In-Service Training Program

Prevention of Medication Errors
OBJECTIVES

1. Define medication error.
2. List three physiologic changes in the elderly that compound the risks of taking medications.
3. Name two factors contributing to medication errors.
4. State the “five rights” when administering medications.
5. List four tips for preventing medication errors.
INTRODUCTION

- Medication errors cause at least one death every day and injure approximately 1.3 million people annually in the United States. ¹

¹ http://www.fda.gov/cder/drug/MedErrors Cited July 29, 2004
INTRODUCTION

Medication errors can occur anywhere in the distribution system:

- Prescribing
- Repackaging
- Dispensing
- Administering
- Monitoring
INTRODUCTION

Common causes of such errors include:

- Poor communication
- Ambiguities in product names, directions for use, medical abbreviations or writing
- Poor procedures or techniques
- Patient misuse because of poor understanding of the directions for use of the product
INTRODUCTION

In addition, job stress, lack of product knowledge or training, and similar labeling or packaging of a product may be the cause of, or contribute to, an actual or potential error.
INTRODUCTION

The National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP), an independent body comprised of 25 national and international organizations, 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 healthcare professional, patient, or consumer.”

[2] Ibid.
MEDICATION ERROR

Defined by the Centers for Medicare and Medicaid Long-Term Care Regulations

There is a specific regulation that The Centers for Medicare and Medicaid reviews during the long-term care survey process. This regulation [F-Tag 332 §483.25(m)(1) and F-Tag 333] states:

(m) **Medication Errors.** The facility must ensure that (1) It is free of medication error rates of five percent or greater; and (2) Residents are free of any significant medication errors.
HOW MEDICATION ERRORS AFFECT THE ELDERLY

The elderly are at greater risk for medication errors and/or complications for a number of reasons. The elderly:

➢ Generally take more medications than the young, so they are at greater risk of taking the wrong medication or taking the right medication in the wrong dosage.
HOW MEDICATION ERRORS AFFECT THE ELDERLY

The elderly:

- Are more sensitive to the effects of medication due to physiologic changes and may not be able to tolerate usual adult dosages
- Use more over-the-counter (OTC) medications than younger people, thus increasing the risk of incompatibilities of medications or overdoses
HOW MEDICATION ERRORS AFFECT THE ELDERLY

The elderly:

- May suffer from cognitive impairment, making following administration and dosage instructions difficult and dangerous.

- May experience vision problems, making reading directions difficult, increasing the risk of error.
The elderly:

- May live alone and lack a primary caregiver or someone to assist in the administration of medications
- May experience financial constraints, preventing them from obtaining the necessary medication in adequate quantities
HOW MEDICATION ERRORS AFFECT THE ELDERLY

The elderly:

- May lack necessary transportation, preventing them from obtaining prescribed medications
HOW MEDICATION ERRORS AFFECT THE ELDERLY

Physiologic changes related to the aging process compound the risks the elderly already face when taking medications.
HOW MEDICATION ERRORS AFFECT THE ELDERLY

General Physiologic Changes:

- Increased risk of developing chronic diseases
- Increased functional and cognitive deficits
- Increased percentage of body fat
- Loss of muscle mass
- Decreased body water
HOW MEDICATION ERRORS AFFECT THE ELDERLY

- Decreased cardiac output
- Decreased kidney and liver function
- Decreased effectiveness of the immune system
- Decreased plasma albumin

Result: Because of these changes, a decrease in the dose of some medications may be needed to optimize benefits and avoid toxicity and adverse reactions.
HOW MEDICATION ERRORS AFFECT THE ELDERLY

Physiologic Changes and Drug Absorption:
- Decreased stomach acid and intestinal blood flow
- Decreased stomach emptying time

Result: Because of these changes, there may be a decrease in the rate of drug absorption, causing a delay of action and peak effectiveness.
HOW MEDICATION ERRORS AFFECT THE ELDERLY

Physiologic Changes and Drug Distribution:

- Changes in body composition
- Reduced lean muscle mass; increased ratio of fat to muscle
- Reduced cardiac output

Result: Because of physiologic changes in the body (changes in body fat, muscle tissue, cardiac output, body water, etc.) the distribution of certain drugs may change.
HOW MEDICATION ERRORS AFFECT THE ELDERLY

Physiologic Changes and Drug Metabolism:

- Decrease in liver blood flow, liver size and enzyme activity, which affect the ability of the liver to breakdown (metabolize) drugs.

Result: Because of the decrease in liver function, it may be necessary to reduce the dose of medications metabolized by the liver.
HOW MEDICATION ERRORS AFFECT THE ELDERLY

Physiologic Changes and Drug Elimination:

- Decrease in kidney blood flow and drug receptor site(s) causing more (or less) sensitivity to a drug effect

Result: Because of the decrease in kidney function, it may be necessary to reduce the dose of medications metabolized by the kidneys.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

The American Hospital Association (AHA) lists the following factors as common causes of medication errors:

1. *Incomplete resident information*. For example, not knowing about a resident’s allergies, other medications, previous diagnoses and lab results.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

2. *Unavailable drug information.* For example, lack of up-to-date warnings of how a particular drug may interact with food or other drugs.

3. *Miscommunication of drug orders.* For example, poor handwriting, confusion between drugs with similar names, misuse of zeroes and decimal points, confusion of metric and other dosing units and inappropriate abbreviations.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

4. Lack of appropriate labeling. For example, when a drug is prepared and repackaged into smaller units.

5. Environmental factors. For example, lighting, heat, noise and interruptions can distract the healthcare worker during drug administration.3

FACTORS CONTRIBUTING TO MEDICATION ERRORS

Failure in the Medication Management System

➢ Generally speaking, resident injuries or deaths resulting from medication errors should not be attributed to individual healthcare workers, but rather to the breakdown of a complex healthcare system.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

- The 1999 Institute of Medicine (IOM) report clearly states that medication errors are the result of a series of failures in the medication management system.
- The following slides describe the sequential elements of the medication management system and identifies possible reasons for medication errors throughout the process.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

Medication Management System Process and Possible Reasons for Errors:

- Assessing the resident’s medical needs
  - Missed symptoms
- Selecting the appropriate medication for the resident
  - Confusing drugs that look alike or sound alike
FACTORS CONTRIBUTING TO MEDICATION ERRORS

- Writing and ordering the prescription
  - Dose miscalculations
  - Unclear orders
  - Relying on memory to identify drug names instead of referring to a Physician Desk Reference (PDR)
  - Incorrect use of decimal points
  - Confusing use of abbreviations and symbols
  - Illegible written prescriptions
FACTORS CONTRIBUTING TO MEDICATION ERRORS

- Transmitting the prescription to the pharmacy
  - Lost transmission
  - Unable to read transmission (print too light)
- Entering the prescription into pharmacy records
  - Transcription error(s)
FACTORS CONTRIBUTING TO MEDICATION ERRORS

- Dispensing the medication
  - Poor inventory control
  - Medication count error
  - Automated medication dispensing devices (AMDD) that include more than one type of drug
FACTORS CONTRIBUTING TO MEDICATION ERRORS

- Processing the prescription
  - Labeling or packaging error(s)
  - Confusing packaging
- Administering the medication
  - Administered to the wrong resident
  - Noncompliance by resident
FACTORS CONTRIBUTING TO MEDICATION ERRORS

- Instructing the resident
  - Cultural or language
- Observing/monitoring the resident
  - Inadequate monitoring
  - Not knowing what signs and symptoms to observe and monitor
FACTORS CONTRIBUTING TO MEDICATION ERRORS

In addition, the healthcare worker may be coping with personal stresses, a heavier-than-normal workload or unusual distractions. All can contribute to medication errors.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

Categories of Medication-Related Problems

It is important to remember that the same medication in the same dosage given to two different residents may have two completely different results. For one resident, a particular medication may be the solution to a serious medical problem.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

For the other, the medication may lead to a more serious medical problem or loss of life due to complications, allergies or interactions.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

The following eight categories of medication-related errors have been identified:

1. Untreated indication
   The resident requires medication but is not receiving the medication.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

2. Improper drug selection
   The resident requires medication but is receiving the wrong medication.

3. Sub-therapeutic dosage
   The resident is being treated with an inadequate dose of the correct medication.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

4. Failure to receive drugs
   The resident has a medical problem as a result of not receiving the proper medication.

5. Over dosage
   The resident is being treated with too much of the correct drug.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

6. Adverse drug reaction
The resident has a medical problem as a result of an unintended and detrimental adverse drug reaction.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

7. Drug interaction
   The resident has a medical problem as a result of an interaction between medications or food.

8. Drug use without indication
   The resident is taking a medication without a valid medical reason.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

Unique Aspects of Healthcare
Research, much of it sponsored by AHRQ’s predecessor, the Agency for Health Care Policy and Research, documents that the rate of healthcare errors is far higher than the error rate in other industries.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

The unique aspects behind healthcare errors include the following:

- Healthcare is distinct in its complexity

A resident is the recipient of numerous activities performed each day that rely on the interaction of monitoring, treatment and support systems.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

- Healthcare is decentralized and fragmented

For example, the prescription and delivery of medications requires the completion of at least five interdependent steps: ordering, transcribing, dispensing, delivering and administering. Within any of these steps are opportunities for error.
FACTORS CONTRIBUTING TO MEDICATION ERRORS

- **Organizational factors**
  Healthcare is provided in a variety of settings.

- **Other**
  Medical errors usually affect only a single resident at a time and are therefore treated as isolated incidents.
PREVENTING MEDICATION ERRORS

Not One Simple Solution
The 1999 IOM report and the Quality Interagency Coordination Task Force (QuIC) agree that the solution to eliminating medication errors is complex.
PREVENTING MEDICATION ERRORS

The following areas need to be further explored as ways to prevent medication errors:

- Accurate reporting systems and a determination of what type of errors should require mandatory reporting.
PREVENTING MEDICATION ERRORS

- Computerized systems:
  - Distribution: how drugs are distributed
  - Labeling: how drugs can be more clearly labeled
  - Laboratory and X-ray reports: how results affect drug dosages
PREVENTING MEDICATION ERRORS

• Medical records exchange: how the information is documented in the medical record
• Prescription writing: how to create uniform standards of writing
• Storage: how drugs are stored and retrieved to decrease potential errors
PREVENTING MEDICATION ERRORS

Illegible handwriting of prescriptions is one of the primary causes of medication errors. This area could easily be served by technology, yet the ISMP estimates that less than five percent of U.S. physicians write prescriptions electronically.
PREVENTING MEDICATION ERRORS

There are three primary reasons for such a low percentage of electronically written prescriptions:

- The physician’s reluctance to learn and use computers
- The unavailability of convenient hardware and medication software
- The cost of technology
PREVENTING MEDICATION ERRORS

It is important to note that incorporating technology into the medication delivery system will not solve all the problems by itself. It is only one of many necessary interventions to ensure the safety of nursing home residents.
Preventing Medication Errors

Promoting a Culture of Safety

Promoting a culture of safety means that the healthcare industry must stop “blaming” individuals, take an objective look at what happened and look for possible solutions. The end result is a healthier and safer environment for residents.
PREVENTING MEDICATION ERRORS

Steps to promoting a culture of safety include:

1. Determining why the error occurred
   • Prevent recurrence, do not assign blame
   • Use science: obtain facts, be thorough
   • Identify weak points in the system.
PREVENTING MEDICATION ERRORS

2. Establishing methodologies to address existing problems
   • Use agreed upon methodologies
   • Evaluate and revise as necessary.

3. Emphasizing safety versus assigning blame.
PREVENTING MEDICATION ERRORS

4. Encouraging co-workers to voice observed problems in a constructive manner.

5. Learning from each other.
PREVENTING MEDICATION ERRORS

The Five Rights

When administering medications, remember the five rights:

- Right drug
- Right dose
- Right resident
- Right time
- Right route
PREVENTING MEDICATION ERRORS

Right Drug

➢ Know the generic and brand name of the drug.
➢ Know why the drug is ordered.
➢ Have a current PDR readily available for reference.
PREVENTING MEDICATION ERRORS

➢ Check the container label three times and compare to the Medication Administration Record (MAR):
  • Once before taking the container from the shelf or drawer,
  • Once while removing the drug from the container, and
  • Once when returning the drug container to the shelf or drawer.
PREVENTING MEDICATION ERRORS

- Never give a medication from a container that is not properly labeled or a medication that someone else has prepared.
- Keep unit-dose packages wrapped until the medication is ready to be given.
PREVENTING MEDICATION ERRORS

- Make sure the dosage symbols and abbreviations are clearly designated on the MAR and container. If not, stop and clarify.
- If medication is a different color or shape, check with the pharmacist.
PREVENTING MEDICATION ERRORS

➢ If a calculation is needed for a correct dose, ask another qualified person to check the calculation.

➢ Have another qualified person check “high-risk” drugs such as insulin or anticoagulants.
PREVENTING MEDICATION ERRORS

Right Resident

- Always identify the resident. Identification can be determined by either looking at the resident’s wristband, the resident’s picture or asking another person who is familiar with the resident for verification.

- Never leave a drug at a resident’s bedside unless the resident has an order to self-administer.
PREVENTING MEDICATION ERRORS

Right Time

- The right time is considered one hour before or after the scheduled time except for specific drugs (before and after meals) and/or as ordered (sliding scale insulin).
Right Route

- A physician’s order must designate the correct route. If none is given, call the physician.
- If the route is changed, a new order must be written.
PREVENTING MEDICATION ERRORS

Twenty Tips for Preventing Medication Errors

Preventing medication errors is everyone’s concern. Here are some tips to remember:

1. Be an active, cooperative member of the healthcare team.
2. Always read the drug packaging label three times during dose preparation.
3. Write legibly.
PREVENTING MEDICATION ERRORS

4. Do not guess at anything. If an order is difficult to read, ask for clarification.
5. If workload is unusually heavy, speak with the charge nurse.
6. Correctly identify the resident before administering any medications.
7. Monitor residents for possible adverse drug reactions (ADRs).
PREVENTING MEDICATION ERRORS

8. Slow down. Rushing nearly always results in errors.

9. Clearly write all orders with a ballpoint pen. Print the name of the drug.

10. Avoid the use of abbreviations for drug names.

11. Avoid the use of unnecessary symbols on medication orders.
12. Include the indication for the medication with each order. For example, “for severe pain.”

13. Before administering any unfamiliar medication, refer to a PDR or contact the pharmacist.
14. If the situation requires a telephone order, repeat the order back for verification.

15. Maintain only authorized medications on the nursing unit.

16. Return all discontinued medications promptly to the Director of Nursing (DON) for destruction.
PREVENTING MEDICATION ERRORS

17. Always use a zero to precede a decimal point when dosages are less than 1. For example, 0.5mg.

18. Complete a Medication Error Form for all errors.
PREVENTING MEDICATION ERRORS

19. Trend all reports and discuss in the Quality Assurance and Assessment (QA&A) committee.

20. Implement annual in-services on medication error prevention.
PREVENTING MEDICATION ERRORS

JCAHO and Medication Safety
The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has acknowledged the need for a more refined system of preventing medication-related errors.

The 2004 Patient Safety Goals http://www.jcaho.org/index.htm include the following medication-related goals:
PREVENTING MEDICATION ERRORS

Goal #2: Improve the effectiveness of communication among caregivers. (Note: this goal is repeated in the 2005 goals).

- Implement a process for taking verbal or telephone orders or critical test results that require a verification "read-back" of the complete order or test result by the person receiving the order or test result.

- Standardize the abbreviations, acronyms and symbols used throughout the organization, including a list of abbreviations, acronyms and symbols not to use. (See handouts for list of abbreviations.)
The 2005 Patient Safety Goals include the following medication-related goals:

Goal #1: Improve the accuracy of resident identification.

- Use at least two resident identifiers (neither to be the resident's room number) whenever administering medications or blood products, taking blood samples and other specimens for clinical testing, or providing any other treatments or procedures.
Goal #3: Improve the safety of using medications.

- Identify and, at a minimum, annually review a list of look-alike/sound-alike drugs used in the organization, and take action to prevent errors involving the interchange of these drugs.
PREVENTING MEDICATION ERRORS

Goal #6: Accurately and completely reconcile medications across the continuum of care.

During 2005, for full implementation by January 2006, develop a process for obtaining and documenting a complete list of the resident's current medications upon the resident's admission to the organization and with the involvement of the resident. This process includes a comparison of the medications the organization provides to those on the list.
PREVENTING MEDICATION ERRORS

Goal #6 (continued)

- A complete list of the resident's medications is communicated to the next provider of service when it refers or transfers a resident to another setting, service, practitioner or level of care within or outside the organization.
SUMMARY

Medication errors are a serious problem in the United States, largely due to the fragmented nature of our healthcare industry. The prescription and delivery of medications requires the completion of ordering, transcribing, dispensing, delivering and administering. Any of these steps can lead to opportunities for error.
SUMMARY
Understanding why medication errors occur and finding ways to prevent future errors is critical to the health and safety of residents. Ongoing training should be incorporated into orientation and yearly skill competency to evaluate all employees who administer medications.