Medication Errors

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Objectives

- Discuss the impact of medication errors
- List the most common medication errors
- Describe strategies to prevent look-alike sound-alike drug errors (LASA drugs)
- Review the potential risks of medical abbreviation use
- Outline strategies for medication error prevention
  - Individual Perspective
  - Organization Perspective
Examples

Statistics

• Accuracy Rate in Community Pharmacy:

  98.3%

• This translates to 4 errors per day in a pharmacy filling 250 prescriptions daily

Statistics

• 2/3 of adverse events are associated with four medication classes:
  1. Warfarin
  2. Insulin
  3. Oral antiplatelet agents
  4. Oral hypoglycemic agents
Statistics

• What age group(s) are at the highest risk for ADRs due to medication errors?
  • Under 5 years old
  • Over 65 years old

Impact

• Medication errors account for an estimated $21 billion in healthcare costs every year
• There were almost 4 billion prescriptions filled in 2013...
  – Based on the assumed error rate, 68 million prescriptions were filled incorrectly
• 100,000 adults are treated in emergency departments each year because of adverse events caused by antibiotics
• 120,000 hospitalizations yearly are due to ADRs

Impact

• For every 1,000 people taking prescription medications:
  – 90 seek medical attention due to ADRs
    • 40 of those patients have problems due to a medication error
• Americans lose an estimated 20 million work days per year due to incorrect use of medications prescribed for heart or circulatory diseases alone
A Closer Look at Medication Errors

How Do Errors Occur?

<table>
<thead>
<tr>
<th>Error</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Patient Info</td>
<td>Missing allergies, DOB, renal function, medical conditions, etc.</td>
</tr>
<tr>
<td>Incomplete Verification</td>
<td>Warnings overlooked or ignored, checks for high-alert drugs and high-risk populations not performed</td>
</tr>
<tr>
<td>Failure to Select Correct Drug Product</td>
<td>Similar packaging, names, locations</td>
</tr>
<tr>
<td>Other</td>
<td>Distractions, lack of staff education or training, lack of patient counseling, etc.</td>
</tr>
</tbody>
</table>

Other Errors

- Inappropriate drug storage
- Inappropriate labeling
- Inappropriate use of device
- Incorrect preparation

AND MORE...
Where Do Errors Occur?

- **Prescriber Error**
  - Incorrect medication written/selected
  - Incorrect dose
  - Incorrect instructions
  - Not factoring in patient specific characteristics (Allergies, age, liver/kidney function, etc.)

- **Nursing Error**
  - Incorrect medication selected
  - Incorrect administration

- **Patient Error**
  - Incorrect interpretation of directions
  - Improper medication use (route, quantity, frequency)

- **Pharmacy Error**
  - Incorrect medication dispensed
  - Wrong, incomplete, or confusing instructions
  - Wrong or inappropriate dose
  - Wrong patient selected
  - Improper preparation
  - Administration errors – immunizations/IV’s
  - Failing to clarify unclear instructions
  - Failure to counsel patient
  - Point of sale errors
Look-Alike Sound-Alike Drugs (LASA)

Which regulatory body publishes a list of commonly confused drugs for use as a reference tool in pharmacies?

A. DEA  
B. FDA  
C. ISMP  
D. USP

LASA Examples

- Hydroxyzine & Hydralazine
- Clonidine & Clonazepam
- Celebrex & Celexa
- Tramadol & Trazodone & Toradol
- Amiloride & Amlodipine
- Hydrocodone & Oxycodone
- Risperidone & Ropinirole
- Zyloprim & Zolpidem
- Zyrtec & Zyprexa
- Humulin U-100, U-500
- MSO4 & MgSO4
Preventing LASA Errors

- Do not store problematic medications in alphabetical order
- Ask for the indication of the prescribed medication
- Repeat back verbal orders
- Request or provide spelling of the medication
- Tall Man Letters
  - busPIRone & buPROPion
  - clomiPHENE & clomiPRAMINE

According to ISMP, which of the following abbreviations are considered “error prone” (select all that apply):

A. QD  
B. QOD  
C. D/C  
D. HS  
E. 10000
Abbreviations

• Can be easily misinterpreted
• Problems with abbreviations:
  – Poor handwriting
  – Variable meanings
  – Use of unapproved abbreviations
  – Overlooked decimal points

Problematic Abbreviations

• QD / QID
  – once daily vs. four times daily
• AD, AS, AU / OD, OS, OU
  – O’s and A’s may look similar if written poorly
• HS / hs
  – May be half strength or at bedtime
• Decimal points missed .1 or 1.0
  – Mistaken as 1 and 10 if decimal point not seen
  – Use 0’s only when appropriate
  – Should be written as 0.1 and 1

Electronic Prescribing:
A Solution to Med Errors?
True or False

E-prescribing eliminates the risk of prescribing errors

FALSE

E-Prescribing Errors

• Missing or mismatched quantities
  – “1” entered as the quantity for insulin, creams
• Mismatched or conflicting dosage forms
  – Prescribed drug = solution; sig directions for tablets
• Wrong drug selected alphabetically
  – Propranolol instead of Propafenone

E-Prescribing Errors

• Instructions in sig field contradict text in note field
  – Sig says “1 tab QID”
  – Note field says “1-2 tabs 3-4 times daily as needed”
• Wrong instructions selected
  – Three times daily vs. every 3 hours
• No dispensing units
  – #1 instead of 1 ml or 1 tsp
Strategies for Error Prevention

Individual Perspective

- Develop a routine
- Organize your workplace
- Reduce distractions
  - Distraction is the leading cause of errors in pharmacy
- Final verification of prescription should be completed by someone other than the person who data entered the prescription
  - If another person is not available, delay checking if possible
- Verify secondary identifiers at multiple stages of the prescription process
- Counsel your patients

Organization Perspective

- Technology
  - Barcode scanners
  - Image scanners
  - Automation
  - Drug images at verification
- Staff
  - Adequate training
  - Adequate number of staff for a given volume
- Work flow/Process
  - Enable appropriate checks and balances
  - Standardize procedures
- Quality improvement
Specific Strategies for Prevention

- Intake
  - Write DOB or other secondary identifier on all hardcopies
  - Update allergy info at each encounter

- Order Entry
  - Identify/evaluate all computerized alerts

- Filling
  - Use technology when available (Barcode scanners, etc.) to improve accuracy
  - Avoid the habit of filling what you expect vs. examining each prescription and drug individually
    - Same size/color bottles, usual medications/directions from a particular physician, etc.

Verification

- Double check all aspects of the prescription (including past history)
- Evaluate appropriateness of therapy (including diagnosis or indication)

Point of Sale/Pick Up

- Correctly identify patient
- Use a secondary identifier (DOB) to increase the likelihood of identifying an error
- Counsel patients

Patient Counseling

- Indian Health Service Counseling Questions:
  1. What did the doctor tell you this medication was for?
  2. How did the doctor tell you to take it?
  3. What did the doctor tell you to expect?

What potential medication errors will these 3 simple questions catch?
Handling Medication Errors

How Do We Handle an Error?

• Prepare policies and procedures in advance
  – Define how staff will respond to a potential medication error
  – Define how to communicate with patients/caregivers following an error
  – Define when to notify a prescriber
• Correct the error
• Document the error
  – What happened, how was it handled, who was contacted, what was the result, what is the plan to avoid similar errors in the future?

How Do We Handle an Error?

• Be open and honest with patients and caregivers impacted by the error
• Apologize
• Be empathetic
• Do not make excuses

When a patient reports an error to an outside agency, it is usually due to poor handling by pharmacy staff, not due to the error itself.
How Do We Handle an Error?

• Quality improvement

• Root Cause Analysis

Scenarios

For each of the following scenarios, provide answers to the questions below:

1. What happened/might have happened that resulted in the medication error?
   • There may be multiple potential errors

2. Based on the identified problems, what improvements would you make to the current process?
Scenario #1

Jane Doe is a 56 year old woman who comes to the pharmacy with three new handwritten prescriptions from her doctor. This is her second time at the pharmacy. While speaking with the employee at drop off, the patient states that she will be back to pick the medication up later today.

A few hours later, Jane Doe picks up what she thought were the refills that she asked for two days ago. After returning home, she looks at her medication and is confused by what she sees. The medications that she received had her name on it, but they were not the refills that she was expecting.

Scenario #2

A pharmacy receives an e-script for a 7 month old:

**Cefdinir 250/5**

2 po daily x 10 days

The prescription is filled with the directions “take two teaspoonsful by mouth daily for 10 days” and is dispensed to the parents.

Scenario #3

Mr. Jones is in the hospital receiving IV medications. The prescriber orders a heparin flush. The pharmacist dispenses heparin 10,000 units/mL to the nurse who administers it to the patient.
Scenario #4

Mr. Smith leaves the pharmacy after picking up what he thought was his monthly metoprolol prescription. When he gets home he notices that the tablets look different. He calls the pharmacy to inquire about it and the employee says “it’s probably just a different manufacturer. I wouldn’t worry about it.” Mr. Smith proceeds to take the medicine for the next week.

Later, he reports to the doctor and states that he has not been feeling well. His blood pressure has been running extremely high. Upon examination the medication in Mr. Smith’s bottle is not metoprolol.

Scenario #5

Mrs. Williams presents to the pharmacy with a new prescription for insulin. Her medication is filled and in 15 minutes, Mrs. Williams is on her way home with her new basal insulin prescription. Mrs. Williams reports back to the pharmacy two months later stating that her blood sugar has not improved at all with the basal insulin. The pharmacist asks Mrs. Williams to demonstrate how she is using the insulin pen. Mrs. Williams states that after dialing up her dose, she injects the needle into her abdomen and dials the end of the pen back down to inject the insulin.

Scenario #6

Mrs. Johnson is in the hospital. She is unable to swallow medication. Her potassium is low and the doctor orders 20 meq of IV KCl. The pharmacist sends KCl 20 meq with directions to give IV push.
Questions?

Resources


Additional Resources

- FDA and ISMP Lists of Look‐Alike Drug Names with Recommended Tall Man Letters

- ISMP's List of Confused Drug Names

- ISMP's List of Error‐Prone Abbreviations, Symbols, and Dose Designations

- ISMP Root Cause Analysis Workbook for Community/Ambulatory Pharmacy

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