PREVENTING MEDICATION ERRORS IN PHARMACY PRACTICE

DR. SULLIVAN’S SUPPLEMENTAL HANDOUT
PREVENTING MEDICATION ERRORS IN PHARMACY PRACTICE

ACTIVITY DESCRIPTION
Medications errors may occur more often than you think. Everyone in the pharmacy must have as a goal the prevention of medication errors. The goal of every pharmacist is to follow the five “Rs”: right drug, right patient, right dose, right time, and right route. This knowledge based program will give health care providers an understanding of how medication errors occur with an emphasis on preventing them from occurring in your pharmacy practice. This program has been APPROVED by the Florida Board of Pharmacy for Medication Errors.

TARGET AUDIENCE
The target audience for this activity is pharmacists and pharmacy technicians in hospital, community, and retail pharmacy settings.

LEARNING OBJECTIVES
After completing this activity, the pharmacist will be able to:
- Identify the real truths about medication error occurrence
- Describe the process of root cause analysis
- List the common pitfalls in root cause analysis
- Describe the methods to improve patient safety regarding medication error prevention
- Identify common medication error prevention and reduction techniques
- Define the process of failure mode and effects analysis (FMEA)
- Describe the application of failure mode and effect analysis using case examples to prevent medication errors
- Identify how medication reconciliation can improve patient safety

After completing this activity, the pharmacy technician will be able to:
- List the most common types of medication errors
- Identify strategies to minimize the most common errors made by pharmacy technicians
- Describe root cause analysis

ACCREDITATION

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Donnie Sullivan is a professor of pharmacy practice at Ohio Northern University. He received his B.S. in pharmacy from Ohio State University in 1990, his MS from Ohio State University in 1991, and his Ph.D. is Pharmacy Administration from Ohio State University in 1996. He has published several peer-reviewed articles and five consumer drug reference books. He has taught courses in pharmacy law, medication error prevention, and OTC products for 15 years. He has done more than 90 professional presentations on pharmacy law, medication error prevention techniques, and OTC products all across the U.S. He has been voted professor of the year by his students in 13 of his 14 years at Ohio Northern University.

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Preventing Medication Errors in Pharmacy Practice

Objectives

- Identify the real truths about medication error occurrence
- Describe the process of root cause analysis
- List the common pitfalls in root cause analysis
- Describe the methods to improve patient safety regarding medication error prevention
- Identify common medication error prevention and reduction techniques

Objectives

- Define the process of failure mode and effects analysis (FMEA)
- Describe the application of failure mode and effect analysis using case examples to prevent medication errors
- Identify how medication reconciliation can improve patient safety

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Faculty Disclosure

Dr. Sullivan has no actual or potential conflicts of interest in relation to this program.
Chances for Medication Error

Average pharmacist fills or reviews 250 medication orders or prescriptions per day.

- 1,250 per week
- 58,800 per year (3 weeks vacation)
- 1.76 million during the course of a 30 year career in pharmacy

What do you think is the likelihood you will make a medication error?

Reality of Medication Errors

- Fact: Even in the best designed attempt to automate the medication use process, errors still do occur.
- Fact: Bar codes don’t solve everything
- Fact: It is a common misconception that many medication errors are made by incompetent health care professionals that have a history of making several errors over time. In general, it is rare for a health care professional to make multiple medication errors.

Reality of Medication Errors

- Fact: Medication errors usually occur due to a breakdown in the medication use process. This breakdown often occurs at more than one step in this process.
- Fact: The medication use process consists of five major categories all of which have several steps within each including: prescribing, documenting, dispensing, administering, and monitoring.

Reality of Medication Errors

- The Institute for Safe Medication Practices (ISMP) estimates that the average number of steps in the medication use process is 40. A breakdown in any one of these steps has the potential to cause a medication error.
- A study by Bates et al. found that 56% of errors occur during prescribing, 34% during administration, 6% during transcription and only 4% during dispensing.

Root Cause Analysis

- Whenever a medication error occurs, a root cause analysis should be conducted.
- In general, root cause analysis is undertaken after a medication error has already happened.
- Root cause analysis should focus primarily on the systems and processes to determine why an error occurred. It should not focus on individual performance issues.

Root Cause Analysis

- This analysis should include individuals at several levels within the pharmacy department and leaders within the organization.
- A review of literature regarding how other pharmacies and institutions have dealt with this type of error should also be undertaken.

Root Cause Analysis

When conducting a root cause analysis, the focus should be on answering the following questions:

- What exactly happened?
- Why did it happen?
- At which step(s) did the medication use process breakdown or did a failure occur?
- What happened immediately before the error occurred?

Root Cause Analysis

- What processes or systems underlie the cause of the error?
- What strategies can be implemented to help ensure the error does not occur again?
- Have there been any other “near-misses” similar to this type of medication error?
- What kind of assessment plan will be put in place to monitor the outcomes of any prevention technique that is implemented?
Root Cause Analysis

- Once the root cause of the problem is identified, an action plan, follow-up, and measurement strategy must be implemented to prevent further errors of this type.
- However, health care institutions are strongly encouraged to take a proactive approach and focus a significant amount of time on the prevention of medication errors.

Root Cause Pitfalls

The Institute for Safe Medication Practices’ (ISMP) observations of common root cause analysis (RCA) pitfalls. ISMP recommends starting with these basic questions:

- What happened?
- What normally happens?
- Why did it happen?
- What do policies and procedures require?
- How was the organization managing the risk before the error?

Root Cause Pitfalls

- Many RCAs skip the chronology/timeline of events. This step is essential to uncover all the gaps where the error might have occurred. It also helps to understand the relationship between contributory factors. Finally, it ensures that all aspects of the error are included and analyzed. It is often skipped because it is so time-intensive.

Root Cause Pitfalls

- Overreliance of policy and procedure failure:
  Too often the focus is on whether standard policies and procedures were followed and the analysis fails to uncover what “really” goes on in practice. Where are corners being “cut” to save time and money? Sometimes it’s a workflow or lack of staffing issue. If no policies/procedures were violated and the organization finds “no issues”, this is a bad trap to fall into.
Root Cause Pitfalls

* Failure to conduct an at-risk behavior investigation: Many RCAs fail to assess the behavioral components of an error. The investigation usually stops once the policy breach or at risk behavior is indentified. Further study should take place to understand why it occurred. This is usually do to the organization's culture or system design.

Root Cause Pitfalls

* Failure to understand the underlying cause of human error: The investigation often stops here. The organization needs to assess what factor led to human error: task complexity, urgency, workflow design, process design, experience, training, fatigue, stress, time constraints, working conditions, distractions, interruptions, knowledge deficit, etc.

Root Cause Pitfalls

* Failure to seek outside knowledge or assistance: Many times organizations are afraid to seek outside advice or assistance due to the sensitive nature of the error. This may even include failure to seek the opinion of other departments in the organization. Monitor the medical literature for information on newly discovered medication errors that have occurred in your practice setting.

Root Cause Pitfalls

* Unjust punitive action: Sometimes swift disciplinary action is taken against individuals associated with errors. Managers sometimes equated punishment with severity of the error. A knee-jerk response should be avoided until a complete understanding of the process that lead to the error is uncovered.
Failure Mode and Effects Analysis

- 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.

FMEA

- Failure Mode and Effects Analysis (FMEA) is one way to accomplish this and should be considered part of a comprehensive risk-reduction strategy regarding medication safety.
- Conducted before an error occurs
- The primary goal of FMEA is to systematically identify areas of potential failure in the medication use process at your pharmacy or institution.

FMEA – Step 1

- 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. Let’s do this for the well-known drug Trilipix® (fenofibric acid delayed release) for hyperlipidemia.
- Step 1: The pharmacy staff should discuss how this product is prescribed and what place the drug has in current patient therapy.

FMEA – Step 1

The pharmacy staff should also consider the following questions:
- What clinical information is most relevant about this drug and how does it differ from other therapies used to treat the same thing?
- Which patients are most likely to benefit from the drug?
- How is it ordered and where is it placed on the pharmacy’s shelves?
- What information regarding the drug should be conveyed to the patient and what potential problems might patients encounter when taking this medication?
FMEA – 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.

- 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®.

- Do physicians and prescribers realize that Trilipix® is dosed once daily and Lopid® (which is very similar) is dosed twice daily?

FMEA – Step 2

- Do prescribers understand that this is a delayed-release capsule and understand all the issues regarding delayed release dosage forms?

- In the pharmacy’s inventory, it is 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, an alert sticker 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.
FMEA – 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.

FMEA – Step 4

- 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 Trillipix®.

FMEA – Step 5

- 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 Trillipix® have preformed.

Patient Safety- Verbal Orders

Verbal/oral prescriptions or orders that are communicated via the telephone are particularly prone to medication errors. These types of prescriptions have multiple steps where a medication error could likely occur.

- Bad pronunciation by the nurse or doctor, voice inflections, a noisy environment, distractions, interruptions during the process, lack of knowledge of the drug being called-in, etc.
- These can all affect the accuracy of the oral prescription.
Patient Safety - Verbal Orders

Here are a few tips to help prevent medication errors with oral prescriptions:

- If the oral prescription or order is being communicated too quickly, ask the person to please slow down and speak more clearly. It is not rude to ask someone to please speak up.
- Ask the person to spell drug names that may be similar to others. Sometimes an “S” sounds like an “F” and a “D” sounds like a “B”.

• Many times the nurse cannot read the doctor’s handwriting and will try to make an educated guess. A common occurrence is the nurse saying “Well, it looks like Prevacid 30mg”. Ask the nurse to verify the drug with physician and call you back.
- Pronounce digits separately when providing a strength or dose. For example: Lisinopril 20mg should be communicated, “Lisinopril twenty milligrams... that’s two zero milligrams”

Patient Safety - Verbal Orders

- Never rely on the patient’s profile to help decipher a drug name or directions. Many times if a nurse cannot read the doctor’s handwriting she will ask the pharmacist, “How did the patient take it last time”. Then she will tell the pharmacist to use the same directions on this prescription.
- When receiving an oral prescription, go to a quiet place in the pharmacy free from distractions.

• Educate your technicians to never interrupt you in the middle of taking an oral prescription. If you do get interrupted, have the person giving you the oral prescription over the phone start over.
- If someone is communicating a prescription to a pharmacist and cannot be understood, shows a lack of knowledge of the drug, or seems unsure of what they are calling-in, ask to speak to someone else.
Patient Safety - Verbal Orders

- Review an oral order immediately with your pharmacy intern if taken by them
- Train your pharmacists and interns in the process of taking oral prescriptions
- Finally, once the pharmacist completes the transcription of a verbal or oral prescription, take the time to verify the information with the person calling-in the prescription.

Computer Alerts

- There are a couple of problems with computer alerts. The first is technicians and data entry personnel bypassing alerts so that the pharmacist never sees them.
- The second is too many false alarms. This means that the pharmacist and technicians become complacent to these alerts because many are not clinically significant and become a "nuisance". This leads to bypassing all alerts, even those that are clinically significant and need to be acted on.
- Here are some suggestions provided by The Institute for Safe Medication Practices to deal with these issues:

Computer Alerts

- One potential way to deal with false alarms is to control the sensitivity of the alerts within the system. Allow the user to control the "level" or "seriousness" of the alert for different drug interactions. Pharmacists can set some alerts with a higher priority message than others. The downside to this is that some alerts may be missed by the pharmacist due to their downgraded status.
- Encourage pharmacy personnel to report alerts that keep occurring and are not clinically significantly so changes can be made in the system.

Computer Alerts

- Use the medical and pharmacy literature to identify high-priority or clinical significant alerts and keep a list of them.
- Keep this list at the site where final verification of the prescription occurs and where data entry is done. Train technicians to notify pharmacists when one of the prescriptions on the list is being entered into the computer, so the pharmacist can be alerted that this drug may have the potential for some sort of drug interaction or contraindication.
Computer Alerts

- A written documentation system detailing the alert could be placed with the prescription as it proceeds through the pharmacy’s work flow system to alert the pharmacist before the final verification. Some computer systems have the ability to print an “alert label” along with the prescription label that the pharmacist can review before dispensing the drug.

Computer Alerts

- Require pharmacists to review and authorize high-priority or high-significance alerts before data entry can proceed. There should be safeguards in place that will not allow interns and technicians to bypass these alerts. They must be viewed, acted on, and released by a pharmacist before data processing can continue. If the pharmacist bypasses the alert, documentation should be made in the computer system or on the prescription as to the reason why this was done.

Computer Alerts

- Many computer systems will allow you to print a daily report of bypassed alerts. This will allow the pharmacist to retrospectively look at the most commonly bypassed alerts and take appropriate action. This may include education of the staff not to bypass certain types of alerts or the pharmacist can change the sensitivity of individual alerts within the system.

- Never completely disable the alert system, but adjust it based on clinical significance.

Computer Alerts

- Make sure your alert system is up to date. Studies have shown that many pharmacies’ alert systems are out of date. Keep up with the current medical literature as new interactions and contraindications are discovered and add them to your system.

- Education is the key. Spend time with the pharmacy staff educating them why these alerts are important and when a pharmacist is needed to review the alert and intervene. When in doubt, have the staff ask the pharmacist what to do with an alert message.
Medication Error Prevention

- Check the prescription against the prescription label at least three times.
- Use the same process or workflow every time you fill or check a prescription. If you become interrupted in the middle of checking a prescription, start over from the beginning.
- Educate your support staff not to interrupt you during the prescription checking process. Almost everything can wait a few minutes until you are done.

Medication Error Prevention

- The goal of every pharmacist is to follow the five “Rs”: right drug, right patient, right dose, right time, and right route.
- Have another pharmacist verify any calculations you do. Make that person do the calculation from scratch and on their own. Do not give them your math work and have them verify it.

Medication Error Prevention

- Develop, implement, and follow a medication error avoidance plan.
- Create shelf “tags” or “red flags” for look-alike or sound-alike drugs on storage shelves.
- Constantly evaluate new technologies or dispensing processes for medication error potential.
- Make regular follow-up phone calls to patients or health care providers responsible for the patient’s care to assess how their drug therapy is going and inquire about adverse events, side effects, and/or any changes in the patient’s medication or medical history.

Medication Error Prevention

- Keep the original prescription order, label, and stock medication container together during the entire process from start to finish.
Medication Error Prevention

- Empower all pharmacy employees to make dispensing accuracy their responsibility, not just the pharmacists.
- The work area should be kept free from clutter.
- Area for final verification should be kept away from high traffic areas in the prescription department.

Medication Error Prevention

- Drug bottles that are no longer used should be discarded or returned to the shelves.
- Telephones should be located in an area where they cannot be a distraction to a pharmacist verifying prescriptions before dispensing.
- Pharmacists should only fill one prescription at a time before switching containers or drugs.

Medication Error Prevention

- Make sure the dispensing area has adequate space to perform all activities.
- Train technicians and interns to be the ones who answer the phone.
- If you are interrupted while verifying a prescription, start the entire verification process over.
- Use the same verification process with every prescription dispensed.

Medication Error Prevention

- Keep the fax machine in an area away from the final verification area.
- Make sure all areas of the pharmacy are well-lit. Some studies have suggested that light levels need to be increased for workers over the age of 45. Also, clean lighting fixtures on a regular basis. Lighting levels can be decreased by as much as 25% in fixtures that have not been cleaned for two years.
Medication Error Prevention

- Create “break-periods” where pharmacists can step away from the dispensing process for a short time to avoid fatigue. It is better to make a patient wait a few minutes than have a pharmacist make a mistake due to eye-strain.
- Make sure everyone in the pharmacy is properly trained on how a prescription flows through the work flow system.
- Technicians and interns should conform to the pharmacist’s work flow and habits, not the reverse.

Medication Error Prevention

- Educate your technicians and interns to become “filters” for the pharmacists, but don’t let them overstep their boundaries and risk patient safety.
- Have monthly meetings to discuss how work flow could be improved to reduce congestion, distractions, and improve patient safety.
- Store medication stock bottles in an organized and uncluttered area with at least one inch between bottles sitting side-by-side on the shelf.

Medication Error Prevention

- Make sure your drug reference sources are up to date
- Never completely disable a computer alert system
- Edit your system of drug interaction alerts to eliminate ones that are not clinically significant
- Many systems will allow a print-out of bypassed alerts than should be reviewed

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.
Medication Reconciliation

- These transitions may include home care to hospital care, nursing home care to hospital care, hospital care to at home care, and at home care to nursing home care
- Short-term: nursing home care to ED care and back to nursing home care

Medication Reconciliation

- 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 back to the nursing home on medications for a problem that may have only been a one-time occurrence or acute problem during the hospitalization. The patient is on two new medications for their hypertension and continues therapy with hydrochlorothiazide and enalapril as before. This is a problem with medication reconciliation.

Medication Reconciliation

- Example: The patient may be switched to the hospital’s PPI of choice, such as Pravacid®, while the patient is in the hospital. The discharge doctor does not realize this and gives the patient a new prescription for Pravacid®. The patient is now taking two PPIs because proper medication reconciliation did not occur before discharge.

Medication Reconciliation

- 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.
Medication Reconciliation

Here is a simple stepwise process developed by ISMP for a very basic medication reconciliation process at your pharmacy or institution.

- Step 1: Have the patient or family 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/family members to provide.

- 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 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 anytime 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: Communication 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. (Discharge)
Medication Reconciliation

• Step 7: Offer where to seek outside assistance available to the patient in helping them keep their medication list as current as possible. (Discharge)

• 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.