**Medication Safety Pearls for the Pharmacy Technician**

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**Learning Objectives**

- Classify the most common causes of medication errors
- Describe three different methods used to prevent medication errors
- Identify the impact pharmacy technicians can have on medication safety
- Recognize the various medication safety resources available

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**Institute of Medicine Report**

- **2006**: IOM published a new report, entitled *Preventing Medication Errors*
  - Reiterated the problem of medication errors
  - Found that naming, labeling, and packaging accounted for 33% of medication errors, including 30% of fatalities

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**Presentation Roadmap**

- Definition of a medication error
- Present common causes of medication errors
- Review three error prevention strategies
- Key takeaways
- Self-assessment questions
- Brief overview of medication safety resources

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**Institute of Medicine Report**

- **1999**: Institute of Medicine (IOM) published the report: *To Err is Human: Building a Better Health System*
  - Faulted America’s health system for causing between 44,000 and 98,000 error-related deaths annually
  - Called for improvements in the reporting and handling of medical errors
  - Serious and preventable errors are occurring in our health system

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**Institute of Medicine Report**

- **2010**: The Office of Inspector General for the Department of Health and Human Services
  - Summarized in the report – *Adverse Events in Hospitals: National Incidence Among Medicare Beneficiaries*
  - Inadequate hospital care contributed to the deaths of 180,000 patients in Medicare alone in a given year
### Institute of Medicine Report

<table>
<thead>
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<th>2013</th>
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Journal of Patient Safety includes a study that stated:
- Between 210,000 and 440,000 patients each year who go to the hospital for care suffer some type of preventable harm
- Medical errors are the fourth leading cause of death in America
- Following heart disease, cancer, and chronic respiratory disease respectively

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### How Are Medication Errors Classified

- **James Reason**
  - Psychology professor
  - Research focused on human performance in hazardous systems
- Categorized errors according to two types of causes
- **Active Failure**
  - Individual/human based
- **Latent Failure**
  - System based

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### Active Failure: Example 1

- Mistake
- Error in reasoning could lead to wrong choice

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### Medication Error Defined

- National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) defines a medication error as:

  "...any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional/patient or consumer. Such events may be related to professional or patient actions, to the design, production, distribution, administration, education, monitoring, and use."  

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### Active Failure Versus Latent Failure

- **Active Failure**
  - Error due to the focus on individual acts
  - Slips – doing a familiar action in the wrong way
  - Lapses – failures of memory such that planned actions do not happen
  - Mistakes – errors in reasoning that lead to wrong choices

- **Latent Failure**
  - Error due to systemic properties, or root causes
  - System interfaces
  - Poor maintenance or management practices
  - Look-Alike Sound-Alike

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### Active Failure: Example 2

- Slips – doing a familiar action in the wrong way
Can You Read This?

“Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it deosn’t mttaer in waht ordr the ltteers in a wrod are, the onlj iprmoetnt tihng is taht the frist and lsat ltteer be at the rghit pclae. Ths sbcnuee the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe.”

NEVER underestimate the power of the human brain!

Which of the following is a medication error?

- A retail pharmacy technician forgets to record allergies and patient receives a medication to which he is allergic; patient harm occurs
- A hospital pharmacy technician notices the incorrect drug product in an automated dispensing machine drawer and replaces it with the correct product before patient receives medication; no patient harm occurs
- Both are medication errors
- Neither are medication errors

“Swiss Cheese Model”

- Illustrates how mishaps occur when several safety nets fail and each layer of safety procedure is not rigorously applied

Latent Failure: Example

- Poor maintenance or management practices

Where Can Medication Errors Occur?

- **Anywhere** within the pharmacy process
  - This includes:
    - Order entry
    - Preparation and filling
    - Verification
    - Dispensing
    - Medication storage practices
    - Communication

“Swiss Cheese Model”: Example

- Hepatitis requires a 2nd pharmacist check, is only checked by one
- Medication error
- MD order for Heparin drop
- Hepatitis and Heparin are stacked on the same shelf
- Pharmacist does not catch error when checking
- Minimal training for new technicians
Inadequate and/or ineffective communication is a common cause of medication errors.

- True
- False

Miscommunication of Drug Orders
- The American Hospital Association
  - Miscommunication of drug orders as a common type of medication errors
  - These can involve:
    - Verbal communication
    - Sound-alike medications
    - Written communication
    - Poor handwriting
    - Unapproved abbreviations

Scope of the Problem
- The Joint Commission’s Sentinel Events Database
  - From 1995 to 2004
  - Over 3,000 sentinel events analyzed
  - Revealed 65% of the reported problems were caused by poor communication

Unapproved Abbreviations

<table>
<thead>
<tr>
<th>Do Not Use</th>
<th>Intended Meaning</th>
<th>Potential Problem</th>
<th>Use Instead</th>
</tr>
</thead>
<tbody>
<tr>
<td>mg</td>
<td>Milligrams</td>
<td>Decimal point is missed</td>
<td>mg</td>
</tr>
<tr>
<td>U</td>
<td>Unit</td>
<td>“U” should be written out as “unit”</td>
<td>Unit</td>
</tr>
<tr>
<td>QD</td>
<td>Daily</td>
<td>Period after the “Q” is mistaken for “I” and the “O” mistaken for “I”</td>
<td>q.d.</td>
</tr>
<tr>
<td>QOD</td>
<td>Every Other Day</td>
<td>Period after the “Q” is mistaken for “I” and the “O” mistaken for “I”</td>
<td>q.o.d.</td>
</tr>
</tbody>
</table>

Example of Misinterpreted Abbreviation
- **Intended** dose of 4 units in patient history
- **Interpreted as** 44 units
- “U” should be written out as “unit”

Example of Misinterpreted Abbreviation
- **Intended** “Potassium chloride QD” in medication order
- **Interpreted as** QID
- Should be written as “daily”
Error Prevention Strategies

Verbal Repeat Back
Validate and Verify
Self-Checking Using S.T.A.R.
Peer Checking

Verbal Repeat Back Scenario
You are currently the IV technician working with a pharmacist who was just given an order for a stat TPA, the pharmacist urgently communicates to you from across the pharmacy to “make an 8 mg loading dose of TPA for John Smith in ED bed 6”!

The Key with Numbers
• Clearly state each number
  • Restate the number as “fifteen” so that’s “one-five”
  • This avoids mishearing it as “fifty”
  • Restate the number as “sixteen” so that’s “one-six”
  • This avoids mishearing it as “sixty”

Verbal Repeat Back

Receiver: Completes communication cycle and/or verbally repeats back clarified discrepancies.

Sender: Confirms information and/or clarifies discrepancies.

Sender: Verbally communicates information.

Receiver: Repeats back the key information communicated.

What key information should you quickly repeat back to the pharmacist to confirm you understood the request?
Error Prevention Strategies

*Verbal: Repeat-Back*
*Validate and Verify*
*Self-Checking Using S.T.A.R.*
*Peer Checking*

**Validate And Verify - Error Avoided**
- IV levothyroxine ordered for patient in ICU
- IV Pharmacy technician questioned unusually high-dose
- Dose did not make sense (Validate)
  - Previously never saw a dose this high
  - Levothyroxine was sent with a 1 cc syringe
  - Dose would require a different syringe
- Tech decided to verify dose with pharmacist
  - Pharmacist recognized concern
  - Investigated order
  - Found PO:IV conversion was incorrect
  - Dose ordered was 4x higher

**Clarifying Questions**
- What do you see...

**Remember…**
- When clarifying, ask open ended questions
  - What do you see?
  - Oppose to, *do you see...*
- What did you say?
  - Oppose to, *did you say...*
- When did you want me to make the IV?

*Open-ended questions helps prevent confirmation bias!!*
Self-Check Using S.T.A.R.

Stop  
Pause for 1 - 2 seconds to focus your attention on the task at hand

Think  
Consider the action you’re about to take

Act  
Concentrate and carry out the task

Review  
Check to make sure that the task was done right and that you got the right result

STOP is the most important step. It gives your brain a chance to catch up with what your hands are getting ready to do.

Error Prevention Strategies

Verbal Repeat Back
Validate and Verify
Self-Checking Using S.T.A.R.
Peer Checking

Peer Checking - Error Avoided

- Infusion Center patients
- Appointments made in advance
- Experienced technician
- Infliximab (Remicade®) and Abatacept (Orienca®)
- Expensive medications
- Both drips are made with NS
- Reconstituted with sterile water

Remember...We are better together!!

Peer Checking

- Take advantage of working together
- Check the accuracy of each other’s work
- Identify slips and lapses
- Point out unusual situations or hazards
- Impromptu consultation
- Opportunity to share error prevention experiences

Simple, Yet Effective

- Verbal Repeat Back
  - Requires the receiver to acknowledge the information
  - Restates to sender for accuracy
- Validate And Verify
  - Ask yourself the question first
  - Use your resources and get an expert
- S.T.A.R.
  - The key is to “Stop”
    - An effective way to avoid slips and lapses
- Peer Checking
  - The key is teamwork
    - Be willing to check others AND be willing to have others check you
To prevent confirmation bias what type of questions should you ask?

- Closed-Ended
- Open-Ended
- Circular
- All of the above

Which of the following is/are a different method(s) used to prevent medication errors?

- Verbal Repeat Back
- Validate and Verify
- Stop, Think, Act, Review (S.T.A.R.)
- All of the above

Medication Safety Resources

- Offers drug safety resources for consumers and healthcare professionals
- Focus is on “Information for Healthcare Professionals (Drugs)"
- These resources include:
  - Drug Safety Communications
  - Easily accessible drug safety information available to the public
  - Drug Alerts and Statements
  - Provides consumers and providers “real time” information concerning medication alerts and issues

U.S. Food and Drug Administration (FDA)

How to Access FDA Resource Link

FDA Resource Continued

- Medication Recalls
  - Three different types:
    - Class I
      - Serious adverse health concerns or death
    - Class II
      - Temporary or medically reversible concerns
    - Class III
      - Not likely to cause adverse health concerns
- Market withdrawal
  - Product having a minor violation; not subject to FDA legal action
- Medical device safety alert
  - When device may present an unreasonable risk of substantial harm
**FDA: MedWatch**

- MedWatch
  - This is the FDA's safety information and adverse event reporting program
  - Serves two main purposes
    - Includes FDA Adverse Event Reporting System (FAERS) formally known as AERS
    - Provides clinical information
  - Voluntary and mandatory reporting

**Institute for Safe Medication Practices (ISMP)**

- One of the most well known and utilized medication safety resource
- Provides information for the professional and consumer regarding medication safety
- What you will find on this website:
  - ISMP Newsletter
  - Webinars
  - Educational Opportunities
  - Error Reporting
  - ISMP Consultations
  - Additional Tools

**Confused Drug Names**

<table>
<thead>
<tr>
<th>Confused Drug Name</th>
<th>Drug Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ClonazePAM</td>
<td>ClonIdine</td>
</tr>
<tr>
<td>Colace</td>
<td>Cozaar</td>
</tr>
</tbody>
</table>

**Additional Resources**

- National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP)
- National Alert Network (NAN)
- Agency for Healthcare Research and Quality (AHRQ)
- Patient Safety Network
- Pennsylvania Patient Safety Authority
- Articles

**Pharmacy Technicians are Vital**

- Offer a unique perspective of the medication use process
- Various opportunities to recognize and evade errors
  - Pre-verification and post-verification
    - Prepare and deliver medications
  - Inside and outside of the department
    - Visible on every floor
    - Medication delivery and removal
Identifying unsafe medication practices, then notifying colleagues and pharmacists about them is a way pharmacy technicians can promote medication safety.

True  
False

Key Takeaways
- Miscommunication is a common cause of medication errors
  - Mistakes easily made with verbal and written communication
  - Be willing to ask for clarification and double checks
- Various methods and resources are available to prevent medication errors
  - Verbal Repeat Back
  - Validate And Verify
  - S.T.A.R.
  - Peer Checking
  - FDA
  - ISMP
  - NCC MERP
  - AHRQ

Key Takeaways Continued
- Pharmacy technicians are essential to error prevention
  - Opportunity to recognize errors pre and post verification
  - Visible inside and outside the pharmacy department
- Remember to...
  - Always think of your patients; put their interest and safety first!

Questions
“Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning.”
- Albert Einstein