Pharmacy Technicians: Case Studies in Preventing Medication Errors

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Disclosures

The presenters have nothing to disclose and have no financial interest in KPhA
1. When hospitalized, a patient can expect to be exposed to how many medication errors?
   a. One per day
   b. One per week
   c. One per month
   d. One per year
2. What is not one of the main causes of dispensing errors?
   a. Distractions and interruptions
   b. Workload/staffing issues
   c. Updated drug references/information
   d. Suboptimal packaging/labeling
   e. Failure to double-check orders, medications, and labels
3. Which of the following statements is true?

a. Distractions and interruptions do not significantly contribute to medication errors.

b. Mindfulness should be avoided, as it can lead to distractions and errors.

c. Distractions and interruptions are more common in the hospital setting than a retail setting.

d. Distractions and interruptions have been shown to more than double the risk of making a dispensing error.
4. Which of the following is **not** a recommended practice to avoid medication errors?

a. Minimize clutter
b. Modifying your process to meet patient needs
c. Use the teach-back method when counseling patients
d. Label each product immediately
e. Ask questions rather than assume
5. What are the “4 A’s” related to Mindfulness?
   a. Assertive, Attentive, Alone, and Adapt
   b. Alert, Attentive, Aware, and Avoid
   c. Assertive, Accountable, Alone, and Avoid
   d. Alert, Accountable, Aware, and Awesome
Program Summary

• This program will review the prevalence of medication errors in the United States, with a particular focus on pharmacy preparations and dispensing errors. The effects of distractions and interruptions will be discussed.
• The core components of a culture of safety will be reviewed, along with an explanation of why those components are critical to patient safety.
• Case studies highlighting the pharmacy technician’s role in patient safety will be reviewed, with accompanying practice pointers.
Learning Objectives

• Describe the prevalence of medication errors in the United States and list the most common contributing factors
• Discuss core concepts of a Culture of Safety related to accountability, respectful communication, and systems improvements
• Understand the role of the pharmacy technician in preventing medication errors
• Define the concept of mindfulness and its impact on patient safety
Medication Errors

• IOM, 1999: Medication errors were estimated to account for more than 7,000 deaths annually

• In 2002, about 1 in 6 respondents to a U.S. survey reported that they or a family member had been given the wrong drug or dose

• Information on types of errors is under-reported or missing
  – Medication errors often go undetected
  – For every medication error that harms a patient, there are 100, mostly undetected, errors that do not cause harm (Bates)
IOM report (2007): *Preventing Medication Errors*

Revealed that at least **1.5 million** preventable medication errors harm patients in the U.S. each year

- **As many as 1 in 5 drug doses given in a hospital may be in error**
- **Patients can expect to be exposed to ~ 1 medication error per day hospitalized**
- Wrong drug and wrong dose errors among most common in hospitals and community pharmacies
- Health professionals cite lack of knowledge as most common cause of error
IOM report (2007): Pharmacy Errors

- Activities associated with preparation present the greatest opportunity for error within the pharmacy
  - Inpatient errors: dispensing of incorrect drug, dosage strength, dose calculations
  - Outpatient/Retail errors: incorrect drug labeling regarding use/administration of med
- Main causes of dispensing errors:
  - Failure to Double check orders, medications, and labels
  - Distractions and Interruptions
  - Suboptimal packaging/labeling
  - Poorly designed work areas
  - Outdated drug references/information
  - Workload/staffing issues
IOM Recommendations: Decreasing Med Errors

• Healthcare providers can follow common sense safety rules to guard against medication errors
  – Always use 2 patient identifiers
  – Verify the order and the drug
  – Share patient information with other healthcare providers
  – Develop safe medication administration habits
  – Talk with patients about their medications

• Systems changes are likely to have the greatest impact on error reduction
  – Electronic prescribing, computer order entry
  – Bar coding and automation
  – Medication error reporting
  – Improved drug labeling and packaging
  – Improved drug information resources for consumers
Pharmacy Dispensing Errors

- 5 Stages in Medication Administration Process
  a) Ordering/Prescribing
  b) Transcribing and Verifying
  c) Dispensing and Delivering
  d) Administering
  e) Monitoring

- **Pharmacy dispensing errors** have been found to range from 4 percent to 42 percent of errors (Walsh)

- Community Pharmacies (IOM, 2007):
  - Dispensing Error Rate: 1.7%-24%
  - Using 1.7% error rate:
    - Estimated **51.5 million errors** during the filling of 3 billions prescriptions in the US **every year**
LEARNING FROM OUR PEERS
DISCLAIMER

The following case studies are based on actual events --- the names and identities of some involved parties have been altered to protect their identities. Please keep this in mind as we review the cases and consider implications of the event.
Wrong Entry Cases

A mother brought in 2 prescriptions – one for herself and one for her son. Both prescriptions were entered and filled under the son’s profile. Error discovered by mother at home the next day.

Two Adderall prescriptions are dropped off at the pharmacy for a brother and a sister. Both prescriptions entered and filled under the sister’s profile.

• What process steps were missed?
• What contributed to the error?
• How could this be avoided?
• How could this affect the patient?
Mistaken Identity Case

John Jayhawk comes into the pharmacy to pick up a prescription. The pharmacy technician asks for his name and he says “JAYHAWK”. The pharmacy technician retrieves the prescription, asks if the patient still lives on 23rd Street; the patient nods yes, and pays for the prescription. John is actually given Jane Jayhawk’s clonazepam prescription instead of his BP medication. John takes one dose of clonazepam before the error is discovered when Jane Jayhawk comes to pick up her prescription and it is missing.

• What process steps were missed?
• What other factors contributed to the error?
• How could this be avoided?
• How could this affect the patient?
LASA Case

Chlorothiazide (DIURIL) 500mg po was ordered. Chlorthalidone (HYGROTIN) 500mg po was inadvertently entered and verified for a patient. The dose of chlorothiazide entered was a 10 fold increase over recommended dosing. A technician, recognizing that 10 x 50mg tabs for one dose was unusual, questioned the order with the pharmacist and the order entry error was realized.

• What contributed to the error?
• How could this be avoided?
• How could this affect the patient?
Practice Pointers: 
Order Processing/Dispensing

• Retail Setting:
  – Verify patients name, address, phone number and birthday
    • Be especially aware when processing medications for more than one family member

• All settings:
  – Don’t assume anything
  – Always verify/update drug allergy information
  – Verify all information typed into computer against original prescription
  – Initial the prescription/label to identify the person who filled/compounded/dispensed the medication
  – Have a Name Alert system in place to help avoid errors for patients with same/similar names
ADC Stocking Case

A technician found that Vitamin K 10mg/mL vials were incorrectly stocked in the Neonatal Automated Dispensing Cabinet instead of the correct NICU concentration of 1mg/0.5mL

- What may have contributed to this error?
- How could this be avoided?
- How could this affect the patient?
Misfill Case

A technician was filling a 90-day prescription for glipizide ER 2.5mg tablets. Three stock bottles were needed to fill the prescription, but the system only requires you to scan one of the three bottles. A bottle of 5mg ER tablets was inadvertently mixed in with the 2.5mg ER tablets. The patient called several days later when she noticed that the tablets didn’t look the same.

• What may have contributed to this error?
• How could this be avoided?
• How could this affect the patient?
Practice Pointers: Stocking/Filling

• Always verify that you are pulling the correct medication for dispense
  – Verify the label NDC with the stock bottle NDC number.
• Verify that all of the bottles/tablets look the same
• Pay close attention when restocking items
  – Only restock unused items
  – Ensure multiple strengths/concentrations are not mixed in together
  – Check expiration dates
• Even when scanning meds to stock/restock, often only required to scan one med/bottle so must also perform visual confirmation
• When checking someone else’s work, don’t just assume it is correct
“Regarding all medications as lethal unless proven otherwise has the potential to drastically reduce medication disasters based on assumption.”

“... everyone should have an equal expectation that there’s as much chance of something significant going wrong as there is that everything will go right”

“...you’re supposed to expect that it will be the wrong dose, wrong medication, wrong path, not just be equally receptive to the possibility.”
Wrong IV Case

An 8 month old is admitted to the Pediatric ICU for heart arrhythmia, seizures, and shock. She is sedated and intubated and receiving many drips including fentanyl, midazolam, and vecuronium.

✓ Vecuronium is made with 20mg (20ml) of drug instead of the ordered dose of 15mg (15ml).
✓ Midazolam 60mg in 30ml of 0.9%NS is made with 5mg/5ml vials, but the label indicates that the concentration of 5mg/ml is to be used.

• What may have contributed to the error?
• How could this be avoided?
• How could this affect the patient?
Wrong Color Case

While delivering medications to a patient’s unit, a technician noticed that an IV bag labeled as levetiracetam (KEPPRA) was dark in color. Knowing that IV levetiracetam is a clear solution and has no color, the technician brought it to the staffing pharmacist. It was determined, based off the color of the bag, that this bag was actually compounded using iron.

• What may have contributed to the error?
• How could this be avoided?
• How could this affect the patient?
Practice Pointers

- Label each product immediately.
- Minimize clutter on the countertop, and keep it clean.
  - Always put your stock away and avoid a build up of numerous medications/bags on the countertop
  - This will help prevent confusion and the possibility of grabbing the wrong medication/fluid
- Develop a systematic procedure that you follow every time you fill a prescription.
  - This will help to maintain an effective and efficient workflow and minimize medication errors.
  - Use the same process every time so you don’t miss a step
Heparin Cases

While restocking heparin 100un/ml 10ml vials into a unit’s Automated Dispensing Cabinet, a technician found several 10,000un/ml 10ml vials were mixed in the same pocket.

The wrong concentration of heparin was used to compound an IV bag. The concentration on the label was heparin 1,000 units/ml, but a 10,000 units/ml vial was used.

• What do these two cases have in common?
• What may have contributed to the error?
• How could this be avoided?
• How could this affect the patient?
Heparin Labeling –
Be Aware to Prevent Med Errors

New Labeling mandated by FDA and recommended by ISMP

- Effective May 1, 2013, the FDA mandated that heparin vial labels must express the strength per the entire container followed by the strength per mL in parentheses (50,000 units/10 mL).
- In the past, the strength was labeled only on a per mL basis (5,000 units/mL), with the volume of the vial appearing in a different location. Staff have mistaken the per mL strength as the total dose contained in a vial, which has led to heparin overdoses.

Be aware of the TOTAL DOSE in the vial

PREVIOUS Labeling

NEW labeling

For IV or SC use Rx only

10 mL Multiple Dose Vial

For IV or SC use Rx only

10 mL Multiple Dose Vial
Fentanyl Patch Cases

2007: Elderly patient was admitted to a hospital after application of a 100 mcg/hour fentanyl patch to the skin.

- A fentanyl patch had been prescribed, and that the patient had continued taking PERCOCET 5/325 2 tablets PO three to four times a day.
- The patient’s mental and physical status had drastically altered and the patient was taken to the ED and admitted to the step-down unit. Patient was later discharged with no permanent injury.
- During the call to the patient’s family, it was also confirmed that the patient and family had not been counseled when picking up the prescription and did not understand the potency of the fentanyl patch.

2013: 15-month-old boy was cuddling with his mother, sleeping on her chest as they both took a nap.

- When the mother awoke, she found her son unresponsive. The child was rushed by ambulance to the hospital, where the child was not able to be resuscitated.
- The child’s mother noticed that the patch on her chest was missing.
- A medical examiner confirmed the child’s access to the patch, revealing toxicology findings of acute fentaNYL intoxication.
Wrong Dose Cases

June 2014: A 60-year-old woman with a history of brain cancer, died a slow and painful death after accidentally taking the equivalent of 3 cycles of oral lomustine therapy at one time (450 mg), believing the pharmacy had dispensed just a single dose (150 mg). (ISMP, July 2014)

2014: For a clonidine 0.1mg tablet prescription, the pharmacy label instructions were “Take 0.5 tablet twice daily.”

✓ The directions were interpreted by the patient’s caregiver to mean, take 5 of the 0.1 mg tablets to obtain a dose of 0.5 mg.
✓ The caregiver remembered the doctor saying to reduce the dose so he cut the tablets in half.

• What similarities do these 4 cases have?
• What likely contributed to these events?
• How could these events be avoided?
Practice Pointers: Patient Counseling

• ISMP, 2014:
  – In practice, patient counseling occurs infrequently except in a few states where it is mandated.
  – Assess the health literacy level of patients and caregivers and provide clear, detailed counseling at the point-of-sale.

• Counseling should be offered for all prescriptions.

• Kansas Law:
  – Counseling is required for all patients for new prescriptions; pharmacist judgment is used for refills
  – Must be performed personally to the patient face-to-face by the pharmacy if dispensed in the pharmacy, otherwise by telephone or in writing.

• Teach Back method is necessary to ensure patient comprehension.
Emily Jerry Story

- http://www.safetyleaders.org/webinars/index
  Webinar_June2011.jsp
Protonix Case

An inpatient technician is batching multiple bags of IV Protonix. After making the bags, she steps away to print the labels. The tech is then interrupted to make four STAT Calcium IV PBs, and accidentally uses one of the unlabeled protonix bags. The mistake is not realized until later when the technician has an extra Protonix IV label.

• What may have contributed to the error?
• How could this be avoided?
• How could this affect the patient?
IOM report: Interruptions & Distractions

• Community Pharmacy Setting study:
  – 5,072 prescriptions analyzed
  – Interruptions: ~3 per person per half hour
  – Distractions: ~3.8 per person per half hour
  – Overall error rate: 3.23%
    • Error rate with one or more interruptions: 6.65%
    • Error rate with one or more distractions: 6.55%

Distractions &/or Interruptions more than DOUBLE the chance that you will make a mistake!!
Exercise: Multitasking
Hutchison's Law:

“Any occurrence requiring undivided attention will be accompanied by a compelling distraction.” - Robert Bloch
Mindfulness

• What is it?
  – Being aware
  – Focused
  – Intentional
  – Thinking about thinking

Mindfulness is simply “living in the moment”:
A state of active, open, and intentional attention on the present.
Mindfulness

- Mindfulness is being **focused on what you are doing in the moment and not being distracted by other things** going on or thinking about what you need to do next.

- When you are NOT mindful, it can lead to mistakes or omissions that ultimately affect the quality of the care the patient receives.

- Stay focused (there are many distractions in the pharmacy, so try to avoid them, and concentrate on the task at hand)

- *Every person plays a MAJOR role in keeping patients safe and making sure that they receive the right medications at the right time*. One of the most important things you can do is always stay focused and ‘mindful’ of what you are doing.
Mindfulness: The 4 A’s

• Stay **ALERT**.
  - This includes self-care: get enough rest; take a break if needed.

• Remain **ATTENTIVE**.
  - Be present and focused on the task/patient. When carrying out a high risk task or interacting with a patient, don’t let your mind wander.

• Be **AWARE**
  - Notice the environment, patient concerns and non-verbal cues.

• **AVOID** distractions
  - Limit interruptions by staff, patients, and/or their families when in the middle of a high risk task.

When in the middle of a task, respectfully ask to finish the task first, and then answer the question or address the concern, since patient safety is the first priority!
Practice Pointers: Summary

• Focus on the task at hand, and minimize distractions and interruptions.
• Keep your work area clean and free from clutter.
• Always double-check your work.
• Ask questions. Never assume.
• Seek help if you are unsure.
• Explain directions for each medication with the patient.
• Be observant, and listen to the patients concerns.
• Retail: Always ask the patient, “Do you have any questions for the pharmacist?”
IOM Recommendations for all healthcare providers

• Set your pace and stay on task
• Limit Distractions and Stay Mindful
• Report possible errors and “Near Misses/Good Catches”
• Stay informed
• Don’t assume anything; information should always be verified
• Listen to the patient
CULTURE OF SAFETY

What is it and why it is essential...
Components of a Culture of Safety

ACCOUNTABILITY
COMMUNICATION WITH RESPECT
TEAMWORK
IMPROVING THE SYSTEM
OPENNESS/TRANSPARENCY
NEAR MISS/EVENT REPORTING
What does it look like?

A Culture of Safety

Safety Requirements

Culture; Attitudes & Behaviors
Take ACTION: Safe patient care is everyone’s responsibility.
Why is Culture important?

• Higher safety focus has been proven to be associated with fewer medication errors
• Supports environment focused on the patient
• Employees are more likely to report problems so that they can be fixed
• IOM Recommendations to reduce med errors:
  – Getting people to report med errors
  – Reviewing the errors in a systematic way
  – Put in place measures to fix problems or reduce likelihood of recurrences
Remember....

- Every role is equally important
- Technician’s are often on the front lines and have the opportunity to make a large impact on patient care
- Stay focused and attentive
- Help identify issues before they harm patients
Questions?
1. When hospitalized, a patient can expect to be exposed to how many medication errors?
   a. One per day
   b. One per week
   c. One per month
   d. One per year
2. What is not one of the main causes of dispensing errors?
   a. Distractions and interruptions
   b. Workload/staffing issues
   c. Updated drug references/information
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   e. Failure to double-check orders, medications, and labels
3. Which of the following statements is true?
   a. Distractions and interruptions do not significantly contribute to medication errors.
   b. Mindfulness should be avoided, as it can lead to distractions and errors.
   c. Distractions and interruptions are more common in the hospital setting than a retail setting.
   d. Distractions and interruptions have been shown to more than double the risk of making a dispensing error.
Post-Test

4. Which of the following is not a recommended practice to avoid medication errors?
   a. Minimize clutter
   b. Modifying your process to meet patient needs
   c. Use the teach-back method when counseling patients
   d. Label each product immediately
   e. Ask questions rather than assume
5. What are the “4 A’s” related to Mindfulness?

a. Assertive, Attentive, Alone, and Adapt
b. Alert, Attentive, Aware, and Avoid
c. Assertive, Accountable, Alone, and Avoid
d. Alert, Accountable, Aware, and Awesome
References


