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Dr. Perica completed a PGY-1 Pharmacy Practice Residency at Aurora St. Luke’s Medical Center in Milwaukee, WI, where her residency project focused on creating a program for pharmacy technicians to obtain medication histories for patients in the emergency department. After completion of her residency in 2008, Kate continued to stay involved with the medication reconciliation process and was enthusiastic to join the medication reconciliation efforts at the University of Colorado Hospital (UCH) in Aurora, CO, in Fall of 2010. In January 2013, with a multidisciplinary effort, Kate started a pharmacy technician team for UCH that was similar to the program she helped develop in Milwaukee. There are plans for expansion of the program over the next year.

Dr. Perica reports no actual or potential conflicts of interest in relation to this continuing pharmacy education activity and reports off-label use will not be discussed.

CPE Information:
Universal Activity Number: 0107-0000-14-002-H05-T
CPE Hours: 1 contact hour (0.1 CEU)
Target Audience: Pharmacy Technicians
Activity Type: Knowledge-based
Initial release date: 1/1/2014
Planned expiration date: 12/31/2015

The Collaborative Education Institute is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.

Activity Goal:
Medication reconciliation is a critical component to health care and achieving quality patient outcomes. Pharmacy technicians have the capability of generating a quality medication history that can be beneficial for both pharmacists and physicians. This activity provides a description of the medication reconciliation process and the tools necessary for pharmacy technicians to be a critical component to the medication reconciliation process.

Learning Objectives:
Upon successful completion of this knowledge-based CPE activity, pharmacy technicians should be able to:
1. Identify the Joint Commission Elements of Performance for goal 03.06.01 in which the pharmacy technician could participate.
2. List the four main components required for each drug listed in a medication history.
3. Describe the components of the patient interview to obtain a medication history.
4. Use the ISMP List of Confused Drug Names to identify drugs that are of high risk due to close spelling or sound.
5. Identify abbreviations that are prone to error using the ISMP List of Error-Prone Abbreviations, Symbols, and Dose Designations.

Avoiding medication errors is an important goal throughout the practice of pharmacy and the entire healthcare field, and is something with which pharmacy technicians are very familiar. Studies have suggested that up to 67% of patients had at least one medication discrepancy on their admission medication history and 27-38% of the errors had the potential to require additional monitoring or cause clinical deterioration to the patient. In 2005, the Joint Commission created a national patient safety goal (NPSG) related to medication reconciliation, which is the process of identifying the name, dosage, route, and frequency for every medication currently being taken and ordering medication based on reference to this list. One method of reducing potential medication errors is obtaining a complete and accurate medication history that a provider can use to conduct medication reconciliation. A medication history includes the current medications that a patient uses at home, on a scheduled or as needed basis, and includes prescriptions, over-the-counter medications, herbal remedies, vitamins, and any other drug product that the patient may be using. Having an accurate medication history is an important component to medication safety. The history may provide reasons for the patient’s illness, such as adverse drug effects or non-adherence to drug therapy; assist in diagnosis of the patient’s current problem; help prevent therapeutic failures from being repeated; warn of possible drug interactions, and help identify patients who require further education on their medication. The pharmacy technician has opportunities to help participate in the process of medication reconciliation, which can improve patient safety.

Joint Commission National Patient Safety Goal
In 2011, the Joint Commission’s goal for medication reconciliation was modified to be part of NPSG 03.06.01, which is to maintain and communicate...
The Role of the Pharmacy Technician in Obtaining a Medication History

The goal has 5 elements of performance, which are summarized here.

1. When a patient is seen in a hospital or outpatient setting, obtain information about the medications the patient is currently taking on a scheduled or as needed basis and document the information in a list that others can use.
2. Define the types of medication information to be collected, such as: medication name, dose, route, frequency, and purpose.
3. Compare patient-provided medication information to medications being ordered for the patient in order to identify and resolve discrepancies.
4. Provide the patient (or family) with written information on medications prescribed for the patient after the hospital or outpatient visit.
5. Explain to the patient the importance of managing his or her medication information.

The pharmacy technician has potential to impact elements of performance #1 and #5 through work in different practice settings. In a setting such as a hospital or a call center, a pharmacy technician can effectively participate in obtaining information about what medications the patient is currently using and document this information for use by providers as a medication history, which will be discussed further. While talking with the patient in these settings and in a retail setting, the technician also has a chance to explain to the patient the importance of keeping an updated list of medications and informing providers and pharmacies of updates to this list as changes occur. For example, to a patient that doesn’t have a medication list with them, the technician could say, “It is a good idea to keep a list of your medications with you and bring along to the pharmacy and your doctors’ offices so that we can look at the list and make sure our records are up-to-date to ensure your safety.”

In the second element of performance, the Joint Commission says the organization must define the types of medication information to be obtained. While the defined types of information may vary among different organizations and departments, it is common practice that the minimum information to be collected is also some of the information that would be required for a new prescription, including the drug name, dose, route, and frequency. For example, if a patient says she takes morphine as needed for pain, it would be important to know what dose, whether it is taken orally as a tablet or a liquid, and how often the patient uses it. After some questioning, the patient may then clarify that she uses a morphine tablet of 15mg by mouth every 4 hours as needed for pain.

While drug name, dose, route and frequency are the minimum information that is usually required; there are many instances when it is beneficial to document more information. For example, a 50-year-old male is admitted who has Type 2 Diabetes and he has recently started on sliding scale insulin, which is being prescribed to lower his blood glucose levels. Sliding scale dosing for a patient means that the patient uses a different dose of insulin based on the patient’s blood glucose level. He presents to the emergency department with signs and symptoms of low blood sugar, including a rapid heart rate (130 beats per minute), feeling weak and dizzy, and he reports that his vision is blurry. The patient’s blood glucose level is tested and the result is 60 mg/dL. This low reading, defined as hypoglycemia, could be the result of too much insulin. During an interview with the patient, the pharmacy technician asks him what medications he is using and he says he uses regular insulin subcutaneously with a sliding scale. The pharmacy technician realizes that the sliding scale is a broad range of doses and questions the patient further to obtain specific instructions on what dose of insulin he uses for the sliding scale. The technician discovers that the patient actually doesn’t know the prescribed sliding scale and he just decided to use 20 units of insulin when he tested his blood sugar this morning, and he knows he is supposed to do this three times a day with meals. While it may seem that this information isn’t as complete as it could be, the technician writes on the home medication form that the patient uses “Regular insulin, Subcutaneous, TID with meals” and then writes a comment for the physician “Patient was prescribed to use a sliding scale, but doesn’t know dose ranges and has been using 20 units with meals.” This information is enough to communicate to the provider that the patient could benefit from more thorough instructions about how to use the sliding scale that he was prescribed, which could prevent future hypoglycemic episodes, and the technician is only stating facts about the scenario.

Obtaining a Medication History

When the pharmacy technician interviews a patient about a medication history, there are some important components that are necessary to include in the interview process and the documentation of the medication history. The term medication history may seem misleading; as it is not a list of all the medications the patient has taken in the past. The medication history should only include medications that the patient is currently using or uses on an intermittent basis; the list should not include names of medications that the patient took in the past and is no longer using. Figure 1 shows an example portion of what a paper medication history form may look like when completed. In general, there are four main components of the interview process: introduction of the interview, questioning the patient and clarifying medication information, investigating unclear information, and documenting the medication information.

During the introduction of the interview, there are a few things the pharmacy technician needs to include. The pharmacy technician should first use two patient identifiers to ensure that the correct patient is being interviewed. The Joint Commission’s NPSG.01.01.01 for hospital accreditation says that at least two patient identifiers must be used when providing care, treatment, and services. Examples
of the identifiers include the patient’s name, an assigned identification number, telephone number, or other person-specific identifier. As patients may change rooms during their stay, a room and bed assignment is not an acceptable second identifier for the patient. After identification of the patient, the technician should introduce himself and explain the purpose of the interview. In order to avoid disclosing private information about the patient’s medications or health conditions, the technician should ask the patient if it is permissible to conduct the interview if visitors are present. At this time, the patient could also be asked if a medication list is available. If the patient does not have a list, the technician can remind the patient to carry an updated list in order to help prevent errors and ensure providers are able to easily gather the patient’s medications information. If the patient does have a list, the technician can use the list to guide the interview, and can also offer positive reinforcement to the patient for having a list.

The technician may then interview the patient about medications used at home on a regular or as-needed basis. For each medication, the name, dose, route, and frequency should be obtained. Additional information may be gathered as appropriate, such as: time of last dose, what time of the day or day of the week the medication is usually used, indications for drugs that are used on an as-needed (PRN) basis, and any special directions. If the patient has brought a medication list, it is important to still ask the patient clarifying questions about each item on the list. It is not uncommon to find discrepancies in how the patient has written the medication on their list and how they report actually taking the medication. For example, a patient might have written on the list that they take gabapentin 600mg daily. After questioning, the technician discovers the dosing is actually gabapentin 200mg TID, for a total of 600mg/day, but the actual dose at one time is just 200mg.

<table>
<thead>
<tr>
<th>Patient Name:</th>
<th>Jane Doe</th>
<th>Patient’s Pharmacy:</th>
<th>Rocky Mountain Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Birth:</td>
<td>1/2/02</td>
<td>Pharmacy Phone Number:</td>
<td>555-5555</td>
</tr>
<tr>
<td>Medical Record Number:</td>
<td>12345678</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Medication Information Obtained From:**
- Patient
- Medication List or Bottles
- Family Member or Caregiver
- Pharmacy

**Allergies:** Please document each allergy and the reaction to the allergen
- Penicillin: Rash
- LevoFlaxacin: Itching
- Codeine: Nausea

**Home Medications:** Please include all medications the patient is currently using or uses on a PRN basis.

<table>
<thead>
<tr>
<th>Medication Name</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Indication</th>
<th>Last Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lisinopril</td>
<td>10mg</td>
<td>By mouth</td>
<td>daily</td>
<td>for blood pressure</td>
<td>10/10 am</td>
</tr>
<tr>
<td>Ibuprofen</td>
<td>400mg</td>
<td>By mouth</td>
<td>Every 2 hours as needed for pain</td>
<td>9/30</td>
<td></td>
</tr>
<tr>
<td>Multivitamin</td>
<td>1 tablet</td>
<td>By mouth</td>
<td>daily</td>
<td>as Supplement</td>
<td>10/10 am</td>
</tr>
</tbody>
</table>

Figure 1: Example Home Medication History Form

**ISMP List of Confused Drug Names and Error Prone Abbreviations**
During the patient interview, there may be confusion as to what the patient is using and this confusion could lead to medication errors. The Institute for Safe Medication Practices (ISMP) has developed two lists the pharmacy technician should be familiar with when obtaining a medication history, as well as in every day pharmacy practice when the technician may not even have an opportunity to interact with patients. Both lists are available through the ISMP website at http://ismp.org/Tools/confuseddrugnames.pdf and http://ismp.org/Tools/errorproneabbreviations.pdf, and should be reviewed as part of this learning activity in order to complete the activity and the post-education assessment questions.

The first list, the ISMP List of Confused Drug Names, details medications that can either look alike when written or sound...
alike when heard. This list was generated from reports that were submitted to the ISMP through the National Medication Errors Reporting Program. Knowledge of the medications on this list can be useful when listening to a patient, reading a handwritten list, or even when entering a medication into an electronic health record. The medications are cross-referenced by the drug name that is confused with another drug’s name, and they are presented in reverse order as well (i.e. Aciphex and Aricept; Aricept and Aciphex). Efforts have been made in pharmacies across the United States to use this list to help designate systems to help people distinguish between the look-alike medication names, but this change is not possible in all settings, nor is it reasonable to expect that a patient’s written medication list will include these distinctions.

In addition, many patients struggle with pronunciation of their medication names, which can lead to the patient saying a different drug or the pharmacy technician hearing a different drug than what the patient is actually using. For example, a patient states that she is using a drug for her cholesterol called “Alticor.” While documenting the medication, the pharmacy technician realizes that Alticor isn’t available in the electronic database, and since the patient said it was for cholesterol, the technician thinks the patient meant to say “Advicor”. Alticor is a brand name product for atorvastatin, which is not available in the United States, whereas, Advicor is the brand name for lovastatin, which is available.

One mistake that patients often make is confusing their drug names for a different drug. For example, a patient was being interviewed and was asked about what she took for her pain. The patient stated that she used Oxycontin 5mg every 4 hours as needed for pain. Knowing that Oxycontin doesn’t come in a 5mg dose and isn’t used on an as needed basis, the pharmacy technician asked the patient where her medications were filled and called the pharmacy to clarify the information. Upon calling the pharmacy, the technician discovered that the patient had been prescribed oxycodone, which is a short-acting product, and not the sustained release version of oxycodone, which is Oxycontin.

The second list distributed by the ISMP that can be useful to the pharmacy technician is the ISMP List of Error Prone Abbreviations, Symbols, and Dose Designations. This list was also developed from reports to the ISMP National Medication Errors Reporting Program where the abbreviation was implicated as being misinterpreted and involved with harmful medication errors. The Joint Commission has also developed a list of abbreviations which are not acceptable for use by Joint Commission accredited organizations, which can be seen in Table 1. It is true that many patients won’t report their information verbally or have it written with abbreviations, but these abbreviations may become problematic as the technician is getting information from other resources.

<table>
<thead>
<tr>
<th>Do Not Use</th>
<th>Potential Problem</th>
<th>Use Instead</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, u (unit)</td>
<td>Mistaken for “0” (zero), the number “4” (four) or “cc”</td>
<td>Write “unit”</td>
</tr>
<tr>
<td>IU (International Unit)</td>
<td>Mistaken for IV (Intravenous) or the number 10 (ten)</td>
<td>Write “International Unit”</td>
</tr>
<tr>
<td>Q.D., QD, q.d., qd (daily) Q.O.D., QOD, q.o.d.,qod (every other day)</td>
<td>Mistaken for each other Period after the Q mistaken for “I” and the “0” mistaken for “l”</td>
<td>Write “daily” Write “every other day”</td>
</tr>
<tr>
<td>Trailing Zero (X.0 mg)</td>
<td>Decimal point is missed</td>
<td>Write X mg Write 0.X mg</td>
</tr>
<tr>
<td>Lacking of leading zero (.X mg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>Can mean morphine sulfate or magnesium sulfate</td>
<td>Write “morphine sulfate”</td>
</tr>
<tr>
<td>MSO₄ and MgSO₄</td>
<td>Confused for one another</td>
<td>Write “magnesium sulfate”</td>
</tr>
</tbody>
</table>

Table 1: The Joint Commission Official “Do Not Use” List of Abbreviations

Take for example, a situation where there is a medication administration record (MAR) faxed to the pharmacy technician for a nursing home resident. The handwritten MAR includes “acetaminophen 500mg qn.” While this could mean that the medication is to be taken nightly, the “qn” could also look like “qh,” as in every hour. Whenever the technician is receiving information that could have multiple meanings or interpretations, clarifying the abbreviation to determine the correct meaning of the abbreviation is essential. Likewise, if the pharmacy technician provides handwritten information, avoiding the use of error prone abbreviations can help prevent misinterpretation of the documented medication information. The list goes on to describe errors that could result from inappropriately adding a “0” after a decimal, mistakes with abbreviation of drug names, and other dose designations. For example, a pharmacy technician calls the patient’s pharmacy to clarify a patient’s glargine insulin dose. The pharmacy reports that the patient’s dose of glargine is 10 units at bedtime. The pharmacy technician quickly writes glargine 10u QHS on the
medication history form. The “u” could be misinterpreted as an additional “0” in the dose, and another provider could misinterpret the dose as being 100 units.

Conclusion
In summary, there are new areas that are available for the pharmacy technician to participate in, which include obtaining a medication history and reminding patients of the importance of managing their medication information. When obtaining a medication history, the pharmacy technician incorporates four main components into the interview: the introduction; questioning of medications the patient is using; investigation of the drugs, if necessary; and documentation of the medication list as a medication history. The pharmacy technician in any practice setting can use the lists of Confused Drug Names and Error Prone Abbreviations, Symbols, and Dose Designations to guide practice and avoid potential errors.

References:
The Role of the Pharmacy Technician in Obtaining a Medication History

ASSESSMENT QUESTIONS:

1) Which of the following is an appropriate representation of the Joint Commission’s element of performance in NPSG 03.06.01 that the pharmacy technician could participate in?
   A) Compare the medication information that the patient brought to the visit with the medications being ordered for the patient in order to identify and resolve discrepancies.
   B) Provide the patient (or family) with written information on the medications the patient should be taking after the hospital or outpatient visit.
   C) Explain to the patient the importance of managing his or her medication information.

2) What is a required component of documenting a patient’s home medication?
   A) Dose
   B) Prescriber
   C) # of refills
   D) Date of prescription

3) When interviewing a patient, what is necessary during the introduction?
   A) Telling the patient how long the interview will take.
   B) Asking the patient about what allergies they have.
   C) Using 2 patient identifiers to ensure the right patient is being interviewed.

4) Which of the following is an appropriate example of a second patient identifier that can be used when interviewing a patient?
   A) Date of admission
   B) Date of birth
   C) Location in the hospital
   D) City of birth

5) True or False: A medication history includes all medications that the patient has been prescribed in the past.

6) Which of the following could be considered an inappropriate method of documenting a patient’s dose of epoetin?
   A) Epoetin 10,000u SQ three times a week
   B) Epoetin 10,000 units Subcutaneously three times a week
   C) Epoetin 10,000 units Subcut three times a week

7) True or False: Writing Q.D. is an abbreviation that is prone to error when designating that a dose should be taken daily.

8) Which abbreviation has been used before, intended to mean procainamide, but has been confused as meaning patient controlled analgesia?
   A) PCM
   B) PRO
   C) PCA
   D) ProCAn

9) Which two drugs can be confused with Keppra?
   A) Kadian and Kalexate
   B) Kaletra and Keflex
   C) Kanamycin and Kapidex
   D) Kazano and Kayexalate

10) Which of the following is not a drug that could potentially be confused with Sinequan?
    A) Saquinavir
    B) Singulair
    C) Zonegran
    D) Quinidine

CPE INSTRUCTIONS:
Pharmacy technicians must read this activity and successfully complete the exam (70% pass rate) and evaluation prior to December 31, 2015 using the following instructions:
• Login to MY PORTFOLIO on www.GoToCEI.org
• On the right of the title of this article, click on GO TO EXAM
• Upon successful completion of the exam, you will see a page with explanations to the exam questions. After reading through this feedback, scroll to the bottom of the page and click GO TO EVALUATION
• Complete the evaluation and click SUBMIT
• You can obtain your CPE Statement of Credit at www.MyCPEMonitor.net
If you have any questions about this process, please contact Cindy Smith, csmith@GoToCEI.org, 515-270-8118.