

Medication/Medical Errors

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Course Description

The purpose of this course is to provide an overview of medical errors incidences in the health delivery systems and to identify ways to prevent, manage, improve, and implement health care quality initiatives aim at prevention. Moreover understand the importance of how governmental mandated technology in health can improve outcomes for medication errors. Medication errors are a significant cause of morbidity and mortality when a patient is hospitalized. These errors create urgency for health care organizations to reduce medication errors and deliver safe and ethical care to patients. (Brady, Malone, & Fleming, 2009). The safety of a patient during their hospitalization should be the first priority of health professionals. Ramya, & Vineetha (2014) illustrates that the increase in number of medication errors have drawn the attention of regulatory bodies and health researchers' attention over the last decade in the effort to improve performance quality.



Learning Objectives

1. Identify the cost of medication/medical errors.
2. Identify the causes of medication/medical errors.
3. Understand the different types of medication/medical errors.
4. Understand the importance of how governmental mandated technology in health can improve outcomes for medication errors.
5. Identify ways to implement strategies for medication/medical errors preventions.
6. Understand Universal Protocol, and Joint Commission 2015 National Patient Safety Goals.
7. Define “Time Out”.

Target Audience

Advanced Practice Registered Nurses, Registered Nurses and Licensed Practical Nurses

Introduction

Medication, and medical errors are a significant cause of morbidity and mortality when a patient is hospitalized. These errors create urgency for health care organizations to reduce medication, and medical errors and deliver safe and ethical care to patients (Brady, Malone, & Fleming, 2009). The safety of a patient during their hospitalization should be the first priority of health professionals. Ramya, & Vineetha (2014) illustrates that the increase in number of medication, and medical errors have drawn the attention of regulatory bodies and health researchers’ attention over the last decade in the effort to improve performance quality. The United States Food and Drug Administration encourage nurses and other health care providers to report medication errors to a preferred database, which is used to assist other professionals in avoiding



similar mistakes (Adams, & Urban, 2013). Reporting all medication, and medical errors in a preferred database is imperative to improve the quality of care that is provided to the patient.

According to the United States Food and Drug Administration (2013) a medical error (including a medication error) is "any preventable event that may cause or lead to inappropriate medical (medication) use or patient harm while that patient is being cared for under the control of the health care professional, patient, or consumer. Moreover such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use (United States Food and Drug Administration (2013))".

Cost of Medication Errors

The cost of medication, and medical adverse events can cause more than 770,000 injuries and deaths each year and cost health care organizations up to \$5.6 million. Additionally the cost reported for a single medication error can be estimated at \$4,685 which do not include cost of injuries, mal-practice costs, cost of admissions because of adverse drug effect (ADE), or litigation (Agency for Healthcare Research and Quality, 2010; Thurman, Sullivan, Williams, & Gaffney, 2004). The Office of News and Public Information (2010) illuminates that medication errors are the highest volume of errors in a hospital.



Case Study of a Medication Error Due to Adverse Reaction

Mr. H was scheduled for surgery and the doctor ordered for him to receive a series of antibiotics medication the night before surgery. After the first dose Mr. H noticed that his tongue started to swell and he began to get hot and very short of breath. Mr. H notified his nurse about the symptom that he was feeling. The nurse came into the room with another dose of the same antibiotics after knowing that Mr. H was experiencing these symptoms. The nurse told Mr. H that he had to keep "keep receiving the medication because he needs it for surgery. Mr. H told the nurse please "my tongue feels so heavy and I cannot breathe". The nurse proceeded to give Mr. H two more doses of the pre-operative antibiotics and the patient began to go into respiratory distress.

After giving Mr. H 3 doses of medication, and identifying that Mr. H might be having an allergic reaction, the nurse immediately called the doctor and received an order for an antihistamine, and a corticosteroid. Mr. H's tongue, lips and face were extremely swollen and he could not talk. He also almost suffered a respiratory arrest.

Causes of Medication Errors

The causes of medication, and medical errors in a health care environment can be from a variety of reasons. Examples of medication errors can include a patient receiving the wrong medication or a medication to which they have a known allergy or a patient not receiving appropriate care after an abnormal test result (Agency for Healthcare Research and Quality, 2010). Adverse reactions to known medication allergies are preventable. An adverse reaction to an unknown medication cannot be prevented however the nurse must remain vigilant when



administering medications that are known to have adverse side effect. In addition the nurse must always listen to her patient and keep abreast with the nursing implication when administering medication. Nonetheless medication administration is only one part of the medication management process, and such errors may occur as a consequence of errors in other aspects of the medication process such as selection, procurement, storage, prescribing, ordering and transcribing (The Joint Commission 2007).

Certain medication, and medical errors have a direct correlation to organizational system failures rather than human errors. Therefore it is imperative that health care organizations develop a quality improvement plan that will adopt technology that will aid in reducing, capturing and preventing these errors. Health care organizations that improve technology through the adoption of EHR software aimed at capturing and preventing medication errors will achieve long lasting performance improvement initiative aimed at quality patient care. Additionally causes of medication errors includes failure to follow procedure and distractions (Pape et al., 2005). When a nurse is on a chaotic unit with multiple interruptions, maintaining focus of the environment is key when administering medication (Fu-In et al., 2007).

Medical Errors and the Joint Commission 2015 National Patient Safety Goals

According to Mulloy, and Hughes (2008), surgery is an area of health care in which preventable medical errors and near misses do occur. In 2003, the Joint Commission, American Academy of Orthopedic Surgeons (AAOS) and leaders from 23 other organizations conveyed to address medical errors involving wrong site surgeries. The identification of the meeting yield strategies to reduce or lessen wrong site surgeries that included the creation of a protocol, The Universal Protocol for Preventing Wrong Site, Wrong Procedure, and Wrong Person



Surgery (D'ambrosia, and Kilpatrick, 2002; Joint Commission, 2003). Universal protocol is one of the National patient safety goals in the prevention of same site surgery. Joint Commission (2015) clearly illustrates to prevent medical errors in the OR all health care providers involved with the surgery must:

1. Make sure that the correct surgery is done on the correct patient and at the correct place on the patient's body.
2. Mark the correct place on the patient's body where the surgery is to be done (this should be done with two health care providers).
3. Pause take a "Time-Out" before the surgery to make sure that a mistake is not being made.

Joint Commission 2015 Hospital National Patient Safety goal for prevention medication, and medical errors can be found on the Joint Commission website Pdf file.

http://www.jointcommission.org/assets/1/6/2015_HAP_NPSG_ER.pdf

Electronic Health Record and Medication Administration HITECH Act

Possessing the capability to share electronic health information within and among health care organizations has been generally accepted as a way to improve the quality and delivery of care and help control rising healthcare costs (Board on Healthcare Services and Institute of Medicine, 2006) The government is trying to initiate a national push that will allow doctors and hospitals across the country to adopt electronic health records by 2014 (Health Policy Brief, 2010)



By 2014 health care organizations, physician offices, and other clinicians who treat patients who are Medicare and Medicaid recipients will face governmental penalties if they fail to implement an electronic medical records (EMR) (Health Policy Brief, 2010). Blumenthal, and Tavenner (2010) addressed in 2009, Congress and the Obama administration provided the health care community with a transformational opportunity to break through the barriers to progress. The Health Information Technology for Economic and Clinical Health Act (HITECH) approved incentive payments through Medicare and Medicaid to clinicians and hospitals when they use EMRs privately and securely to achieve positive improvements in care delivery.

HITECH is federally funded governmental act. The HITECH act requires the government to take a leadership role to develop standards by 2010. The standards will allow for nationwide electronic exchange and use of health information to improve quality and coordination of patient care (Majority Staff of the Committees on Energy and Commerce, 2009). HITECH act funds are for those health care organization, and others clinicians who implement an electronic medical records system. Health care organizations who fail to implement an EMR system by 2014 may be faced governmental penalties. According to Pear (2010) starting in 2015, hospitals, and doctors will be subject to financial penalties under Medicare if they are not using electronic health records.

Reporting Medication Errors

Nurses should always follow your health care organizations policies and procedures for reporting medication errors. There is often fear of negative outcomes associated with disciplinary action resulting in less or not reporting the medication error (Uribe et al., 2002).



Health care organization would benefit from putting a non-punitive, and an anonymous reporting medication errors system in place.

Health care organizations that have adopted an electronic error reporting systems have showed to be beneficial when reporting medication errors.

Milch et al. (2006) reported in their study of reporting of adverse events found that nurses reported 47% of errors, of which 33% were medication or transfusion events. Many errors relating to drug administration were also identified in this study that including:

- A. Omitted drugs
- B. Wrong drugs
- C. Wrong route
- D. Time and frequency
- E. Wrong patient

Implication for Nursing Practice

This study is important to nursing practice because health care organizations would benefit from a structure of a non-punitive system for reporting medication errors that will increase the number of medication errors reported. According to Brady, Malone, and Fleming (2009) it is crucial that nurse leaders, educators and researchers in conjunction with other members of the multidisciplinary team adopt a strategic approach in addressing this multifaceted problem on increasing reporting of medication errors. Data collection tool to capture medication errors should also be evaluated when choosing an Information Technology system. Brady,



Malone, and Fleming (2008) Further stresses that it is vital to look to and learn from other high-risk industries such as aviation and the systems that they utilize to reduce and manage risk.

Capturing Medication Errors Data

Regardless of the data collection tool used by hospitals to capture the medication error all organization must choose a tool to determine the cause or causes of the error, and immediate actions for a resolution. Organizational focus should be aimed at building quality patient care for the consumer with the use of quality indicators (Longes, & Rohrer, 2005). These quality indicators can be achieved through collecting of medication errors data, and evaluating the data for performance improvement initiatives. Continuous quality improvement of medication errors requires that performance data can be monitored on the dashboards to identify trends. Data collection reports for improvement of medication errors should be measured daily, weekly, monthly, and then quarterly reports should be generated. The hospital's leadership team that has an administrator, physician, nurses, and department heads will meet monthly to view the medication errors data. Using data to implement an immediate corrective plan of action for any trends is imperative to prevent future occurrences.

Be on Alert for look-alike and Sound Alike Medications

The chance for medication errors has also been connected with the *below specific medications*. The health care team should always be on the alert for look-alike, sound-alike medication. Medication administering from the pharmacy, Pharmacist, to the nurse or the patient poses a risk with look-alike sound-alike medication. Therefore special attention must to take into

consideration during the dispensing of medication. Because medication errors can occur during the dispensing of medication and nursing personal must pay special attention to look-alike sound-alike medication. According to a study conduct by Baumgart-Huckels et al (2014) on the rate of medication errors, and the causes and consequences of medication errors in large teaching hospital was due to the failure to the following five steps:

1. Prescribing
2. Transcribing
3. Preparation
4. Administration
5. Monitoring

Be on Alert for look-alike and Sound Alike Medications
Potential Problematic Drug Names in Red
 BRAND (and generic) NAMES
 Potential Errors and Consequences
Department of Pharmacy (2007)

<p><u>INSULIN PRODUCTS</u> NOVOLIN (human insulin products) NOVOLOG (human insulin apart) NOVOLIN 70/30 (70% isophane insulin [NPH] and 30% insulin regular)</p> <p>Similar names, strengths and concentration ratios have contributed to medication errors. Mix-ups may result in hypoglycemia or poor diabetes control.</p>	<p><u>CATAPRES (clonidine)</u> <u>KLONOPIN</u> (clonazepam)</p> <p>The generic name of clonidine can easily be confused as the trade or generic name of clonazepam. Mix-ups may result in hypotension, loss of seizure control, or other serious adverse events.</p>
<p>VELBAN (vinblastine) ONCOVIN (vincristine)</p> <p>Fatal errors have occurred, often due to name similarity, when patients were given</p>	<p>ULTRAM (tramadol) DESYREL (trazodone) KETOROLAC (toradol)</p> <p>Drugs with similar generic names. Mix-ups</p>

<p>vincristine at a vinblastine dose.</p>	<p>may result in a decline in pain control, change in psychiatric symptoms, or other serious adverse events.</p>
<p>AMBISOME (amphotericin B liposomal) ABELCET (amphotericin B lipid complex) AMPHOCIN, FUNGIZONE (amphotericin B desoxycholate, conventional amphotericin B)</p> <p>Doses of lipid-based products are usually higher than conventional products. Doses also vary from product to product. Confusion between products may result in respiratory arrest, renal failure and sometimes fatal adverse events.</p>	<p>GLUCOPHAGE (metformin) FLAGYL (metronidazole)</p> <p>Drugs with similar names and dosage strengths may be confused with poorly handwritten orders. Mix-ups may result in hypoglycemia or untreated infection.</p>
<p>ULTRAM (tramadol) DESYREL (trazodone) KETOROLAC (toradol)</p> <p>Drugs with similar generic names. Mix-ups may result in a decline in pain control, change in psychiatric symptoms, or other serious adverse events.</p>	<p>COUMADIN (warfarin) AVANDIA (rosiglitazone) CARDURA (doxazosin)</p> <p>Poorly handwritten orders for Avandia (used for type II diabetes) or Cardura (used for blood pressure or urinary symptoms) have been misread for Coumadin (an anticoagulant), or vice versa.</p>
<p>VISTARIL, ATARAX (hydroxyzine) APRESOLINE (hydralazine) HYDRODIURIL (hydrochlorothiazide)</p> <p>Drugs with similar names and dosage strengths. Mix-ups may result in sedation, hypotension, or other serious adverse drug events.</p>	<p>DILAUDID (hydromorphone) injection ASTRAMORPH, DURAMORPH, INFUMORPH (morphine) injection</p> <p>Hydromorphone is 4-8 times more potent than morphine. Fatal errors have occurred due to the false belief that hydromorphone is the generic equivalent of morphine.</p>

<p>CELEBREX (celecoxib) CEREBYX (fosphenytoin) CELEXA (citalopram)</p> <p>Drugs with similar brand names may be confused with poorly handwritten orders. Mix-ups may result in decline in mental status, lack of pain or seizure control, or other serious adverse events.</p> <p><i>Department of Pharmacy (2007)</i></p>	<p>GLUCOPHAGE (metformin) FLAGYL (metronidazole)</p> <p>Drugs with similar names and dosage strengths may be confused with poorly handwritten orders. Mix-ups may result in hypoglycemia or untreated infection.</p>
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Conclusion

Several information technologies have been shown to improve the safety of patient medication administration. Physician entries using a computerized system for their order entry have been proven to have better outcomes to decrease medication errors. Additionally health care organization must first recognize that people and systems contribute to medication errors (Cohen, 2007). The focus of medication errors should be on identifying the error-prone aspects of the medication use continuum with the goal of improving system safety and reliability through remedial action. Moreover the net result of the above will be a much safer system with the use of electronic health records, which will still require substantial human guidance (Agrawal, 2009).

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