A Discussion of Medication Error Reduction Strategies

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Learning Objectives

1) Discuss Failure Mode and Effects Analysis as a tool in error prevention
2) Discuss the effect of the recession on medication errors
3) Discuss the importance of medication reconciliation as a medication error reduction technique
4) Discuss the proper use of oral syringes and how to prevent medication errors
5) Discuss the role of at-risk behaviors and their role in medication errors

Medication errors are still a major problem in the U.S. health care system. In 1999, the report by the Institute of Medicine, “To Err is Human-Building a Better Health System”, described how extensive this problem was and issued a call to action of health care professionals to develop strategies to reduce medication errors. One of the best strategies that can be employed by an organization to combat and prevent medication errors before they occur is Failure Mode and Effects Analysis (FMEA). It is different than Root Cause Analysis and is discussed below.

Failure Mode and Effects Analysis (FMEA) as a Tool in Error Prevention

Many organizations erroneously wait until a medication error happens before they decide to see if the medication use process in their organization is broken. This may be viewed as a backwards approach to reducing medication errors. It is important to employ root cause analysis after an error occurs, but healthcare organizations should be more proactive in their approach of preventing medication errors. Failure Mode and Effects Analysis (FMEA) is one way to accomplish this and should be considered as part of a comprehensive risk-reduction strategy regarding medication safety. The primary goal of FMEA is to systematically identify areas of potential failure in the medication use process at your institution. This proactive approach will be discussed in the context of new medications, clinical guidelines or therapies that are added to your practice site. The Institute for Safe Medication Practices (ISMP) has developed a stepwise process to use FMEA when new drugs become available and are being prescribed or are added to your inventory. The best way to illustrate this process is with a case example. Let’s consider the drug Trilipix® (fenofibric acid delayed release) for hyperlipidemia. When a pharmacy first receives this drug in their inventory, FMEA should be conducted. Step 1: The pharmacy staff should discuss how the product will be prescribed and what place the drug has in current patient therapy. The pharmacy staff should also consider the following questions: What clinical information is most relevant about this drug? How does it differ from other therapies used to treat the same thing? Which patients are most likely to benefit from the drug? How will it be ordered and where will it be placed on the pharmacy’s shelves? What information regarding the drug should be conveyed to the patient? What potential problems might patients encounter when taking this medication? Step 2: What could potentially go wrong when this drug is prescribed and dispensed to a patient? The pharmacy staff should systematically and methodically examine where errors may occur, not just in the dispensing process, but in all steps of the medication use process. For example: When an oral prescription for Trilipix® is called in to the pharmacy, what might it be mistaken for? What drugs might it be confused with? Trilipix® may be confused with TriCor® and sounds...
a lot like Trileptal® or Tri-Levlen®. Will physicians and prescribers realize that Trilipix® is dosed once daily and Lopid® (which is very similar) is dosed twice daily? Do prescribers understand that this is a delayed release capsule and understand all the issues regarding delayed release dosage forms? When placed in the pharmacy’s inventory, it will be located very close to TriCor® and next to Trileptal® on the shelf. What could you do to make sure the pharmacist or technician grabs the correct medication? Maybe the drug should be stored on another shelf, alert stickers could be placed on the bottle, or a computer alert message may warn the pharmacist not to grab Trileptal® by mistake. These potential sources of medication errors must be anticipated and processes put in place to help prevent these types of errors. Anticipating these potential errors and addressing them in advance is the key. **Step 3:** The pharmacy staff needs to determine the likelihood of these types of errors occurring and what the consequences of these types of errors are. Some consequences may be more severe than others and those types of potential errors need to be addressed first and with the most definitive measures. The goal is to detect the error before it occurs and minimize the consequences. **Step 4:** What types of processes are already in place to prevent these types of errors from occurring? The pharmacy may have a very good error prevention process in place for oral prescription products with sound-alike names or computer alerts during the dispensing process. This could be applied very easily to Trilipix®. **Step 5:** Set up an evaluation and feedback system to determine if errors are still occurring with this medication. Also, the pharmacy needs to regularly evaluate how successful the counter-measures or processes implemented to prevent errors with Trilipix® have preformed.

**Recession = More Medication Errors**

A recent survey of health care practitioners (primarily nurses and pharmacists) conducted by the Institute for Safe Medication Practice (ISMP) found that the recession has eroded medication safety. The study participants felt that the primary cause is the reduction in staffing levels in order to cut costs. The results suggest that layoffs, staff attrition without replacement, reductions in benefits (time-off), and hiring less experienced staff are just a few potential contributing factors to a decrease in the medication safety process. Other factors identified by the study participants include staff morale, increased patient workloads, and fear of losing their job when reporting medication errors/misadventures are also contributing to a less safe medication safety process. Twenty-five percent of nurse respondents indicated that reductions in staffing and increased patient loads have led to hurried drug administration practices and short-cuts in this process. Thirty-three percent of the respondents indicated that the use of clinical pharmacists on the patient care units has been reduced. Cost-cutting measures have pulled some of the clinical pharmacists back into more drug distribution and order entry roles, which reduces their availability for patient care and health professional consultation. Inventory control concerns were one specific example discussed in the study. Examples of this include: 1) the purchasing of multi-dose vials of medication instead of single-use vials or prefilled syringes in order to cut-costs; 2) reduced availability of drug inventory on the nursing units due to reductions in purchasing. Some medications may now be stocked only centrally in the main pharmacy, increasing the amount of time before a patient can receive a needed dose; and 3) new formulary restrictions and criteria have made some high-cost drugs unavailable and without proper additions to the formulary of therapeutic equivalents. Cost-containment is the new reality in health care organizations given the current economic climate. Community pharmacists are feeling the effects of the recession with reductions in technician help in the pharmacy. This leads to increased workloads for the pharmacist, more distractions, and less concentration on checking and filling medications. However, health care organizations should not jeopardize patient care and not sacrifice medication safety just to save money. This delicate balancing act of cost-control and patient safety should involve health care professionals responsible for direct patient care before decisions that might adversely affect patients are implemented.

**Medication Reconciliation**

One of the biggest potential sources of medication errors is when patients transition from one point of care to another. The Institute for Healthcare Improvement estimates that bad communication or lack thereof could be responsible for as many as 50% of all medication errors and up to 19% of adverse drug reactions in hospitals. These transitions may include home care to hospital care, nursing home care to hospital care, hospital care to at home care, and at home to nursing home care are just a few examples of transitions in care where medication errors can occur.
For example, a patient is stable on two medications for their hypertension: hydrochlorothiazide 12.5mg once daily and enalapril 5mg once daily. The patient enters the hospital for a routine procedure, such as gall bladder surgery, and experiences some type of hypertensive crisis while hospitalized. The patient is given a series of medications to control the problem. When discharged, the patient is sent home on medications for a problem that may have only been a one-time occurrence or acute problem during the hospitalization. The patient goes home on two new medications for their hypertension and continues therapy with hydrochlorothiazide and enalapril as before. This is a problem with medication reconciliation. In the same patient case, the patient may be switched to the hospital’s ACE inhibitor of choice, such as lisinopril, while the patient is in the hospital. The discharge doctor does not realize this and gives the patient a new prescription for lisinopril. The patient is now taking two ACE Inhibitors because proper medication reconciliation did not occur before discharge.

A study by the Mayo Clinic found that many patients know little about the medications they are prescribed when they leave the hospital. In fact, 15% of patients did not know their physicians had even prescribed a new medication to take when going home and 33% of patients could not name their new medication(s). In addition, only 22% could name a serious side effect of the new medication and most patients stated that side effects were not even discussed with them before they left the hospital. Finally, more than one-third of patients did not even know the basics of these new discharge medications such as dose, how to take it, or what it was for. These are very alarming statistics and illustrate the need for medication reconciliation. Most health care practitioners agree that medication reconciliation is a problem, but are not sure how to properly implement strategies to deal with it. Even Joint Commission on Accreditation of Healthcare Organizations (Joint Commission) is having difficulty in dealing with it. In 2005, Joint Commission introduced medication reconciliation as one of its National Patient Safety Goals. In fact, National Patient Safety Goal 8 states healthcare organizations should “accurately and completely reconcile medications across the continuum of care”. However, many healthcare organizations have struggled to meet this goal. This has led to Joint Commission to consider revising its requirements. In fact, Joint Commission’s surveyor findings on National Patient Safety Goal 8 will not contribute to an organization’s accreditation decision and will not appear on an organization’s accreditation report. However, Joint Commission will continue to evaluate compliance with Goal 8 in order to provide data, refine requirements and contribute to process improvements. From these evaluations and meetings Joint Commission plans to have with health care providers and practitioners, Joint Commission hopes to release an improvement to Goal 8 that supports both the quality and safety of care. The implementation of the “new” Goal 8 should be in place sometime in 2011.

As health care professionals continue to struggle with this issue, what can pharmacists due to help implement a process that helps reduce medication errors. It is short-sighted to only include prescription medications in this process. Pharmacists should ask patients if they are taking any OTCs, vitamins, herbas, nutriceuticals, and home remedies. The process should begin with the pharmacist asking the patient for a current list of medications they are taking. Suggest to your patients that they should carry a current list of all medications with them at all times and give this list to close family members and friends in case the patient is unable to communicate with healthcare providers. Pharmacists should always update patient profile information in the computer on a regular basis and anytime the patient has transitioned from one care setting to another. Pharmacists should also use the medication reconciliation process to help identify transcription errors, omissions from the patient’s chart or profile, and clarify misunderstandings regarding continuation of therapy after transitioning to another level of care.

**Here is a simple process for developing a basic medication reconciliation process at your pharmacy or institution.**

**Step 1:** Have the patient provide a current list of all medications, including OTCs, herbal products, and vitamins that the patient takes on a regular basis. This may be difficult for some patients to provide. One option is to have them or a caregiver bring a bag with all the patient’s medications to the pharmacy. Pharmacists sometimes call this a “brown bag program”. **Step 2:** Have the physician responsible for the patient’s care review and act on every medication on the patient’s list. This will help reduce duplication of therapy and errors of omission. **Step 3:** Generate a list of new medications the prescriber wishes to begin in treating the patient. This should also include any OTC and “as needed” medications as well. **Step 4:** Review the two lists with prescriber to identify any discrepancies. **Step 5:** Repeat the same process any time the patient transitions from one level of care to another, always making sure the list is reconciled, updated and reviewed with the patient and caregiver. **Step 6:** Communicate to the patient the importance of knowing what medications they are taking, how they are to be used, and what they are treating. Stress to the patient to keep an up-to-date list of medications and include any and all changes at the time they occur. **Step 7:** Offer assistance to the patient in helping them keep their medication list as current as possible. Healthcare professionals must realize that medication reconciliation is everyone’s responsibility. The entire healthcare team, physicians, pharmacists, nurses, dieticians, etc. should all be involved in this process.
Proper Use of Oral Syringes

Health care organizations still need to address the problem of using parenteral syringes to administer oral medications. The use of a parenteral syringe (one with a Luer lock that can be attached to a needleless intravenous (IV) tubing system) to administer oral medications is a recipe for disaster. Even though many health care professionals think it would be impossible for a nurse to administer an oral medication provided in a parenteral syringe into an IV line, it still occurs far too frequently. It only takes one temporary memory lapse or distraction to cause this to occur. There are many reasons why the use of parenteral syringes for oral medications still occurs.  a) The pharmacy department may forget to send up an oral syringe with an oral medication.  b) The nursing unit may be temporarily out of stock of oral syringes or dosing cups.  c) Do to overwork and large patient care loads, a nurse may grab a parenteral syringe to administer an oral medication to save time.  d) A patient will not drink the medication from a dosing cup, so the nurse grabs a parenteral syringe to administer it to the patient.  How can we combat this problem?  1)  Keep all clinical areas well-stocked with oral syringes. 2)  Establish high-quality training programs that education nurses and pharmacists of the dangers of using parenteral syringes for oral products and their potential consequences.  3) Use auxiliary labels on oral syringes that clearly state “For Oral Use Only”.  Apply the label on the plunger or tip so the label must be removed prior to administration.  4)  Include warnings on the Medication Administration Record (MAR) such as “Administer Only with an Oral Syringe”.  5)  Dispense liquid medications from the pharmacy in oral syringes whenever possible.

At-Risk Behavior and Medication Errors

There are three classifications of behavior that can be involved in a medication error. The first type is human error. In this type of error, a health care professional did something other than what was intended. For example, a pharmacist placed simvastatin 10mg instead of 20mg in a prescription vial. The second type is reckless behavior. In this type of behavior, the pharmacist is intentionally taking a risk but does not necessarily want to harm the patient. A good example of this is when a pharmacist is so busy, he/she does not check to make sure the technician placed the correct medication in the patient’s bottle. He/she just assumes the technician placed the correct medication in the bottle. The third is at-risk behavior. These behaviors can become a normal part of everyday life. They become so common place at the work site that the perception of their risk fades over time. Why does this risk fade? Because these risky behaviors have not caused a problem so far, but beneath the surface a problem or medication error is just waiting for the right opportunity to surface. One example of an at-risk behavior is a pharmacist who always overrides all drug interaction alerts from a pharmacy’s computer system. The pharmacists believes that 99% are false-alarms and feels he/she can rely on their own knowledge of drug-drug interactions. This is an at-risk behavior. Identifying and discouraging at-risk behaviors in the primary weapon in preventing this behavior. Listed below are some at-risk behaviors that should be addressed and corrected by health care organizations.

1) Rushed communication with a coworker working the next shift. This can lead to information being left-out or miscommunicated.
2) Failure to address an issue with a prescriber when the pharmacist feels that the drug is being inappropriately prescribed, dosed, or used. The idea of “just because the prescriber wrote it, my job is to fill it” can lead to serious medication errors.
3) Not reading the stock medication bottle label 3 times before counting it and dispensing it.
4) Answering the phone and taking care of walk-up customers at the same time the pharmacist is checking several prescriptions.
5) Having every patient “sign-away” their option to be counsel by a pharmacist because it saves the pharmacist time and aids his/her ability to keep “caught-up”.
6) Not checking the patient’s profile for allergies or other drug interactions because the drug being dispensed is a “safe” or low-risk” drug.
7) Using “homemade” abbreviations (such as “Q46” for “every 4-6 hours” or “pp” for “as needed for pain”) when taking oral prescriptions from a prescriber to increase speed and save time. This leads to confusion if another pharmacist needs to read and interpret this prescription at a later date.
8) Leaving several stock bottles of medication in the dispensing/counting area to save time running back and forth to the shelves for medication.
9) Leaving the keys in the safe that stores schedule II medications to speed up the dispensing process of these medications. (By doing this, the technicians do not have to always ask for the keys.)
10) Allowing technicians to counsel patients on simple things like: number of refills, storage in the refrigerator, and use of the medication.

11) Not regularly verifying important information with the customer to update their patient profile with new information such as new chronic diseases, new allergies, herbal product use, other medications they may be getting filled at other pharmacies, commonly used OTCs, etc.

These are just a few examples of at-risk behaviors of pharmacists. If you find yourself guilty of any of these behaviors, don’t let them continue. Just because they have not led to an error yet, does not mean one may not occur in the future. Again, medication error prevention is everyone’s responsibility and the reduction of at-risk behaviors will help reduce these errors in the future.

References for this program are available upon request. The views contained in this program are not intended as legal advice. Pharmacists should always consult their own attorney or the New York Board of Pharmacy when questions or issues regarding the practice of pharmacy arise.

Continuing Education Test Questions. Using the Test Answer sheet on the last page, please circle the correct response for each question. A passing grade of 70% must be obtained to receive continuing education credit. CE statements of credit will be mailed within 2 weeks of receiving your answer sheet.

1) Failure Mode and Effects Analysis (FMEA) occurs after an error has occurred and is very similar to root cause analysis.
   a) true  
   b) false

   2) With regards to a new drug product being stocked by the pharmacy, which of the following is NOT a step in the stepwise approach to FMEA?
   a) Set up an evaluation and feedback system to determine if the errors are still occurring.
   b) The pharmacy staff needs to determine the likelihood of these types of errors occurring.
   c) The pharmacy staff needs to determine what the consequences of these types of errors are.
   d) Only assess what could go wrong during the dispensing process.
   e) Determine what types of processes are in place to prevent these types of errors.

   3) Which of the following are examples of how the recession could increase potential for medication errors?
   a) The purchasing multi-dose vials instead of single use vials.
   b) Reduced availability of drug inventory on the nursing units.
   c) New formulary restrictions and criteria have made some high-cost drugs unavailable.
   d) b and c only
   e) a, b, and c

   4) The study participants in the ISMP study (recession and medication errors) felt that ______________ was the primary cause of eroding medication safety.
   a) inventory reduction strategies
   b) staff morale
   c) reduction in staffing levels
   d) reduction in benefits
   e) hiring less experiences staff

   5) Medication reconciliation should take place anytime the patient transitions from one point of care to another.
   a) true  
   b) false

   6) Which of the following are true regarding medication reconciliation?
   a) Joint Commission should have a new “Goal” regarding medication reconciliation sometime in 2012.
   b) Only prescription medications should be included in the medication reconciliation process.
   c) Most medical professionals agree medication reconciliation is a problem, but are not sure how to fix it.
   d) b and c are true
   e) a, b, and c are true
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7) Which of the following should be included in a medication reconciliation process?
   a) Have the patient provide a list of only prescription medications.
   b) Stress to the patient the importance of keeping an up-to-date list of medications they take.
   c) Offer assistance to the patient in helping them keep their list of medications as current as possible.
   d) b and c only
   e) a, b and c

8) Which of the following are things a pharmacy department can do to prevent the misuse of parenteral syringes for oral medications?
   a) Keep all clinical areas well-stocked with oral syringes.
   b) Use auxiliary labels on oral syringes that state, “For Oral Use Only”.
   c) Establish training programs that educate nurses and pharmacists on the dangers of using parenteral syringes for oral products.
   d) b and c only
   e) a, b and c

9) At-risk behavior is when the pharmacist is intentionally taking a risk, but does not want to hurt the patient.
   a) true       b) false

10) Which of the following are at-risk behaviors that should be addressed and corrected by a pharmacy?
    a) Leaving several stock bottles of medication in the dispensing or counting area.
    b) Allowing pharmacy technicians to counsel patients on refills and storage.
    c) Using homemade abbreviations when taking oral prescriptions from prescribers.
    d) a and b only
    e) a, b and c
Continuing Education Test Answer Sheet
A Discussion of Medication Error Reduction Strategies.

New York Course #: 071067-011-001-H05  C.E.U.s: 0.1  Contact Hours: 1hour
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1)  A    B    C    D    E          6)  A    B    C    D    E
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