



Medical Errors

A Self-Study Learning Module

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OBJECTIVES

1. Define Medical Error
2. Understand the magnitude of a medical error and how it affects patients safety.
3. Correctly identify different types of medical errors.
4. List four types of medication errors.
5. List the Five Rights of Medication
6. Identify four reasons medical errors occur
7. Correctly identify the difference between an adverse reaction and medication error.
8. Correctly identify the difference between an adverse reaction and medication error
9. Describe how to identify and report a medication error
10. Define the elements of Root Cause Analysis.

Introduction

The worst fear of all healthcare professionals and every nurse providing direct patient care knows that it is inevitable that she/he will witness or make a medication error in the course of their career. The question is how many medical errors are made on a daily basis. The exact incidence of medical errors is, for many reasons unknown. A percentage of medical errors are not reports for several reasons. Various medical errors occur, but the individual(s) involved do not recognize that an error has been made. Consequently, there is no standardized way to report medical errors, and there is no centralized agency that collects this information.

There has been enough data to suggest that medical errors are common and are not unusual. Since 1995, the Food and Drug Administration has received more than 95,000 reports of medication errors, and a study published November 2010 by the inspector general of the Department of Health and Human Services estimated that unexpected adverse effects added billions of dollars to health care costs, they contributed to 180,000 deaths a year, and that 44 percent of these were clearly or likely preventable. (General, 2013)

The Institute of Medicine's (IOM) 1999 published *To Err is Human: Building a Safer Health System*, this illuminated the unfortunate reality of medical errors in the health care industry. Healthcare professional must commit to paying greater attention to evaluating current approaches for reducing errors and building a new system to reduce the incidences of medical errors.

As a result of an increase in medical error incidents, the Florida Legislature, during 2001 passed a law mandating all healthcare professionals in Florida complete a 2 hour course on the topic of prevention of medical errors. This continuing education course is intended to satisfy the requirements of the Florida Law and provide all licensed healthcare professionals with information regarding the root cause analysis process, error reduction, prevention and patient safety.

What is a Medical Error?

There is no universally agreed upon definition of a medical error, and many of the commonly used definitions are accurate and useful. A definition of medication error is, "any preventable event that may cause or lead inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer." Another definition is "a medical error is harm caused to the patient that results from the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim. Errors can include problems in practice, products, procedures and systems." (Taskforce, 2012)

Also the IOM report defines an error as "the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim." (Medicine, 2013)

Adverse Reaction or Medication Error

The question is generally raised is this an adverse reaction or a medication error. They are different in nature and as a healthcare provider it is recommended that you understand the difference.

Adverse Reaction: is an appreciable noxious or unpleasant reaction that occurs during the normal, proper use of a medicinal product.

Medication Error: is defined as harm that occurs caused by mistakes made in the processes of prescribing, transcribing, dispensing, administering or monitoring a drug.

- ❖ **Key point: Adverse drug events do not involve mistakes in those processes.**

Defining Different Types of Medical Errors

As there are many definitions of the term medical error, there are classifications systems for the different types of medical errors. The classifications are all basically valid, but they are all, to some degree arbitrary. However, they are very useful because they can help health care professionals to remember and recognize areas of practice and care where medical errors are likely to occur. The classification scheme used here has been collected from various sources (Medicine, 2013) (Report to the President on Medical Errors, 2013)

Diagnosis errors: Diagnosis errors occur when a disease or condition is wrongly diagnosed, not diagnosed at all, or diagnosed too late. Both primary conditions and complications can be wrongly diagnosed, diagnosed too late, and so on.

Prevention errors: Prevention errors occur when a health care professional has failed to use reasonable and appropriate levels of attention, knowledge and planning to prevent an adverse event, primary conditions or a complication. This definition implies that health care professionals are vigilant and proactive. Also implied in this definition is the responsibility of health care professionals to provide themselves, their patients, and each other with the knowledge and resources they need to prevent illnesses and /or complications.

Institutional errors: These are defined as errors that occur because of the basic structure of a hospital, clinic, and so on. This may involve the way that staffing is arranged, the way that communication and information are handled, the in-place procedure for checking medications-any feature of the protocols and procedures of an institution that leads to the commission of a medical error.

Medication errors: Medication errors are what most people think of –and what may nurses worry about especially when they think of medication errors. Medication errors occur when a patient gets the wrong drug, gets the wrong dose, or when a drug is given at the wrong dose ,or when a drug is given at the wrong time or in the wrong route. Medication errors occur when a medication is given for the wrong reasons. Medication errors also occur when side effects and/or adverse effects are not anticipated, recognized or treated correctly. They can also occur when drug interactions occur and should/could have been avoided or anticipated. They can be made when the drug is ordered, when it is dispensed or when the drug is administered. Poor

communications, staffing issues and lack of knowledge appear to be three of the most common reasons why medication errors occur.

Treatment errors: Treatment errors can occur in many situations. The wrong treatment may be given, it may be given at the wrong time, or it may be given for the wrong reason. Treatments may be omitted, they may be duplicated, they may be given late (this is very common type of medical error), they may be given incorrectly, or treatment may be unnecessary.

Adverse medical incident means medical negligence, intentional misconduct, and any other act, neglect or default of a health care facility or health care provider which caused or could have caused injury to or the death of a patient, including, but not limited to, those incidents that are required by state or federal law to be reported to any governmental agency or body incidents that are reported to or reviewed by any health care facility peer review, risk management, quality assurance, credentials, or similar committee or any representative of any such committee (FS 381.028)

An adverse event attributable to error is a preventable adverse event, also called a **sentinel event**, because it signals the need to ask why the error occurred and make changes in the structural system.

Most Common Medical Errors

The most commonly committed medical errors in the order of occurrence are:

- ❖ **Medication errors** are the most common medical error. This will be discussed in a different module in detail.
- ❖ **Infection:** Hospitals, clinics and other health care facilities are common sources of infection, and infections acquired by patients after contact with the health care system are very common: the Center for Disease Control (CDC) has estimated approximately 1 in 10 patients will acquire an infection after they are hospitalized.
- ❖ **Falls:** this may not seem like a medical error however, a majority of patient falls could be avoided with a fall prevention program with reasonable and appropriate anticipation and intervention. This is a common medical error. (7)
- ❖ **Surgical errors:** Surgical errors include a variety of types. Wrong site surgery was on the most common errors in orthopedic procedures. Risk factors contributing to these errors include more than one surgeon involve in the case, multiple procedures performed during the surgical case, and unusual time constraints, particularly pressure to speed up a preoperative procedures. In an effort to reduce this risk JCAHO recommends the following:
 - Clearly mark the operative site, involving the patient in the marking process
 - Require oral verification of the correct site (TIME OUT) in the operating room by each member of a surgical team
 - Develop a verification checklist that lists all document referencing intended surgical procedure and site
- ❖ **Incorrect Diagnosis:** Incorrect diagnosis is a very common occurrence. In a study in 2009 found that incorrect diagnosis was relatively common and a study in 2010 found that family practice physicians noted that approximately 25 percent of all claims against these physicians were for diagnosis errors, most commonly for the diagnosis of myocardial infarction and breast cancer. (10) (11)
- ❖ **Pharmacy errors:** Grouped into two groups mechanical and judgmental.
 - **Mechanical errors** happen during the preparation or the processing of a prescription. (wrong medication/wrong dose)
 - **Judgmental errors** happen during the process of patient screening, patient counseling, or drug monitoring.
- ❖ **Laboratory Errors:** Errors made in the lab could be technical, procedural or the result of poor communication. Common errors involve specimen errors such as

mislabeled, a mismatch between the specimen and requisition, and unlabeled specimens.

- ❖ **Treatment errors:** This area overlaps with medication errors, but occurs when procedures and treatments are performed incorrectly, performed for the wrong person, performed for the wrong reason and so on.
- ❖ **Communication error:** One of the most common causes of medical errors. Accurate communication is vital for diagnosing; treating; dispensing and administering medications; maintaining patient safety; following policies and procedures; and making sure all treatments are done correctly.
 - **Sentinel event**-is defined as an unexpected occurrence involving death or physical or psychological injury or the risk thereof. Sentinel events indicated a need for immediate investigation and response. This is considered a **serious medical error**.

Communication errors are verbal and written and they occur in every part of the process of delivering care. Poor and inaccurate communication can contribute to causing medical errors.

Medication Errors

Medication- related errors are the most common types of errors, and of primary concern to health care providers who administer medications, as well as the practitioner who prescribes medications, and the pharmacist who dispenses medications. Medication errors are called preventable adverse drug events (ADEs).

The three most common errors:

- ❖ Omission errors- failure to administer an ordered medication dose
- ❖ Improper dose/quantity error- any medication dose, strength or quantity that differs from that prescribed
- ❖ Unauthorized drug errors – the medication dispensed and/or administered was not authorized by the prescriber, this category includes dispensing or administering the wrong dose.

Factors and Processes Affecting Medication Errors

In hospitals, medication errors are common during every step of the administration process; obtaining the medication, prescribing it, dispensing it, administering it, and monitoring its impact. Taking into account all the many types of errors that occur in a hospital, there is an average of at least one medication error daily. Due to this complexity of the medication process, there is much room for potential error. The golden standard is to protect the patient from medication errors. To ensure this process medication administration needs to follow the “five rights” .

FIVE RIGHTS OF MEDICATION ADMINISTRATION

- ❖ Right medication
- ❖ Right dose
- ❖ Right patient
- ❖ Right route
- ❖ Right time

The following have been added to the rights:

- ❖ Right for information
- ❖ Right to decline or refuse
- ❖ Right documentation

- ❖ Right evaluation/reassessment

Safe Medication Administration

Health care providers must be attentive and critically think about the many factors that can cause medication errors. Reasons for medication administration errors may include error, system design, the actions of physicians, pharmacists, and other nurses.

Reasons for healthcare provider fall short to errors. The following categories are:

- ❖ **Inadequate knowledge and skill**

- This can reflect the patients lack of his/her knowledge regarding current diagnosis and the correct administration of medication. Medication error can relate to knowing how to operate and IV pump/infusion device, mistaking IV lines for NG tubes/feeding tubes, failure to adequately prepare medications before administration, failure to check and use at least two identifiers prior to administration of medication, and failure to monitor the patient after the administration of medication for side effects.

- ❖ **Failure to comply with the policy and procedures or “short cutting” the process**

- This is usually the lack of attention to the safeguarding of proper administration procedures to prevent errors; no checking patient's identification or allergies, not checking the MAR, and looking at medications given to the nurse late by a pharmacy.

- ❖ **Failure in communication**

- This is the following factors: transcription errors, use of illegal abbreviations, illegible handwriting, and incorrect interpretations of the physicians order, use of verbal orders, failure to document medications given or omitted, and unclear MARs.

- ❖ **Individual and /or system issues**

- As healthcare providers we are faced with many challenges such as workload, distractions when obtaining and administering medication, working off shifts, working overtime, and not working in an area you are not accustomed too. In addition, many facilities use different

manufacturers that distribute products that re look-alike and sound alike drugs names, unclear labeling, multi-dose vials, similar packaging, failure to check the order against the MAR or the pyxis, and failure to specify drug concentrations on IV bags. Example: *Hespan* and *Heparin* and *Amrinone* and amiodarone.

Steps to take in Reducing Drug-Name Errors

1. Know the medication you will be administering
2. Have a standardized system in place for processing medication doses and dose times.
3. Do not use abbreviations
4. Limit the different IV/Infusion pumps
5. Implement Physician Order Entry System
6. Implement unit dose
7. Do not store concentrated potassium on the patient care units and be sure pharmacy dilutes the medication.

Disclosing Medical Errors

Once a medical error has been discovered, the situation should be evaluated for actual or potential harm to the patient. There should be an assessment of the root cause or causes of the error and then the error should be appropriately documented.

Documentation of medical errors is important, and you should use the same principles of documentation that you would use for any clinical situation: be accurate, be honest, be objective, and be timely. Do not try to document person feelings or what might be considered excuses.

If you have made a medication error or a treatment error, simply document what happened to the patient, what actions you took and to whom the error was reported. All health care facilities should have policies and procedure in place that outlines technical steps for handling medication errors. What to tell the patient?

As a patient you have the right to know about anything that has affected your health or has a potential to affect your health. The question remains *how much information is given to the patient and who is telling them?*

In the event an actual medical error has been committed, steps to disclosure are straightforward. Someone must tell the patient what has happened and why, tell the patient who made the error, apologize for the error and explain the steps that have taken to reduce this type of error in the future. It is important that disclosure of an error be done properly so advice and feedback are given. Always meet with a supervisor, administrator, or other authority prior to meeting with the patient. When talking to the patient having a supervisor or physician in attendance assures the patient that the error has been recognized by people with the authority to make changes. This insures that the health care facility is aware and not just one person is accepting responsibility.

After reporting an error a Root Cause Analysis (RCA) will need to be performed. We will discuss this further in another area.

Factors that Influence the Occurrence of Errors

- Distraction/inattention while doing tasks
- Fatigue, too many consecutive days worked
- Increasing patient volume, staff overworked
- Illegible handwriting or incomplete orders can contribute to the misinterpretation or incomplete information causes a gap in the care of patients
- Mislabeling or not labeling medications/syringes
- Trial and error used when unfamiliar situations or new situations
- Used an old solution or, technology to resolve a new situation
- Familiarity- seeing what we want to see even if it is incorrect causes of mistakes.

Factors that Affect Medication Errors

- Miscommunication
- Misidentification
- Incorrect patient labeling
- Improper abbreviations
- Sound alike drugs
- Incorrect placement in the medication drawer
- Inaccurate calculations
- Drug is not available
- Incorrect/improper order interpretation
- Equipment issue
- Healthcare provider or patient not available
- Incorrect diluent

Identification of a near miss is just as important as identification of an actual error in that it helps highlight issues with medication administration process. A full **assessment** is important in understanding what may have gone wrong anywhere in the process. Looking at the error from all angles, results in a **diagnosis** of exactly where the mistake(s) was/were made. Then it is important to **implement** corrective actions so that the error does not occur again. A system of good checks and balances and a food error free outcome for our patients is the final **evaluation**.

There are five stages of the medication process:

1. Ordering and prescribing
2. Transcribing and verifying
3. Dispensing and delivering
4. Administering
5. Monitoring and reporting

Prescribing and Ordering

When following the five stages of medication administration, ordering and prescribing are the two most often causes of a series of errors that result in a patient receiving the wrong dose or wrong medication. An example: if a physician does not transcribe and order clearly and legibly and/or incomplete; errors can be made in the translation of the order. In order to ensure a safe ordering/prescribing process it is important to have essential information readily available to those involved. This can include allergies/sensitivities, age, weight, lab values, and current medications compatibility. Considerations should be given to computer generated order entry systems. Illegible physician orders are high risk for incurring possible mistakes. For handwritten orders, policies and procedures should address acceptable order format. Abbreviations and acronyms should be avoided. Standardized process such as medication administration times, inpatient order format, and protocols for verbal orders to reduce variability in medication administration system should be considered. A system policy detailing the process for order clarification by healthcare providers can decrease the risk of inhibition from aggressive and confrontational behavior when seeking clarification for an ordering physician which leads to a decrease in preventing errors.

Transcribing, Dispensing, and Delivering

In all healthcare settings, physicians, nurses, and pharmacist are involved in transcribing, verifying, dispensing and delivering medications. With any process, specifically medications, as the number of staff members increase and the process increases with initiation and implementation, the greater the possibility for error can occur. The pharmacist has an important role intercepting and preventing prescribed order errors.

Currently drug reference texts and online tools should be available to all medical staff, pharmacy, and nursing staff. Online programs specific to critical care drip medications

and calculations are integral in preventing human calculation errors. A process for pharmacy to double-check and verify critical care, high-risk, and compounded pharmaceutical medication is also recommended to increase patient safety.

Medication Administration

Nurses and Paramedics remain primarily involved in the administration of medications. The responsibility is similar to that of the pharmacist in dispensing and administration. The healthcare professional must maintain his/her knowledge of medications being administered. This encompasses drug administration and the interactions with other agents. It is imperative that reference material is available near dispensing area and vital to maintain and ensure patient safety.

Bar Code Medication Administration (BCMA) is the use of a wireless scanner device that is used to scan the patient's wristband and the medication prior to administration. This advancement in technology has shown to decrease medication errors.

Confirmation of all "rights" prior to medication administration should be done with each medication administration. **Review the rights on previous pages...**

Reconciliation of medication is mandatory aspect of all medical and nursing care facilities. Medication reconciliation practiced at each transition of patient care is a Joint Commission National Patient Safety Goal. This improves safety by increasing communication between caregivers. This is a process of comparing a patient's medication orders to all of the medications a patient has been taking. This is done to avoid medication errors such as duplication, dose errors, drug interactions, and omissions. This process can be done on paper or electronic technology. Computer based programs are being utilized increasingly in hospital and outpatient clinic settings. On patient discharge a final reconciliation is completed and signed by the primary physician. This provides a thorough list of all medications the patient is to continue taking with a dose and schedule. The reconciliation is printed, signed by staff and patient, and then sent home with discharge documents.

Monitoring

Without reporting, many errors may not be known. Medication errors are clear danger to patient safety and errors usually involve a multiple of disciplines when they occur. Developing a culture of self-reporting without repercussions while provide and environment of trust and incorporate a culture of patient safety when learning is encouraged and blame is discouraged.

Reporting Errors and Sentinel Events

Improving patient safety begins by promptly reporting errors, followed by analysis of the root cause and contributing factors, as well as development of a plan of action to prevent similar errors in the future. This is the best way a healthcare organization can assess safe care delivery and determine how to improve safe care. It is an important factor to understand the sole responsibility of mistakes is the fault of individual practitioners

Root Cause Analysis (RCA)

JCAHO requires that a thorough, credible root cause analysis (RCA) be performed for each reported sentinel event. The goal of the Root Causes Analysis is to find out:

- What happened
- Why did it happen
- What do you do to prevent it from happening again

Root Cause Analysis (RCA) is a tool for identifying error prevention strategies. It is a process for discovering basic and contributing causes of errors with the continuing goal of preventing recurrence.

RCA is an interdisciplinary process involving:

- Experts from all services involved
- Those who are the most familiar with the situations
- Asking why at each level of cause and effect
- Identification of changes needed
- As great a degree of impartiality as possible

A credible RCA must:

- Include participation by the leadership of the organization and those most closely involved in the processes and systems.
- Be internally consistent
- Include consideration of relevant literature

In July 2001, the Agency for Healthcare Research and Quality released a report outlining evidence based clinical recommendations for improving

patient safety "Making Health Care Safer: A Critical Analysis of Patient Safety Practices. In 2013, the Agency for Healthcare Research and Quality reviewed the above recommendation with the growing body of research and have adopted 22 strategies and 12 Safety Improvements are encouraged.

Clinical Opportunities for Safety Improvement

1. Multi-component interventions to reduce falls.
2. Use of clinical pharmacists to reduce adverse drug events.
3. Documentation of patient preferences for life-sustaining treatment.
4. Use of informed consent to improve patients' understanding of the potential risks of procedures.
5. Team training.
6. Medication reconciliation
7. Practices to reduce radiation exposure from fluoroscopy and computed tomography scans.
8. Use of surgical outcome measurements and report cards, such as the American College of Surgeons National Surgical Quality Improvement Program.
9. Rapid response systems
10. Utilization of complementary methods for detecting adverse events/medical errors to monitor for patient safety problems.
11. Computerized provider order entry.
12. Use of simulation exercises in patient safety efforts.

In 2013, the Joint Commission on the Accreditation of Healthcare Organizations issued an update on the Hospital National Patient Safety Goals. This is an example of the safety goals for Hospitals, if this not the area you work in please refer to the (JCAHO) for update goals in your area of expertise.

2013 National Patient Safety Goals

Identify patients correctly

- NPSG.01.01.01 Use two ways to identify patients. Example use patients date of birth and name.
- NPSG.01.03.01 Make sure the correct patient receives a blood transfusion and receives the correct blood.

Improve staff communication

- NPSG.02.03.01 Get the right test results to the right staff member.

Use medicines safely

- NPSG.03.04.01 Before a procedure, label medications that are not labeled.
- NPSG.03.05.01 Take extra care with patients who take medications to thin their blood.
- NPSG. 03.06.01 Record and pass along correct information about a patient's medication. Find out what medicines the patient is taking. Compare those medications to new medicines given to the patient. are at home. Tell the patient it is important to bring their up-to date list of medications every time they visit a doctor.

Prevent infection

- NPSG.07.01.01 Use the hand cleaning guidelines from the Centers for Disease Control and Prevention or the World Health Organization. Set goals for improving hand cleaning. Use the goals to improve hand washing.
- NPSG.07.03.01 Use proven guidelines to prevent infections that are difficult to treat.
- NPSG.07.04.01 Use proven guidelines to prevent infections of the blood from central lines.
- NPSG.07.05.01 Use proven guidelines to prevent infections after surgery.
- NPSG.07.06.01 Use proven guidelines to prevent infections of the urinary tract that are caused by catheters.

Identify patient safety risks

- NPSG.15.01.01 Find out which patients are most likely to try to commit suicide.

Prevent mistakes in surgery

- UP.01.01.01 Make sure that correct surgery is done on the correct patient and at the correct place on the patient's body.
- UP.01.02.01 Mark the correct place on the patient's body where the surgery is to be done.
- UP.01.03.01 Pause before the surgery to make sure that a mistake is not being made.

KEY POINT: This is a summary of Hospital National Patient Safety Goals.

Summary

System characteristics as a contributing factor is causing medical errors have been extensively studied. In many instances, it has been found that poor systems of communication, infection control and medication prescribing, dispensing and administration have been fault for medical errors. The Institute of Medicine concluded that many medical errors were due to poor systems, not negligent practitioners.

There has been a lot of attention focused on the traditional "**blame and shame**" culture of health care. Individuals certainly bear responsibility for their actions when a medical error occurs. But if the goal is to prevent medical errors, then the approach is bound to fail for many reasons. It discourages voluntary reporting and never asks if the system contribution is the error. The focuses on blame and punishment instead of finding the root cause of the error and why the error happened.

None of these measures will work if health care professional are not responsible and conscientious. Nurses and all other health care professional are judged and evaluated by whether their actions are appropriate and reasonable. Personal behavior and prevention of medical errors in essence revolves around each nurse using his/her initiative to gain reasonable and appropriate levels of planning and action.

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