CHAPTER 2
THE PHARMACY TECHNICIAN’S ROLE IN REDUCING MEDICATION ERRORS
(2 CONTACT HOURS - MANDATORY)

Learning objectives

- Explain the common points of medication errors as they pertain to pharmacy technicians.
- Discuss strategies to prevent or reduce the occurrence of medication errors.
- Identify the eight “rights” of medication administration.
- Describe important patient safety considerations.
- Identify the components of a root-cause analysis.
- Explain continuing education interventions that help reduce medication errors.

Introduction
Pharmacy technicians play a major role in the safe distribution of medications. They have a multitude of responsibilities that may include:

- Interpreting written prescriptions.
- Performing pharmacy calculations.
- Inputting patient and prescription data into the computer.
- Managing inventory.
- Filling and labeling prescription bottles.
- Helping to resolve issues with insurance companies.

The pharmacy technician’s role continues to evolve and varies considerably depending on the practice setting (e.g. retail pharmacy, inpatient hospital) and the state in which the technician practices. Ultimately, regardless of setting or location, the ultimate goal is for the pharmacy technician to provide an “extra layer of safety,” for the safety and well-being of the patient.

Medication errors
What is a medication error? According to the National Coordinating Council for Medication Error Reporting and Prevention, a medication error is “any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging, nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use.”

Medication errors in hospitals and other settings are common and are a source of considerable concern for healthcare organizations, healthcare professionals, and health care consumers. This concern was intensified with the publication of reports from nationally renowned experts, such as the 2006 report by the Institute of Medicine, which stated that medication errors cause harm to about 1.5 million patients every year. Sadly, it is estimated that at least 44,000 deaths occur every year as a consequence of medication errors. One million more errors are stopped prior to administration to the patient. In addition to patient harm, medication errors have a significant monetary impact. Such errors are estimated to cost billions of dollars annually in additional treatment costs.

Barbara is a pharmacy technician who works in the pharmacy of a small community hospital. As she returns to the pharmacy after lunch, she encounters a nurse from one of the medical/surgical units. The nurse tells Barbara that the unit is “unbelievable today. A couple of Dr. Morrison’s patient’s aren’t doing well and two nurses called in sick. Will you check on some of Dr. Morrison’s orders we just sent to you? We need that furosemide right away. One of his patients has some mild congestive heart failure and we need to deal with it quickly!” Barbara hurries into the pharmacy and finds an order from Dr. Morrison to be filled immediately. The order is for furosemide for Janice Brady. Barbara is puzzled. She remembers filling an order for analgesia for Ms. Brady earlier in the day. But Ms. Brady is 24 years old and hospitalized for surgical repair of several compound fractures following an automobile accident. Barbara calls the unit and finds that the furosemide was intended for a Ms. Janine Brady, an 82-year-old woman hospitalized with pneumonia. Dr. Morrison had documented the order on the wrong medical record and the nurse who transcribed the order had been pulled from another unit and was not familiar with either patient. To add to the problem, the two women share the same last name and similar first names. Thanks to Barbara’s alertness, an error was prevented.

There are many points at which medication errors can occur. Short staffing, inattention to detail, similar names of patients, and similar names of medications all contribute to medication errors. Although pharmacists are ultimately responsible for all dispensed prescriptions, pharmacy technicians are an essential part of the process of safely filling and dispensing medications. What are the common points of medication errors as they pertain to pharmacy technicians?

- **Prescription drop-off:** Errors at this point are often linked to either a lack of or inaccurate patient information. Examples include failure to enter known drug allergies, entering information on the wrong patient record, or failure to enter known health care issues such as pregnancy. Knowing as much as possible about the patient’s condition helps to reduce the possibility of such errors.
- **Order entry:** Errors at this point are usually associated with a lack of or incorrect drug information. Research indicates that more than one in 10 medication errors are directly associated with the use of incorrect drug names, misunderstood abbreviations, and illegible or vaguely written orders. Errors also occur despite computer safety features such as drug alerts. Such alerts can be lengthy and numerous and sometimes busy technicians “override” an alert to save time and trouble. However, all alerts and clinical warnings should be relayed to and discussed with the pharmacist. Such communication is essential to accurate dispensing of medications and the safety of the patient.
- **Filling and Dispensing:** About 80 percent of dispensing errors are related to incorrect selection of the medication from stock. This may be due to look-alike/sound-alike medication names or look-alike packaging. For example, a pharmacy technician may select a medication container because of past familiarity with a label, the size or shape of the container, or even the location of the container. This may be especially common if the technician is in a hurry or if he/she has long been accustomed to a drug being packaged in a particular way or located in a certain area.
- **Accuracy check:** During an accuracy check the pharmacist checks the correctness and correctness of the filling process. Sometimes this check is performed incorrectly, especially if the person performing the steps involved in filling and dispensing is the same person who performs the accuracy check. It is recommended that, whenever possible, a person other than the one who performs the filling/dispensing process should carry out the accuracy check. In this way, an independent double check is conducted.
- **Point of sale:** Sometimes a prescription that has been accurately filled is given to a patient for whom it was not intended. A busy outpatient setting is an environment in which it can be relatively easy to give medication to the wrong patient. It is recommended that the person picking up the prescription verify the address or another identifier in addition to the name of the patient.
- **Patient education:** It is estimated that approximately 80 percent of medication errors can be identified during the patient education process. Simply asking if a patient has any questions is insufficient. Research also shows that patient education and error prevention is especially important when high-alert drugs are being dispensed.

In summary, ongoing vigilance and alertness are necessary at all points of potential error to ensure accuracy of drug dispensing and patient safety. Pharmacy policies and procedures must be evaluated on a regular basis to identify causes of potential breakdowns in accuracy and safety.

**Strategies for error reduction and prevention**

Martin, a pharmacy technician, works in the pharmacy of a large drug store. As soon as the pharmacy opens, there is a long line of impatient customers who need prescriptions filled or refilled. Martin attempts to read a prescription in handwriting that is difficult to read. He believes that he has interpreted it correctly and proceeds to fill the prescription for Actos, 35 mg once daily. He asks the pharmacist to perform an accuracy check, saying, “Here is Mrs. Deller’s...
The preceding example illustrates how a combination of problems (illegible handwriting, failure to read the prescription accurately, failure to seek clarification of the prescription, and lack of knowledge about the patient) all contributed to a potential serious error. It is imperative that all pharmacy personnel identify and implement strategies for error reduction and prevention.

Continuing education

Ongoing continuing education is an essential strategy for error prevention and reduction. Pharmacy technicians must continually update their knowledge of drugs, their actions, doses, routes, indications, interactions with other drugs, herbs, and food; contraindications; and side effects. They must also remain alert to newly approved drugs and drugs that have been recalled or received additional safety warnings from the Food and Drug Administration (FDA), and results of clinical studies on newly developed drugs.

Certification of pharmacy technicians may also prove to be a strategy for medication error reduction and prevention. Results from a 2010 survey sponsored by the Pharmacy Technician Certification Board showed that more than 80 percent of the 3,250 pharmacists surveyed agreed that pharmacy technician certification is linked to a reduction in medication errors. Eighty-three percent of respondents noted that working with technicians who were certified increased the amount of time pharmacists were able to spend on patient care. The pharmacists who participated in the survey worked in various practice settings around the United States. The study itself was carried out by researchers at the University of Oklahoma College of Pharmacy.

It comes as no surprise that well-trained and educated pharmacy technicians are expected to have a positive impact on patient care and safety. In fact there is an anticipated 25 percent increase in the number of pharmacy technician positions by the year 2018.

The Eight “rights” of medication administration

 Historically, pharmacists, pharmacy technicians, nurses, and other health care professionals were taught the five “rights” of medication: right drug, right patient, right dose, right time, and right route. However, a more current listing of “rights” include three more: right reason, right response, and right documentation.

These broadly stated practices are essential to the safe and accurate dispensing and administration of medications.

The right drug

Upon receipt of a prescription or order, it is imperative that technicians select the correct medication as prescribed by the health care provider. If the name of the drug is unfamiliar, consult a reliable reference. Unfamiliar names are sometimes the generic name for a more familiar brand name. Consult references, if necessary, to identify the purpose of administering the drug, its action, routine routes and doses, interactions with other drugs, herbs, and foods, side effects, and contraindications. When selecting the medication, be sure to check the label to ensure accuracy.

Pharmacy alert! Never simply “grab” medication from a location without checking the label. Serious errors have been made when pharmacy personnel automatically go to the location where a specific drug has always been kept. Locations change! Be alert to changes in color, shape, or size of pills. If a pill, tablet, capsule, looks different it may be the wrong medication!

The right patient

The patient’s identity should be confirmed by checking two patient identifiers such as name, date of birth, address, etc.

The right dose

Confirm that the dose is appropriate for the drug, the condition, and the patient. For example, elderly patients or patients with compromised renal function may need reduced doses of some medications. Be sure to check the drug label with the prescriber’s order.

The right time

Confirm that the order/prescription is written for the correct time of day and frequency.

The right route

Confirm that the route by which the medication is to be given is documented by the prescriber and that it is appropriate for the patient.

The right reason

Confirm that the prescribed drug is appropriate for the patient’s condition.

The right response

The patient’s response to the drug must be monitored. Although the pharmacy staff may not be present to actually witness responsiveness, they can and should communicate with physicians or nurses when appropriate and include desired response as part of providing patient education.

The right documentation

Documentation/record keeping is essential. Include not only what was dispensed but any patient education that was provided.

Elements of a prescription

There are certain elements of any order in the inpatient setting and any prescription that must be present to fill and dispense medications. In all types of settings, the drug, its dose, route, time and frequency of administration must be clearly stated without use of unapproved abbreviations according to accrediting agency (such as the Joint Commission) standards and hospital policies and procedures. All orders must be signed by the prescriber.

Required elements of a prescription include:

- Patient’s full name and address. 
- Prescriber’s full name, address, telephone number, and DEA number.
- Date of issuance.
- Prescriber’s signature.
- Name of drug, dose, route, amount.
- Directions for use.
- Refill instructions.
- If generic substitution is permissible (as appropriate to the drug).

Failure to include this information, or if the information is provided but is ambiguous, requires clarification from the prescriber.

The Joint Commission’s “Do Not Use List”

In 2002 the Joint Commission’s Board of Commissioners approved a National Patient Safety Goal requiring accredited organizations to develop and implement a list of abbreviations not to be used. It also identified a list of abbreviations for possible future inclusion. These abbreviations are deemed to be dangerous and contribute to medication errors.

Health care organizations are encouraged to add to the list as deemed necessary and appropriate. However, if the organization chooses to add to the list, policies and procedures must be in place to support this action and the organization must uphold such policies and procedures.

To date the Official Do Not Use list includes:

- U or u (unit): Instead, the word “unit” should be written.
- IU (international unit): The term “international unit” should be written.
- Q.D., QD, q.d., qd (daily) and Q.O.D., QOD, q.o.d., qod (every other day): The word daily or the phrase every other day should be written.
- Trailing zero (X.0 mg) and lack of leading zero (.X mg): Decimal points are often missed. Instead, write X mg or 0.X mg.
- MS; MS04; MgSO4: Morphine sulfate and magnesium sulfate may be confused for one another. Instead write out morphine sulfate and magnesium sulfate.

To date, the following abbreviations and symbols are being considered for possible future inclusion in the official Do Not Use List. The Joint Commission recommends that the following items be considered when as organizations expand their Do Not Use lists to include an additional three or more items:

- >=, < (greater than and less than symbols): Write out “greater than” or “less than.”
- Abbreviations for drug names: Write out the names of drugs.
- Apothecary units: Use metric units.
- @: Write “at.”
- cc: Write out mL or ml or milliliters.
- ug: write “mcg” or “micrograms.”
- H.S. (may be taken for at bedtime or half-strength): Write out “half-strength” or “at bedtime.”
T.I.W. Write out “3 times weekly” or “three times weekly.”
S.C. or S.Q.: Write out “subcutaneously” or write “Sub-Q” or “subQ”.
D/C (may be taken for discharge or discontinue): Write out “discharge” or “discontinue.”
A.S., A.D., A.U.: Write out “left ear,” “right ear,” or “both ears.”
O.S., O.D., O.U.: Write out “left eye,” “right eye,” or “both eyes.”

Unfortunately, some of these abbreviations and symbols are still being used. It is up to the members of the health care team who are responsible for filling, dispensing, and administering medications to clarify orders and not accept orders and prescriptions that contain abbreviations or symbols that are banned or ambiguous.

Pharmacy alert! The Institute for Safe Medication Practices (ISMP) has published a list of dangerous abbreviations that it recommends be prohibited. A number of these abbreviations also appear on the Joint Commission’s list. For further information about the ISMP and its recommendations, visit the ISMP website at www.ismp.org

High-alert medications
High-alert medications are those (such as heparin) that involve an increased risk of causing significant patient harm if administered incorrectly. Although these drugs may or may not be linked with an increased number of medication errors, they are linked to extremely serious consequences if administered in error.

The ISMP has published a list of high-alert medications on its website. This list is updated frequently and is created from information gathered from the ISMP data base on medication errors. It is recommended that pharmacy technicians visit the ISMP web site (www.ismp.org) regularly for the latest list of high-alert medications. By being constantly aware of medications on this list, procedures can be developed to prevent errors involving these types of drugs. For example, when filling orders, special attention should be paid to automated alerts in the computer that pertain to these medications. The use of additional labeling on the original medication package can help to alert pharmacy personnel to high-alert medications.

Look-alike sound-alike medications
As shown in the scenario at the beginning of this section, look-alike and sound-alike medications increase the risk of error. Examples of such drugs include Celexa and Celebrex, Amaryl and Reminyl, and Avinza and Evista.

The FDA is working diligently to prevent and abolish look-alike and sound-alike medications, but many still exist. Before approving the name of a new medication, the FDA secures the services of over 100 health care professional volunteers to enact “real-life” medication scenarios. The FDA reviews these scenarios and rejects those names (often as many as one-third of the proposed names) because they look or sound similar to drugs already approved.

The FDA also tracks medication errors due to confusion of drug names. If it is determined that a medication name is leading to errors or near-errors, the FDA can notify health care providers about the problem and recommend that the manufacturer change the name of the drug causing confusion.

Both the Joint Commission and the ISMP have developed lists of medication pairs that have been involved in medication errors. The Joint Commission mandates that accredited facilities identify a list of look-alike/sound-alike medications to satisfy the safety requirements of the National Patient Safety Goals.

In addition to being especially cautious regarding medications that look-alike or sound-alike, pharmacy personnel must be wary of drugs that are packaged similarly. Even the same drug, but different strengths of that drug, may be packaged similarly. Never use color or style of packaging as a means of identifying drugs. When working with high risk or look-alike/sound alike medications, ask a colleague to double-check work for accuracy.

Dealing with common points of error
Prescription drop-off
Here are some strategies for preventing errors at the point of prescription drop-off:
- Develop a checklist of essential patient information that should be obtained from or about every patient.
- Verify the patient’s identity by using at least two identifiers. Write the patient’s date of birth on every hard copy prescription even if there are several prescriptions for the same patient. This gives the pharmacist easy access to a second identifier as he/she performs the final dispensing of the medications.
- Check the existence of allergies and medical conditions at every patient encounter. New information should immediately update in the patient’s computerized file, and such information should be relayed to the pharmacist and other pharmacy personnel as appropriate. Knowledge of the patient’s health status assists in identifying prescriptions that may be written incorrectly or for the wrong medication.

Pharmacy alert! Pediatric and geriatric patients are at an increased risk of adverse effects and harm due to medication errors. The need for calculation of doses based on age and weight is especially important for pediatric patients. Renal and hepatic decrease in function or compromise may affect the clearance and metabolism of drugs, which may require a reduced dosage compared to younger adults.

Order entry
- Ensure that there is an ongoing system of continuing education for pharmacy personnel. Pharmacy technicians must be familiar with the brand and generic names of drugs, allergy codes, patients’ health status, and directions for medication administration. They must also be aware of unacceptable/dangerous abbreviations and symbols and the dangers associated with high-alert medications and look-alike or sound-alike drugs.
- Prescriptions that do not contain necessary elements, are written illegibly, or are questionable in terms of safety must be clarified before being filled.
- Never ignore or circumvent technology safeguards. Drug alerts can be both time-consuming and numerous in numbers. However, bypassing alerts is NEVER acceptable. Alerts contain information necessary for safe dispensing of medications.
- Alerts dealing with drug interactions, allergies, duplications, and other warnings must be relayed to the pharmacist.

Pharmacy alert! If, after thorough evaluation, pharmacists believe that some alerts are unnecessary or repetitive, they should communicate directly with the source of the alerts and share their concerns. However, until or if such alerts are discontinued by their sources, all alerts must be reviewed and acted upon as appropriate.

Filling and dispensing
The majority of errors during the filling and dispensing process occur due to inaccurate selection of product from stock. Such inaccurate selection is usually due to medications that are packaged similarly or have similar names. Safeguards to avoid such errors include:
- Physically separate drugs with similar packaging and labels.
- Ensure that the production work station system guarantees that the correct product has been selected. The system may rely on the National Drug Code checks, bar code technology, scanned images of products and prescriptions, or other types of technology for product verification. The important point is that whatever system is in use facilitates error prevention.
- As medications are prepared, labels should be read carefully, with special attention given to the NDC number three times: as the product is chosen, as the medication is prepared, and when the stock container is disposed of or restocked.
- Make sure that the following match: computer-generated prescription label, the stock bottle label, the hard copy prescription, and the computer-generated receipt.
- The pharmacy technician must carry out a quality review of the prescription before giving the prescription to the pharmacist for his/her review.

Accuracy check
An accuracy check must be carried out by the pharmacist. He/she verifies the correctness of:
- The information collected when the prescription was received.
- The data entry outcome (including alerts).
- The final assembled product.
When providing patient education, it is important to determine what process and system failures exist that contribute to errors and to identify ways to correct such failures.

Health care organizations and outpatient pharmacies have policies and procedures in place that deal with the internal reporting of medication errors. National databases are also available for the reporting of errors.

The U.S. Pharmacopeial Convention (USP) operates three medication error reporting systems:12
1. Medication Errors Reporting (MER) Program.
2. The Veterinary Practitioners’ Reporting Program.
3. MEDMARX.

The MER Program operates in conjunction with ISMP. Health care professionals can report medication errors anonymously online, by phone (1-800-23-ERROR), or by mailing or faxing a report to USP. The USP reviews the information and forwards findings to the FDA and manufacturers.12

Patients should be informed of the error within 24 hours of the event being discovered. They should receive an apology and be informed of what impact the error may have. Patients should also be told of the actions being taken to prevent errors in the future.12

**Patient safety and responsibility**

All error prevention strategies are grounded in the desire to ensure patient safety. However, it is also important to think about the responsibility that patients/families and caregivers have for their own safety and well-being. If medications are correctly prepared and dispensed and patient education properly provided (including adequate evaluation of their knowledge), patients and their families or other caregivers are responsible for:

- Taking medications as prescribed.
- Recognizing and reporting side effects as instructed.

**Pharmacy alert!** It is especially important that patients/families and caregivers be taught what side effects require immediate emergency medical intervention, such as difficulty breathing and swelling of the lips and tongue, which indicate anaphylactic reaction. They also need to be taught how to obtain help (e.g., dial 911) in emergencies.

- Keeping health care providers and pharmacy staff informed about changes in their health status.
- Recognizing if their medications are “different” than what they usually take (e.g., appearance, size, color, etc.) and reporting or questioning these differences prior to taking such medications.
- Maintain a current, accurate list of all medications they take and inform health care providers and pharmacy staff about this list and any changes if they occur.
- Actively participate in planning their own treatment regimen.

Some patients may not be accustomed to being treated as part of the health care team. They just assume that health care professionals know “best,” and they do not ask questions even though they may have some concerns. The Joint Commission has developed some helpful patient education materials that help to teach patients to take responsibility for their own health status, to ask questions, and to report concerns. The series is called Speak Up and addresses such issues as asking about medications, stroke, infection control, and reducing the risk of falls.

Much of the patient education material related to the Speak Up series is available in English and Spanish and can be downloaded for patient use for free. Access these and other patient education materials on the Joint Commission’s website at www.jointcommission.org.

**Root-cause analysis**

Understanding why a medication error occurred, the factors that contributed to its occurrence, and the systems that failed to “work” are essential to learning from mistakes and identifying actions to take to avoid future errors. Root-cause analysis is a process for analyzing errors that goes beyond identifying individuals who were involved in the adverse occurrence. It is not a “blame game” process. Instead it is an organized investigation conducted to find out why an error occurred and what can be done to prevent errors in the future.5,9

The root-cause analysis should be performed by an interdisciplinary team whenever possible. This is possibly more easily done in a hospital or outpatient health care center setting where many disciplines work together and risk management personnel are onsite to participate or lead the team analysis. In cases such as these, the actual person or persons involved in the error should not be part of the initial analysis. They will provide information and be included in reviewing the data analysis and helping to write action plans for systems improvement. But it may be difficult for them to participate in an objective analysis throughout the entire process, especially if the error led to serious patient harm. Most facilities have policies and procedures to govern the root-cause analysis process including team members and determining outcomes.

In smaller facilities, such as small outpatient pharmacies, the team may be limited to pharmacy staff and physicians. In some cases, patients and caregivers may be part of the root-cause analysis team, especially if the patient or
caregiver failed to follow instructions or carry out recommendations provided during patient education. The ultimate goal is to conduct an analysis that will lead to actions that will improve patient safety.

There are a number of ways to conduct a root-cause analysis. Various forms and checklists are used to organize investigation, document data, and write out action plans. There is no single “best way” to conduct a root-cause analysis as long as it is determined how and why an error occurred and actions to improve safety and reduce errors are identified. After implementing identified actions, the team must also review the effectiveness of these actions. If actions fail to have the desired effect on safety and error reduction, analysis must be reviewed and new actions identified.

All errors must be analyzed, but a complete root-cause analysis may not be necessary for every error. For example, in the hospital setting, the patient was given one dose of 500 mg of an antibiotic when 250 mg was ordered and no harm came to the patient. A briefer analysis may be conducted to identify contributing factors and correct processes. However, any event of a serious nature that caused significant harm or had the potential to cause significant harm should be analyzed via the root-cause analysis process. All sentinel events must have a root-cause analysis.

The Joint Commission offers A Framework for A Root Cause Analysis and Action Plan in Response to a Sentinel Effect that can be accessed on the Joint Commission website. The suggestions that follow are based on this framework.

Each category is accompanied by questions or suggestions for information to be obtained that must be addressed as part of the analysis. Note that not all questions will apply in every event, and others may be needed to be addressed.

What happened?
- Was this event a sentinel event?
- What type of harm resulted from the adverse event?
- Provide a brief description of the event, including the date, day of the week, and time of day that the event occurred.
- What areas of the facility were involved? (pharmacy, nursing unit, outpatient clinic, etc.)

Why did it happen?
- What was the process or activity during which the event occurred?
- What are the steps in this process or activity?
- A flow chart or diagram may be useful to help “see” the flow of events.

What were the contributing factors?
- What factors contributed to the event?
- What human factors contributed to the event?
- Did equipment performance play a part in the event or affect the outcome of the event?
- What environmental factors contributed to the event?

What uncontrollable external factors contributed to the event? (These must truly be uncontrollable. For example, a disaster such as a tornado is not directly controllable).
- Are there any other factors or issues that had an impact on the outcome?
- What other services were impacted by this event?

Why did the event occur? What systems and processes contributed to the event? What human resource issues contributed to the event?
- Were involved staff members adequately qualified and currently competent for the responsibilities they were expected to carry out?
- Did staff members receive adequate orientation, in-service training, and ongoing continuing education and training for their roles and responsibilities related to events surrounding the event? Is the process of planning and delivering such education adequate?
- How did staffing compare to recommended or mandated levels? Were there inconsistencies in staffing levels as required by facility policy and procedure or other mandates?
- What were the plans for dealing with issues that reduce effective and adequate staffing levels? Were these plans carried out if staffing was not adequate? Why or why not?
- To what extent is staff performance addressed as part of the event?

What information management issues had an impact on the event?
- Was necessary information available (e.g., reference materials, supervisory assistance, medical input) when needed? Was such information accurate, complete, and clear? Why or why not?
- Was communication among involved participants adequate? Why or why not?

What environmental issues had an impact on the event?
- Was the physical environment appropriate for the processes that had to be carried out? Why or why not?
- What systems and processes are in place to identify environmental risks?
- What types of emergency and failure-mode responses have been identified, planned, and tested?

What leadership issues had an impact on the event?
- To what extent is the culture of the facility favorable to identification of risk and reduction of risk?
- What barriers to communication exist that have the potential to increase risk of errors?
- To what extent is the prevention of adverse outcomes communicated throughout the facility as a high priority? How is this addressed? Are all staff members aware of this as a priority?
- What can be done to protect patients and staff members against the effects of uncontrollable factors? Have such actions been identified? Are plans in place to address these factors?

Why or why not? What are the plans? How are their effectiveness assessed?

After gathering and analyzing the data pertaining to the preceding questions, an action plan to reduce risk must be developed. Each item of the action plan must be clearly stated in measurable terms. For example, an action might state that “Implement a double-check of all high-alert drugs by having two pharmacists review and document the accuracy of filling a high-alert prescription before it is dispensed.” This is concise and measureable. It would not be appropriate to state, “Understand that high-alert medications must be double-checked.” This does not clearly state what is to be done or how it is to be done.

Each action item should identify a person or persons responsible for implementing the action including writing out a new procedure or policy as needed. A date for implementation of the action item should also be identified.

The root-cause analysis team should also set a date to evaluate the effectiveness of the action items. They must determine if the actions they have identified work and help to reduce error. If actions are found to be ineffective, new actions must be identified and consequently evaluated for effectiveness.

Part of the action plan for adverse events, no matter how minor should be to counsel the persons involved. The pharmacist, the pharmacy technician, the physician, and the nurse who are involved in an error (especially an error that causes significant patient harm) may suffer from fear, guilt, and lowered self-esteem. They may also suffer from physical effects such as insomnia, physical or emotional illness, and difficulty resuming their work responsibilities. It is important to provide support for these individuals as well as instructing them in ways to reduce errors in the future. It is imperative to note that error analysis should not be conducted as a way to find someone to “blame.” It is a process to help improve job performance, enhance patient safety, and improve the quality and appropriateness of the patient environment.

Education interventions that can help reduce medication errors

Ongoing education is necessary if health care professionals are to reduce the occurrence of medication errors. But what should be part of ongoing education? Arguably, most if not all, persons involved in the preparation and distribution of medications know the eight “rights” of medication administration and necessary safety precautions to take. Ongoing education should go beyond basics and include statistical information about medication error occurrences within a facility and on a national basis, how to access national resources pertaining to medication errors, and facility-based strategies to safeguard patient safety.

Orientation

Orientation of new employees is the starting point for education. An overview of facility policies
and procedures pertaining to the safe preparation and dispensing of medications as well as a review of the eight “rights” of medication is appropriate. New employees should also be told about the current state of medication safety within the facility in which they work and what plans are in place to further enhance such safety. Orientation should be competency-based, and new employees must demonstrate competency in their basic job responsibilities as part of orientation.

**Inservice or on-the-job training**
This type of education refers to education that must be offered quickly and as part of an immediate need. An example of such education is the training that must take place when a new or unusual medication is ordered. Before it can be prepared and dispensed, it is necessary that resources be consulted regarding what the medication is used for, its action, route of administration, range of dosage, side effects, and interactions. All of these factors, in a simplified format, should be part of the patient’s education as well. It is necessary and appropriate that the physician be consulted when this type of medication order arrives at the pharmacy. Other members of the health care team (e.g., nurses, therapists, etc.) should also be part of the inservice training.

**Education alert!** Inservice training is absolutely necessary when a new, unusual, or unfamiliar medication is prescribed. It is also mandatory that the entire pharmacy staff be provided with inservice training. Never assume that it is sufficient for one or two employees to be trained. It is likely that all personnel will need to be part of the preparation and dispensing process at one time or another.

**Continuing education**
Continuing education refers to education that is offered to enhance the skills of health care professionals beyond the basics. For example, inservice, as noted in the preceding section, occurs when an immediate, on-the-job need presents itself. Continuing education is usually more in-depth and is designed to increase knowledge, skill, and professional growth on an ongoing basis.

Continuing education can take many formats. It may involve attending conferences and all-day programs offered at locations other than the facility for which one works. It can be a program that is presented prior to the beginning of the work day or after normal working hours. For organizations that have 24-hour pharmacy coverage, programs can take place at regularly scheduled times convenient to those who work during the evening or at night.

Remember that continuing education does not have to be in a “classroom-type” setting with a presenter and learners in the same physical location at the same time. Thanks to technology, continuing education can be presented “on demand” via computer, iPhones, iPads, etc. Journal clubs are another useful way to present continuing education. Keeping up with the latest information, which comes from a variety of sources such as journals and the Institute of Safe Medication Practices, is difficult. Staff members could be assigned to present information from a particular resource during staff meetings on a regular basis. This would allow all personnel to receive educational information without having to read every journal or consult every resource themselves. This approach also encourages all staff members to assume responsibility for their own ongoing continuing education.

Another facet of continuing education is honest information about medication safety in the workplace. Data from risk management, quality improvement, and research projects should be presented. All employees have the right to know what works and what doesn’t when it comes to medication safety. Employees should learn about national statistics as well as the statistics pertaining to their own facilities. There was a time when such data were closely guarded by administration and management. Such data are now (or should be) shared with all employees so they can not only learn the current status of medication safety but also have input into improving medication safety.

Part of the continuing education process is teaching staff members to participate on committees and task forces on medication safety. Those staff members who actually prepare, dispense, and interact with patients are the persons who can provide the most practical input when it comes to designing systems and writing policies and procedures to enhance medication safety. Staff members should be groomed in presentation skills so that their input is taken seriously and “makes sense” to others in the organization and facilities for which they work.

Continuing education is much more than a lecture about new medications or FDA announcements. It is about pharmacy personnel taking responsibility for their own professional growth and development and for improving patient safety, especially when it comes to medication errors.

The effectiveness of all types of education should be assessed. For example, after a program on adverse drug interactions, did the occurrence of such problems decrease? Did staff members’ ability to recognize potential dangerous interactions increase? It is not enough to offer education. There must be a process in place to determine whether the education was effective in terms of an increase in knowledge and patient safety.

In summary, the reduction of medication errors involves many factors. The most important factor, however, is the ability of all pharmacy personnel to assume responsibility for a safe patient environment and to actively pursue strategies that will both improve such safety and enhance professional growth and development.

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**THE PHARMACY TECHNICIAN’S ROLE IN REDUCING MEDICATION ERRORS**

**Self-assessment Questions**
Test your knowledge gained from this course by answering True or False to the following questions. Answers can be found at the bottom of this page.

1. A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer.
   - True
   - False

2. Medication errors at the point of order entry have been drastically reduced to less than one in 100 of all medication errors because of computer safety features, such as drug alerts.
   - True
   - False

3. When filling a prescription, make sure that the following match: computer-generated prescription label, the stock bottle label, the hard copy prescription and the computer-generated receipt.
   - True
   - False

4. Patients cannot be held responsible for their own safety and well-being when it comes to medications.
   - True
   - False

5. Contributing factors are excuses, and should play no role in a root-cause analysis of a medical error.
   - True
   - False

**Answers:**

1. False
2. False
3. True
4. False
5. True
References

THE PHARMACY TECHNICIAN’S ROLE IN REDUCING MEDICATION ERRORS

Final Examination Questions
Choose True or False for questions 11 through 20 and mark your answers on the Final Examination Sheet found on page 41 or complete your test online at www.elitecme.com.

11. Errors at the point of prescription drop-off are most often linked to either a lack of or inaccurate patient information.

True  False

12. Nearly 80 percent of dispensing errors are related to a pharmacy staff member’s failure to double-check the patient’s identify.

True  False

13. Results from a 2010 survey sponsored by the Pharmacy Technician Certification Board showed that more than 80 percent of the 3,250 pharmacists surveyed agreed that pharmacy technician certification is linked to a reduction in medication errors.

True  False

14. There are currently five “rights” of medication administration: right drug, right patient, right dose, right time, and right route.

True  False

15. MS is an acceptable abbreviation.

True  False

16. Before approving the name of a new medication, the FDA secures the services of over 100 health care professional volunteers to enact “real-life” medication scenarios.

True  False

17. To prevent errors at prescription drop-off, it is recommended that a checklist be developed of essential patient information that should be obtained from or about every patient.

True  False

18. When reporting errors via the MER program, the person reporting the error must give his/her name and contact information.

True  False

19. As part of patient safety, patients must be taught to include ALL medications, including herbs, vitamins, and over-the-counter medications on their list and to inform health care providers and pharmacy staff as well.

True  False

20. This is an appropriate action plan statement to write as part of a root-cause analysis: Pharmacy technicians will understand the importance of telling the pharmacist of any alerts that are generated.

True  False