to “Pregnancy and Lactation Labeling Rule”.

How many certification exams are there for pharmacy technicians looking to become certified?

When does the new pregnancy category labeling go into effect?
- June 30, 2015

Name one way you can further the technician profession?
- See slide 19

True/False – PTCB will run background checks on test candidates.
- False


# References

