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Medication Error

Methods for identifying and preventing errors in pharmacy

INTRODUCTION

“Knowing is not enough; we must apply. Willing is not enough; we must do.” This quote from Goethe opens the Institute of Medicine’s most recent report on medication errors, “Preventing Medication Errors” and sends the message that it is time for each and every individual involved in the health care system, patients included, to take action to decrease medication errors.

Earlier reports from the Institute of Medicine addressing medication errors include, *To Err is Human* (2000), *Crossing the Quality Chasm* (2001) and *Patient Safety* (2004). Together, these reports have appropriately provoked interest in and debate over the scope, severity and detrimental impact of medication errors on individual patients and health care systems. In 2000, the Institute of Medicine reported that anywhere from 44,000 to 98,000 Americans die of medical errors each year in hospitals, and as many as 7,000 deaths resulted directly from medication errors.² The “Preventing Medication Errors” report estimates the cost of preventable medication errors in hospitals at \$3.5 billion (2006). Preventable errors for Medicare enrollees in am-

bulatory settings were estimated at a national annual cost of \$887 million.³ It is clear that medication errors are a pervasive and persistent problem. This problem need not be insurmountable. This lesson will examine prescription-based errors and identify a variety of actions that can be taken to prevent medication errors and build a safer health system.

Research on the topic of errors and the results of errors has been performed primarily in the hospital setting. This is at odds with the fact that most medical care is provided in the outpatient setting. Patients in these two settings have different risks for medical error. Hospitalized patients are helped with all medication doses by a trained professional. However, these patients are more likely to have serious debilitating disease which predisposes them to injury should an error occur. Ambulatory patients often are administering medications without help, but are more likely to be relatively healthy. As we shall see, the problem of medication errors is not just about correct administration of medications. The potential for medication errors—and the opportunity to decrease the risk of those errors—is evident at each and every step

of the process, including drug development, labeling and packaging, prescribing, dispensing and administration.

Interestingly, the label of “preventable” has not lead medical or lay people to believe that all these preventable errors can reasonably be prevented. There is wide acceptance that human actions will be contaminated, to a lesser or greater extent, with error. In a survey of both physicians and patients, just over 40 percent believed that half of the preventable errors leading to the death of a patient could reasonably be prevented.⁴

It is important to keep in mind that most medication errors are not the result of a single human action. More likely they are the result of a variety of variables. For example, consider a situation in which a consumer took a medication incorrectly due to an error in the label. If it is assumed that this error was caused by the individual who typed the label, it might seem logical to acknowledge that everybody makes mistakes and think that, other than reminding the person to be more careful, there is really nothing that can be done. But, seen in a different light, it is possible to see many actions that could be taken to prevent, or at least

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Target Audience
Advance practice clinicians, including nurse practitioners and physician assistants, practicing in retail environments.

Learning Objectives
Upon completion of this lesson, the clinician should be able to:
1. Describe the cost and consequences associ-

- ated with medication errors in the community.
2. Identify the issues that occur at each step, including product development, manufacturer packaging, prescriber ordering, pharmacy dispensing and patient use that may contribute to or minimize medication errors in the community.
 3. Describe system-based approaches to decreasing medication errors.
 4. Identify and implement steps that prescribers can take to decrease the risk of medication errors.
 5. Educate patients on their role in managing the risk of medication errors.

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minimize, such errors. If the label error had to do with a drug name, could it be that part of the problem had to do with two drugs having similar names? Was the prescription neatly written? Did the prescription include abbreviations that are easily confused? Were there distractions, such as a phone call, taking place when the label was being typed? Did anyone double-check the prescription against the label? When the medication was provided to the consumer, did the pharmacist or pharmacy technician say the name of the drug and review the directions on the label with the consumer? Did the consumer know what medication he or she was supposed to be receiving and what the directions should read? Clearly, there are many steps that go into the correct provision and use of a medication. To prevent medication errors, it is necessary to give consideration to each and every one of these steps and identify actions that can be taken at each step to decrease the risk of errors.

Some of the tools that may be used to decrease medication errors are complex, such as advanced prescribing software that can guide possible diagnosis choices and limit doses to those appropriate according to research or national treatment guidelines. Others are as simple as a laminated card in a lab coat pocket. The common factor is the willingness of the health care professional to use whatever tools are available to decrease medication errors.

CATEGORIZING ERRORS

In attempting to assess the scope of the problem, it is necessary to define what is meant by an error. In its Quality Chasm Series, the National Institutes of Health

has employed the following terminology:

Error: The failure of a planned action to be completed as intended (error of execution) or the use of a wrong plan to achieve an aim (error of planning). An error may be an act of commission or an act of omission.

Medication error: Any error occurring in the medication use process.¹

These definitions are very broad, but so is the scope of the actions that can

(See Pie Chart, center, or visit <http://www.nccmerp.org/pdf/indexColor2001-06-12.pdf> - or - <http://www.nccmerp.org/pdf/indexBW2001-06-12.pdf>).

THE SYSTEMS APPROACH: IDENTIFYING CHALLENGES

All too often, when a serious medication error comes to light, the first question people ask is, "whose fault was it?" As noted above, however, few errors occur because of a single human action. Errors occur within systems and so a systems approach is necessary to prevent errors. Systems need to be designed to avoid situations that are likely to result in errors. They should also have features built into the system that provide for checks to verify correctness.

While the term "human error" is often applied when mistakes are made, an effective system will expect that humans will make errors. Rather than hope that such occurrences are rare and don't cause serious harm, error prevention systems should build in checks to identify and correct errors before they progress to the point where harm may occur. Such a system must take into consideration errors that may occur at every step in the process.

The systems approach, with checks throughout, is essential because factors that can increase the risk of medication errors exist throughout the health care process.

At the manufacturing level, just taking into consideration the naming of a product, there are many factors that pose challenges. Among these are the multiple entities that participant in one or more aspects of the naming process. The International Union of Pure and Applied Chemistry identifies molecular

NCC MERP Index for Categorizing Medication Errors



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contribute to or minimize the potential for errors. In essence, each and every step in the process, including drug development, naming and labeling, prescribing, dispensing and administration, is involved.

A variety of schemes have been utilized to categorize various types of errors. Among these is a system adopted by the National Coordinating Council for Medication Error Reporting and Prevention which categorizes errors based on the outcome. (Figure 1). It is interesting to note that Category A identifies those situations that have the capacity to cause an error, even if an error has not occurred. As each organization and individual considers what actions can be taken to decrease medication errors, it is important to look at situations that have the capacity to cause errors even if one has not yet occurred

entities and assign chemical names. The United States Adopted Name Council (USAN) assigns the generic name. The USP Expert Committee on Nomenclature determines the drug's official title. The manufacturer selects a brand name, keeping in mind that the different brand names might be used in different countries.¹ The multitude of organizations involved in the various aspects of drug naming creates fertile ground for differences in approach or processes used to determine the various drug names. Even with maximum cooperation between these groups, the ever-lengthening list of available drugs makes naming an ever-increasingly difficult task.

Prescribers face a different set of circumstances that may contribute to "human error." Chief among these are pressure to keep up with work flow and expectations to respond to multiple demands. Distractions, including those created by multiple demands, are just one of a number of factors that prescribers need to manage so as to minimize their potential contribution to medication errors.

The dispensing step within a pharmacy also is frequently labeled as a "human error" mine field. In addition to distractions and disruptions, there is a myriad of communication steps in the pharmacy setting which are rife with opportunity for error. Issues such as handwriting, telephone communication, ambient noise, competing demands, crowding and the ever present demands for speed all can contribute to an error-prone atmosphere.

The patient role in error often is labeled as non-compliance. The reasons behind non-compliance are varied. Patients and caregivers may have limited reading skills and simply not understand written instructions. Some common patient errors include taking "as needed" medications as though they were scheduled, taking scheduled medications as though they were "as needed," patients finishing a 30-day supply of medication for a chronic condition and assuming themselves cured or applying an oral liquid suspension as a lotion to the skin. Some drugs are particularly error prone due to a narrow ther-

apeutic range and frequently changing instructions.⁵ Lack of resources can limit a patient's ability to afford the medication or even get to a pharmacy to have the order filled. Limited physical skills, such as eyesight or hand steadiness, can make medication administration challenging.

THE SYSTEMS APPROACH: IDENTIFYING SOLUTIONS

An effective system approach looks at each step in the system and develops a plan of action to assure safety.

Patient-centered care

The patient is a part of the system and should participate in efforts to minimize errors. However, in order for this to happen, health care professionals must fully embrace the role of the patient and the value of patient-centered care.

Patient-centered care requires that the patient or the patient's advocate take the center stage. The Joint Commission of Accreditation of Health Care Organizations (JCAHO) has created a brochure that can be used and copied without seeking special permission. It is available online at <http://www.jointcommission.org/PatientSafety/SpeakUp/>. The theme of this brochure is to encourage patients to "speak up" by asking questions about their care, paying attention, educating themselves, asking for an advocate, knowing their medications and being an active participant in their health. Specific recommendations include:

Speak up if you have questions or concerns.

Pay attention to the care you are receiving. Make sure you are getting the right treatment and medications.

Educate yourself about your diagnosis, the medical tests you are undergoing and your treatment plan.

Ask a trusted family member or friend to be your advocate.

Know what medications you take and why you take them.

Use health care organizations that has undergone an evaluation based on safety standards.

Participate in all decisions about

your health care.⁶

It is worth noting that the most recent report from IOM also emphasizes patients' rights. In "Preventing Medication Errors," patient rights include the right to:

- Be the source of control for all medication management decisions that affect them.

- Accept or reject medication therapy on the basis of their personal values.

- Be adequately informed about their medication therapy and alternative treatments.

- Ask questions to better understand their medication regimen.

- Receive consultation about their medication regimen in all health settings and at all points along the medication use process.

- Designate a surrogate to assist them with all aspects of their medication management.

- Expect providers to tell them when a clinically significant error has occurred, what the effect of the event on their health will be and what care they will receive to restore their health.

- Ask the provider to report an adverse event and give them information about how they can report the event themselves.¹

It is critical that all individuals involved in the health care process maintain a perspective of patient-centered care. As will be discussed below, even those individuals involved in drug development and manufacturing have a role to play in decreasing medication errors and increasing safety.

THE ROLE OF THE MANUFACTURERS

Discussions of medication errors often focus on health care professionals. However, in a systems-approach, consideration of how to minimize medication errors starts with the manufacturer.

Drug Development

It is not uncommon to hear drug manufacturers criticized for developing too many "me-too" type drugs, including those that have the same active ingredient but just a different dosing regimen.

TABLE 1
Naming problems

Problem	Example
Brand names that look or sound alike	Celebrex® and Cerebryx®
Generic names that sound or look alike	amrinone and amiodarone
Different formulations with the same brand name	Dulcolax stimulant laxative Dulcolax stool softener
Multiple abbreviations to represent the same concept	LA, XL, XR, SR
Lack of standardized terminology	“concentrate” products may have different concentrations

However, anyone who has every tried to take even a short course of an antibiotic medication that had to be refrigerated, shaken and taken four times a day, one hour before or two hours after eating, understands the impact that easier dosing regimens can have on compliance. Particularly with a community-based population, the easier it is to take medication properly, the more likely individuals are to understand and do what they have been told. In this way, drug and delivery system development can play a significant role in decreasing errors.

Drug Names

Many incidences of medication error are related to product names (See Table 1). Situations which may lead to confusion include:

- brand names that sound or look alike
- generic names that sound or look alike
- different formulations with the same brand name
- multiple abbreviations to represent the same concept
- lack of standardized terminology

Labeling

Labeling also can have an impact on medication errors. Small print or cluttered labels are hard to read. Many manufacturers make use of color, however, some designs are intended to make all labels from a particular manufacture look similar. This can make it difficult to differentiate between products from that manufacturer.

It is also important to note that some color combinations have greater contrast than others. Labels with colors that have

little contrast between the print and the background are generally more difficult to read or recognize. Black lettering placed over a royal blue background, or yellow numbers against a white portion of the label are examples of poor contrast. In general, white or lightly colored letters on a dark background are harder to read than black or dark colored letters on a light background.

Manufacturers who use color contrast to make letters more visible and different color schemes to differentiate between different doses of the same drug make it easier for pharmacists and pharmacy technicians to quickly identify the correct product. Size and location of critical information also can impact the ability to quickly locate a product of a certain dose or formulation.

Packaging

Medication packaging also can impact the potential for medication errors. Packaging that is unit of use and/or based on the treatment regimens can decrease the risk of errors. For example, steroid tapering dose schemes can be challenging for patients. First, they must understand the directions, then keep track of where they are in the tapering schedule. Convenience packaging has addressed this issue with a built-in taper guide for the most common tapering scheme.

Unit of use packaging, often in the form of blister packs, also can be helpful. These may be in the form of a basic blister pack in which each dose is individually wrapped in a blister pack that is organized accord-

ing to the calendar or multi-dose packets containing more than one medication. In many countries, including those in Europe, Australia, Asia, and Latin America, unit of use packaging is the norm.⁷ In the United States, however, less than 20 percent of all prescriptions and over-the-counter drugs are produced in blister packs.⁸ Several studies have shown that unit of use packaging is easier for consumers to use and increases accuracy of administration and adherence as well as health outcomes.¹

For products that are manufactured in unit of use packaging, the patient generally receives the product in the manufacturer’s original package, thus minimizing the potential for dispensing error in the pharmacy. A potential concern when products must be repacked into unit of use packages is the care needed to avoid the risk of introducing error in the repackaging and the need to assure that critical information is not separated from the product—which is now very small and has only a tiny amount of space available for print.

With regard to liquid oral medication, the inclusion of an administration device, such as a spoon or cup with clearly marked measurements, also can decrease the potential for medication errors. The wide variability in the volume of liquid “teaspoons” from silverware sets will hold is well-known. Also, some liquids are viscous and may include special measuring cups that, when used properly, will assure that the patient receives the correct dose even though some of the liquid remains on the cup.

Not surprisingly, since many of the issues cited above impact the prescriber, the pharmacists and the patient, these issues continue to be important throughout the health care system. As we shall see, while the manufacturer can play a role in developing names that are less likely to be confused, the prescriber can and should take certain actions to assure correct communication of the correct drug name, the pharmacists can and should take certain actions to assure that they are receiving the correct drug name and even the patients should be paying

attention and checking to make sure they are receiving and taking the correct product. Preventing medication errors requires the commitment and cooperation of everyone in the system.

THE ROLE OF THE PRESCRIBER

Medications whose inherent risks require advanced professional oversight to achieve safe and effective outcomes are legally reserved for public use solely at the discretion of licensed health care professionals. Such "legend drugs" are reserved for specifically trained and licensed professionals to prescribe. These highly selective prescribing rights exist because of the complex nature of legend drugs and their potential interactions with other medications.

Distractions

Among the major challenges prescribers such as clinicians face, is multiple demands on time and attention. Distractions, from a variety of sources, can interrupt and interfere with the provision of quality care. Some of these distractions may be from external sources such as a ringing phone. However, even within the clinician-patient interactions, distractions may occur. Compressed within individual encounters is the need to address the patient's presenting concern while updating interval health histories, documenting adherence to disease specific guidelines, recommending or prescribing preventive care measures, promoting healthy lifestyles and managing payment and cost issues or concerns. Concurrently, a background cacophony of intrusions such as pages, telephone calls, and even general background noise may further challenge the clinician-patient interaction. Indeed, a study of family physicians found physician error often was a result of "being rushed, distracted and interrupted."⁹

While neither law nor custom enforces distraction-reduction in medicine, distractions can and should be reduced within each patient encounter by separating competing demands from the cognitive activity necessary to safely complete the "prescribing moment."

Though not always perceptible to patients, clinical encounters progress through various stages, with the prescribing of a medication often the penultimate activity. At this point, the focus of provider's attention shifts from collecting patient information to providing medical advice, which often manifests as a written prescription. Because the prescriber is concentrating on accessing information and transmitting it to paper or a digital assistant, this is typically the quietest time during the exam. Frequently, patients use this quiet time to expand their presenting concerns, seek advice on non-related conditions or return to a list of questions. This communication may be extremely important, yet if it disrupts the clinician's attention it may increase the risk of an error. So as to avoid such a situation, the clinician should seek to elicit all questions and information from the patient before initiating the prescribing process. Alternatively, the clinician may seek the patient's assistance in managing distractions by saying something such as "Let me complete your prescription and then I'll answer your question," or "Once I finish this we'll go over it together."

Communicating with the patient

The clinician-patient interface is all about communication. Not only does the clinician need to obtain information from the patient, the clinician also needs to provide information to the patient. The patient is part of the medication error prevention system and needs to be included as a partner from the very start.

When the clinician prescribes a medication, he or she should clearly communicate to the patient the name of the drug, the reason why it is being prescribed, the directions for taking the medication and any special instructions or concerns that may be related to that medication. It is very important to remember that information that may seem routine to health care professionals is not necessarily routine to members of the public. Thus, a "basic" direction of taking the full course of an antibiotic, along with a brief explanation of why this is important, may be

new information to the patient and may have a significant impact on the correct administration of the medication.

Prescribers should keep in mind the discussion above regarding unit of use and other packaging issues. When packaging includes a spoon or cup for accurate measurement, the prescriber should mention this to the patient and explain why the use of these aids is important. Prescribers also should make sure that patients understand how to correctly use unit of use medications. Should they be started right away or, as is the case of some oral contraceptives, be started on a specific day in the future? Prescribers also should be cognizant of whether a patient would benefit from unit of use packaging, either as provided by the manufacturer, via repackaging or perhaps through the purchase of multi-day pill containers. Working with the patient to assure a dose administration process or schedule that is manageable within the context of his or her life will increase the potential for correct administration and decrease the possibility of a medication error in this area.

Clinicians should verify that the patient understands the information he or she has provided. The classic closed questions of "Do you understand?" and "Do you have any questions?" are not adequate. Clinicians should ask patients to explain back the name of the medication and the directions for administration. Also, questions such as "What additional information would you like?" will be more effective than simply asking if the patient has any questions. It is also important to keep in mind that health care interfaces often are stressful for patients and many patients will think of questions only after they have left the clinician's office. For this reason, patients should be encouraged to call if they have any questions after they get home.

Providing patient instructions in varied forms can increase the odds of the instructions being understood. Verbal explanations with a picture-rich brochure or demonstration sheet appeal to various methods of understanding.

Communicating with the pharmacy

It sounds so simple to say “and then the clinician writes a prescription.” However, as all clinicians know, a great deal goes into the decision-making process that results in a prescription being written. To maintain the integrity of that prescription, a number of actions should be taken to assure clear and accurate communication of that prescription to the pharmacy.

Simplicity and legibility are the keys to minimizing the risk of medication errors. Prescriptions should contain no more than one medication, as multiple drugs and instructions may overlap and confuse the pharmacist attempting to fill the prescriptions.

Illegibility—the stuff of legend—continues to plague pharmacists and patients. Illegibility is the progeny of insufficient time. Since medications are the tangible cornerstones of therapy, the prescribing moment should be the last place for shortcuts. Any time saved by scrawling prescriptions often is lost in subsequent telephone tracking and delayed explanations. Though some view illegibility as a professional emblem or harmless quirk, reports of injuries secondary to poor handwriting continue to accumulate. Illegibility can be bypassed with electronic prescription entry devices or pre-printed prescriptions. When writing drug names, prescribers should take the extra effort to write drug names in capital letters, which are less easily confused than lower-case letters.

When prescribing a brand name product, consideration should be given to writing both the brand and generic name. While some products have similar-sounding brand names and other products have similar-sounding generic names, few products have both brand and generic names that are easily confused.

When using preprinted prescription pads that contain the names of all partners in a group, the prescriber should circle his or her pre-printed name. One should not assume that one indecipherable signature is more remarkable than another. Highly original and equally indecipherable signatures are commonplace.

Dose distortions may result from the

use of non-specific abbreviations, antiquated measures and decimal placement confusion. The μ symbol for units and micrograms is notorious for multiplying doses and provoking errant substitutions. Replace μ with “units” or “micro-” to avoid confusion. Likewise, eliminate drug abbreviations (is TCN triamcinolone or tetracycline?). Despite attempts to standardize abbreviations, confusion and misapplication of effort continue to distort patient care. A list of abbreviations that can be confusing can be found at <http://ismp.org/tools/errorproneabbreviations.pdf> for abbreviations that resist standardization and consistently are misunderstood.

Apothecary measures have largely gone the way of soda fountains. Metric measures are near universal and preferred by pharmacies and medication manufacturers. Though now the norm, metric measures also may contain seeds of errors in the placement of decimal points. Place leading zeroes when using decimal expressions less than one (example: 0.05). Eschew trailing zeroes after decimals (example: do not write .50). Ten-fold errors in drug strength and dosage have occurred with decimals due to the use of a trailing zero or the absence of a leading zero.¹⁰

Consider adding the patient’s age, especially in pediatric and geriatric populations, to promote drug and dose assurance. The patient’s age (and weight) orients pharmacists during their checks of appropriate drug and dose. This step also helps avoid age-inappropriate prescriptions (eg: children and quinolones.)

Prescription directions should be clear and specific. Writing only “Take as directed” is of little help if the patient cannot remember how he or she was directed to take the medication and invites misunderstandings and errors. Likewise, “prn” dosing is fertile ground for error production. Some medications have narrow dosing regimens. These instructions should be accurately transferred to prescriptions. Prescriptions such as, “Coumadin 5 mg #100 Sig: as directed” are recipes for error. Specifying directions reinforces care plans and prompts

pharmacist counseling of patients. Error reduction relies upon the engagement of these professional redundancies.

The use of abbreviations in medications’ routes of administration is also a common source for medical errors. OD, OS, PR may create challenges not only to pharmacists’ Latin skills, but also to their deciphering skills. A short abbreviation, if written poorly, can easily be mistaken for a different abbreviation. If it’s important to keep suppositories out of ears, write directions in common language.

Therapeutic duration also benefits from specification. The number of prescribed pills should be matched to the expected duration of treatment and necessary re-assessment visits. Keep therapeutic plans intact by writing for medicines in specific quantities (eg: dispense # 90) rather than dispensing for time periods (example: do not write dispense for one year). This especially applies when using bridging doses during active medication titration. Prescribing the specific number of doses necessary until reassessment compels patient compliance with follow-up appointments and prevents the accumulation of old medications in patients’ homes. When prescribing for a patient from out-of-town, the amount should allow for the duration of the trip only, and thus facilitate follow-up with the patient’s regular health care provider upon return home.

Similarly, match prescriptions for acute events to the total number of tablets needed to treat the single episode of care. Adding extra tablets for theoretic recurrences confuses the duration of therapy of the original illness. For example, treat acute maxillary sinusitis one episode at a time.

Writing the medication’s indication on prescriptions is a frequently encouraged, yet seldom followed, collaborative practice. A written notation of purpose confirms to the pharmacist the appropriate medication and reminds the patient what the purpose of the drug is. This step facilitates professional pharmacist counseling, reinforces care plans, and

provides multiple opportunities for patient education. The indication also guides the dispensing pharmacy in cases of look-alike or sound-alike medications. In trying to decipher a prescriber's handwriting to determine if the product called for is Lamictal or Lamisil, the indication of "for seizures" or "for fungal infection" may avoid an error.

In the event that a prescriber is calling the pharmacy to provide a prescription over the phone, he or she should not only state the name of the drug, but also spell the name. For reasons ranging from sound-alike drug names to common misspellings to different ways of pronouncing drug names and accents, to background noise at the pharmacy, this should be part of every prescriber's routine.

And, finally, should the prescriber received a phone call from the pharmacy seeking a clarification, this call should be welcomed as a commitment to patient safety, not disparaged as a sign of ignorance on the part of the pharmacy.

THE ROLE OF THE PHARMACIST

As noted above, the patient should be central to all aspects of care. With this in mind, the pharmacist should not hesitate to take whatever steps are necessary to assure patient safety. In some cases, this may include contacting the prescriber to seek additional information or obtain a clarification. Rather than avoid calling the prescriber out of fear of appearing "stupid" for not being able to recognize a drug name or decipher a direction, the pharmacist and pharmacy technician should take pride in politely seeking the information he or she needs to provide appropriate care for the patient.

Other actions the pharmacists can take to minimize the risk of errors include:

- Focus on one task at a time.
- Evaluate and periodically re-evaluate workflow to help decrease

error potential.

- Properly train new staff and periodically re-evaluate and retrain current support staff.
- Double check all prescriptions.
- Be aware of look-alikes and sound-alikes.
- Never guess or assume, contact the prescriber.
- Counsel all patients on new and refill prescriptions.
- Have patients repeat information provided during consultation.
- Provide patients with written information about medications.
- Assist patients in integrating drug treatments with their routine schedule to enhance adherence to medications.
- Encourage patients in their efforts to ask questions, seek information and gain an understanding of their condition and medication therapy.
- Document all interactions and communications held with patients and other health care providers.
- Keep up with current drug therapies, guidelines, products and devices.
- Have on hand up-to-date good quality references.

REPORTING

The final step in improving prescription safety is to report all encountered errors. This often overlooked duty closes the error loop and helps avoid dangerous repetitions. Data is collected and analyzed for patterns though an agreement by the Institute for Safe Medication Practices (ISMP), the United States Pharmacopeia (USP) and Food and Drug Administration MedWatch Program. Reporting an error to any of these organizations will result in its inclusion in the data for all three. The links for reporting are: USP Medication error reporting program (<http://www.usp.org/patient-safety/mer/>), FDA MedWatch ([https://](https://www.accessdata.fda.gov/scripts/medwatch/medwatch-online.htm)

www.accessdata.fda.gov/scripts/medwatch/medwatch-online.htm), Institute for Safe Medication Practices (<https://www.ismp.org/orderforms/reporterrortoISMP.asp>). All members of the health care team should be encouraged to identify and learn from errors. Many clinics have a time set aside for discussing difficult cases or to perform peer review. Error incidents might be added to this forum with a great deal of benefit to the clinic system.

When an error is discussed in a supportive group, often a suggestion emerges that can help prevent similar errors. The outcome is beneficial not only to the person reporting the error, but also to the rest of the participants. The format of such a session can follow a root cause analysis pattern, in which all potential contributors to the error are identified, and all the disciplines are represented in the discussion. Each staff member should be empowered to make suggestions that will improve safety. An action plan should be developed from information gained through the analysis of errors. This plan should identify the specific individuals who will be responsible for each part of the action plan.

SUMMARY

Expect and plan for errors to occur. Have a response to errors that supports personnel and improves future care of patients, rather than encouraging hiding errors and allowing the same errors to be repeated.

Prescribing medications represents a clinician's most common and consequential medical action. The dual pressures of increased numbers of patients receiving prescriptions and increased prescriptions per patient compound the opportunities for adverse drug interactions and medication errors. Clear and consistent prescription communication builds a bridge across the quality chasm.

¹Aspen P, Wolcott J, Bootman JL, Cronenwett LR. Preventing Medication Errors. Institute of Medicine. National Academy Press. Washington DC. Prepublication copy 2006. ²Kohn LT, Corrigan JM, Donaldson MS, eds. To err is human. Building a safer health system. Committee on Quality of Health Care in America. Institute of Medicine. Washington DC: Academy Press; 1999. ³Preventing Medication Errors. "Blendon RJ, DesRoches CM, Brodie M, et al. "Views of practicing physicians and the public on medical errors", NEJM 347(24), 1933-1940. ⁴Santel J, Camp S. "Errors with coagulation drugs tend to result in serious harm." www.rnweb.com 2005; 68: 8. ⁵JCAHO speak up. ⁶Intilic, Stokes J, Hendry M, Jensen A, Lewis, G, Literature review for the effectiveness and cost effectiveness of dose administration aids project. Queensland, Australia. University of Queensland. 2004. ⁷Erickson G Unit-of-use packaging: The wave of the future? Pharmaceutical and Medical Packaging News 1998. Available online at <http://www.kdeviceink.com/pmpn/archive/98/06/003.htm>. ⁸Elder NC, Meulen MV, Cassidy A. The identification of medical errors by Family Physicians during outpatient visits. *Ann Fam Med* 2004; 2: 125-129. ⁹<http://ismp.org/tools/errorproneabbreviations.pdf> accessed on 17 Sep, 2006

Medication Error

Methods for identifying and preventing errors in pharmacy

Learning Assessment

- In its report, "Preventing Medication Errors," the IOM estimated that preventable errors for Medication enrollees in ambulatory settings costs _____ per year.**
 - \$8.8 million
 - \$88 million
 - \$887 million
 - \$8.7 billion
- Most preventable medication errors are the result of human error.**
 - True
 - False
- In its categorization of medication errors, the National Coordinating Council for Medication Error Reporting and Prevention includes a category for circumstances or events that have the capacity to cause error.**
 - True
 - False
- Patient error is often classified as:**
 - Category A
 - Category P
 - Non-compliance
 - Non-cooperation
- The focus of the JCAHO brochure titled, "Speak Up" is to get patients to:**
 - Ask questions, seek information and get involved in their care.
 - Report medication errors when they occur.
 - Lobby Congress to enact a patients' Bill of Rights.
 - Get a second-opinion before beginning therapy.
- Factors that may increase the risk of medication errors include:**
 - Distractions
 - Use of abbreviations
 - Similar sounding drug names
 - All of the above
- Only licensed health care professionals can report a medication error.**
 - True
 - False
- Actions manufacturers can take to minimize medication errors include:**
 - Printing labels with white letters on a yellow background.
 - Creating similar labels for all products so they will be identified with the manufacturer.
 - For products for which multiple doses are available, creating labels on which the dose is highly visible.
 - Printing labels with black lettering on a blue background.
- Which of the following is true with regard to unit of use dosing?**
 - It is more common in the U.S. than in Europe.
 - It helps consumers improve accuracy of administration.
 - It has not been shown to have any effect on adherence.
 - More than 80 percent of the drugs available in the U.S. can be purchased in unit of use packaging.
- Which of the following is an action a prescriber can take to decrease the risk of a medication error?**
 - Include all ordered products on one prescription form.
 - Write in cursive.
 - Write the drug name in capital letters.
 - Use capital letters in all abbreviations.
- Which of the following is correct?**
 - 0.05
 - .05
 - .050
 - 0.050
- If a pharmacist is unsure of the name of the drug written on a prescription, he or she should _____.**
 - Make his or her best guess
 - Ask the patient
 - Contact the prescriber
 - Check with another pharmacist to see what he or she thinks
- There is little or nothing that health care professionals can do to minimize distractions.**
 - True
 - False
- Which is correct regarding a medication error reported to the FDA Med Watch program?**
 - It will not be included in the ISMP error data.
 - It will not be included in the USP error data.
 - It will be included in the ISMP and USP error data.
- The value of a systems-based approach to preventing medication errors is:**
 - It is an effective means for identifying the individual at fault for an error.
 - It focuses on the most common causes of error.
 - It identifies actions at each step of the process that can be taken to decrease the risk of an error, even if it has not yet occurred.