

Preventing Errors Through Medication Reconciliation -FL APPROVED-

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Home Study Monograph



Preventing Errors Through Medication Reconciliation

ACTIVITY DESCRIPTION

Medication reconciliation is as essential but often overlooked component of patient safety. This program will introduce and review components of a successful reconciliation. Importantly, it will also highlight the under-recognized collaborative potential of pharmacists and technicians in improving patient safety through medication reconciliation

TARGET AUDIENCE

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

LEARNING OBJECTIVES

After completing this activity, the **pharmacist and nurse** will be able to:

- State the importance of medication reconciliation.
- Review strategies for conducting an efficient medication reconciliation.
- Give examples of common errors discovered during a medication reconciliation.
- Identify opportunities to incorporate pharmacy technicians into medical reconciliation.
- Give examples of measurable outcomes for the implementation of a pharmacy technician led medication reconciliation continuous quality improvement project.

After completing this activity, the **pharmacy technician** will be able to:

- State the importance of medication reconciliation.
- Give examples of common errors discovered during a medication reconciliation.
- Recognize the complementary roles of pharmacists and technicians in conducting medication reconciliation.
- Review strategies for medication reconciliation applicable to pharmacy technicians.
- Give examples of measurable outcomes for the implementation of a pharmacy technician led medication reconciliation continuous quality improvement project.

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Introduction

Inconsistencies between medication lists maintained by patients and their pharmacy or pharmacies, primary care physician, specialist physicians, and hospital or emergency department are a leading cause of adverse drug events.¹ Frequently, changes made by one provider, and in some cases the patient, are not communicated to the entire patient care team which may result in provider and patient confusion, unintentional errors, or serious harm. Some common reasons for this breakdown in communication include:

- Patient filling medications at multiple pharmacies
- Pharmacy unaware that a medication has been discontinued and continues to fill medication either via auto-refill or patient request to “fill everything”
- Changes made to the medication regimen by specialists are not communicated to the primary care physician and vice versa
- The emergency department or hospital does not have an updated or accurate medication list at the time of admission
- Changes made to the medication regimen upon emergency department or hospital discharge are not communicated to the primary care physician or specialists
- Patients poorly understand or are overwhelmed by adjustments made to their medication regimen and therefore lack the ability to communicate changes to their pharmacy and providers

The process of streamlining the medication regimen among all members of the patient care team is called **medication reconciliation**. The Agency for Healthcare Research and Quality (AHRQ) defines medication reconciliation as “reviewing the patient's complete medication regimen at the time of admission, transfer, and discharge and comparing it with the regimen being considered for the new setting of care.”² The AHRQ highlights the importance of literature showing more than half of patients have one or more discrepancies in their medication regimens at the time of hospital admission.³ Of these, an estimated 33% have the potential to cause moderate harm and 6% have the potential to cause severe harm.

The Joint Commission has identified medication reconciliation as a key component of reducing medication related adverse events.⁴ Accordingly, in 2005, it was announced that a Joint Commission accredited organization must incorporate a process for medication reconciliation. To maintain or achieve accreditation, the Joint Commission requires healthcare systems to “implement a process for obtaining and documenting a complete list of the patient’s current medications at admission” with involvement of the patient and/or caregiver. Accredited healthcare systems are also required to provide “a complete list of the patient’s medications” upon referral or transfer to another setting, both within and outside the organization. Such transfers of care are called **transitions of care** and are highly prone to errors resulting from discrepancies in medication records. The Joint Commission defines transitions of care, as “the movement of patients between health care practitioners, settings, and home as their condition and care needs change”.⁵

Examples of Transitions of Care
Transferring from the care of an outpatient physician to a hospital team of doctors and nurses (also known as hospital admission)
Transferring from one pharmacy to another
Transferring from a hospital to a skilled nursing facility
Transferring from one primary care physician to a new primary care physician
Transferring care from the emergency department to a hospital floor
Transferring care from a team of hospital physicians and nurses back to the primary care physician (also known as hospital discharge)

Case Example

Mrs. Smith is a 75-year-old woman with multiple chronic conditions including hypertension, diabetes, and anxiety. Her current medications include lisinopril 20 mg once daily, metformin 1000 mg twice daily, and sertraline 50 mg once daily. At a recent visit to her primary care physician, her blood pressure was slightly elevated and the doctor told the Mrs. Smith he was changing lisinopril 20 mg once daily to lisinopril-HCTZ 20-12.5 mg once daily and sent a new prescription to pharmacy A. Later that afternoon, Mrs. Smith had an appointment with her cardiologist who also noted her blood pressure was high. Mrs. Smith forgot to tell her cardiologist that her primary care doctor had already added another medication and the primary care doctor had not communicated this change to the cardiologist. Accordingly, the cardiologist instructed the patient to start taking amlodipine 10 mg once daily along with her other medications and sent a new prescription to pharmacy B.

That evening, the patient went to both her pharmacies and said, “I have a couple new medications, just fill everything that has refills” and received:

- Lisinopril–HCTZ 20-12.5 mg once daily (from pharmacy A)
- Lisinopril 20 mg once daily (from pharmacy B)
- Amlodipine 10 mg once daily (from pharmacy B)
- Metformin 1000 mg twice daily (from pharmacy A)
- Sertraline 50 mg once daily (from pharmacy A)

When Mrs. Smith woke up the next morning she took: lisinopril 20 mg, lisinopril-HCTZ 20-12.5 mg, and amlodipine 10 mg. A few hours later she became weak and dizzy after bending over to pick up her grandson and fell on her wrist. An ambulance was called and upon arrival her blood pressure was found to be 80/50 mmHg. She was brought to the emergency department for treatment of her fractured wrist.

Case Commentary

Mrs. Smith’s fall was the result of orthostatic hypotension from the multiple antihypertensive agents she had taken earlier that morning. Her wrist fracture could have been prevented if:

- The primary care physician and cardiologist had communicated about the change in Mrs. Smith’s medication regimen

- Mrs. Smith had used one pharmacy that may have identified she was filling both lisinopril and lisinopril-HCTZ
- The primary care physician or Mrs. Smith had communicated to the pharmacy that lisinopril-HCTZ was replacing lisinopril and request that the prescription for lisinopril be voided
- The pharmacy did not comply with the patient's request to "fill everything"

Conducting an Effective Medication Reconciliation

In order to conduct effective and efficient medication reconciliation, one must understand each of the components. Medication reconciliation should include a comprehensive review of all prescription medications, over the counter medications, vitamins and supplements the patient is taking on a scheduled or as-needed basis. Medication reconciliation is not limited to oral medications and should also include inhalers, ocular products, otic products, and topical products. Table 1 provides a summary of products which should be included during medication reconciliation.

<i>Table 1: What Should Be Addressed During Medication Reconciliation</i>
Prescription medications
Non-prescription or over the counter medications
Vitamins and supplements
Herbal or natural products
<i>All of the above should be included whether the patient is taking the agent on a regular or as needed basis</i>
<i>Don't forget to include all inhaled, ocular, otic, and topical products</i>

Steps to Conducting Medication Reconciliation

Medication reconciliation can be conducted in five easy steps. ⁴

1. Develop a list of prescribed medications based on pharmacy and medical records
2. Develop a list of current medications based on the patient's report
3. Compare the prescribed medication list to the patient medication list and identify discrepancies
4. Record discrepancies and inform all providers
5. Provide an updated and accurate medication list to all of the patient's physicians (primary care doctor and specialists), patient and, if applicable, patient caregivers

1. Develop a list of prescribed medications based on pharmacy and medical records

The first step to conducting medication reconciliation is to develop a complete list of the medications prescribed to the patient. To obtain a full picture of what the patient has been prescribed, it is often necessary to consult multiple sources:

- **Start with the electronic medical record:** If you are conducting a medication reconciliation using an electronic medical record at a doctor's office, hospital, or emergency department, start by printing off the medication list in the patient's chart. Verifying that all of the patient's providers use the same electronic medical record system is extremely important.

If you find your patient receives care from a specialist provider who does not document in your electronic medical record system, it is important to verify what they have prescribed to your patient. This may involve reviewing visit notes which were faxed to your office and scanned into the electronic medical record or calling the outside provider's office to request the last visit note. Additionally, contacting the patient's pharmacy or pharmacies to request a summary of the medications they have picked up in the previous 6 - 12 months is highly useful. This information can be relayed from the pharmacy via phone or fax.

If you are conducting a medication reconciliation at a pharmacy and do not have access to the patient's electronic medical records, start by contacting the patient's primary care physician. Inform the office that you are conducting a medication reconciliation and request a copy of the medication list in the patient's medical record.

- Compare medication lists from pharmacy and electronic medical records: Evaluate the medication lists obtained from the patient's medical records and pharmacy fill history. Make note of any discrepancies between what the patient was prescribed by their doctor and what was filled at the pharmacy. Pay special attention to:
 - Dose of medication: i.e. medical record indicates lisinopril 40 mg once daily, pharmacy fill history indicates lisinopril 20 mg once daily with the lisinopril 40 mg prescription on file
 - Directions for use: i.e. medical record indicates furosemide 20 mg once daily and pharmacy fill history indicates furosemide 20 mg twice daily
 - Missing medications: i.e. citalopram 20 mg once daily does not appear in the medical record but the patient has been filling it regularly (this may signal that the drug was changed or discontinued - see more in section 3)

2. Develop a list of current medications based on the patient's report

The second step to conducting medication reconciliation is to develop a medication list based on the patient's report. At minimum, this list should include the medication name, medication strength, and how the patient is taking the medication (i.e. once daily at bedtime, as needed, etc.). If the information is available, it is also helpful for the patient to report why they are taking each medication and which prescriber is responsible for writing that prescription.

It is not uncommon for patients to keep bottles of discontinued medications with the notion that they might need it later. For this reason, asking a patient to bring all the medication bottles in their possession to the pharmacy will help conduct the most thorough review. Likewise, patients often discount the importance of over-the-counter drugs, vitamins, and herbal products and supplements. Therefore, it is important to specifically ask patients if they are taking any medications which they purchase over-the-counter at a pharmacy, vitamin specialty shop, through the mail, or online.

Refrain from verbally referring to the prescribed medication list until the patient has fully reported their medication usage. Beginning the conversation with an open-ended question such as "tell me how and when you are taking your medications" is important to obtaining high

quality and accurate information. Phrasing questions in an open-ended manner will prevent patients from replying with a blanket and oftentimes inaccurate “yes” to a question such as “are you taking this medication.”

3. Compare the prescribed medication list to the patient medication list and identify discrepancies

After verifying both the prescribed medication list and the patient medication list, you are ready to “reconcile” medication. Carefully compare the list developed from the medical and/or pharmacy records to the one provided by the patient and record discrepancies. Table 2 lists common discrepancies identified during medication reconciliation.

Table 2: Common Discrepancies Identified During Medication Reconciliation		
Error	Definition	Common Sources of Error
Medication omission	Patient is taking a drug that does not appear in their pharmacy or medical records	• Patient was told to stop medication but continued taking it • A new medication was started by a provider who does not document in the same medical record as the primary care doctor • Patient uses multiple pharmacies • Patient using an over-the-counter drug, vitamin, or herbal supplement
Dosing discrepancy	Patient reports taking a dose of a medication that is different from what is displayed in the medical or prescription record	• Patient was told to change to a new dose but continued taking previous dose • Dose was changed by a medical provider and not documented in the medical record and/or without sending a new prescription to the pharmacy • Dose was changed by one medical provider and not communicated to the rest of the care team • Patient self-adjusted the medication dose
Direction discrepancy	Patient reports taking the same dose of a medication, but in a different manner than what is documented in the medical or pharmacy record	• Patient was told to change to a new dose but continued taking previous dose • Dose was changed by a medical provider and not documented in the medical record and/or without sending a new prescription to the pharmacy

		• Dose was changed by one medical provider and not communicated to the rest of the care team • Patient self-adjusted the medication dose
Duplicate products	Same medication appears on the medication list with different dosing or directions	• Patient was told to discontinue one dose and start the other but continued to take both • Dose was changed by one medical provider and not communicated to the rest of the care team • Sometimes this is intentional. Read directions carefully. A clue may be if the directions say “take with [other] dose”
Multiple drugs that contain the same ingredient	Two or more agents on the medication list contain the same ingredient (often applies to combination pills)	• Patient using an over-the-counter product and did not inform their provider(s) • Dose was changed by a medical provider and not documented in the medical record and/or without sending a new prescription to the pharmacy <i>Common culprits: acetaminophen, ibuprofen, naproxen</i>
Medication without indication*	A medication appears on either medication list with no clear indication for therapy	• Patient was told to discontinue the medication but did not do so • Provider is unaware that patient has continued to take an unnecessary medication • Incomplete information (true indication exists but is unknown by the patient and cannot be discerned without a full review of the medical record)
Multiple drugs in same therapeutic class*	Two or more medications within the same therapeutic drug class appear on the medication list	• Patient was told to discontinue the medication but did not do so • Dose was changed by a medical provider and not documented in the medical record and/or without sending a new prescription to the pharmacy

		• Patient uses over the counter products with a different ingredient in the same therapeutic class as a prescribed medication. <i>Common culprits: 3rd generation antihistamines, PPI's, NSAIDs</i>
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*Generally requires assessment by pharmacist

After lists are reconciled, review all discrepancies with the patient. If a patient does not report taking a medication listed in their medical or pharmacy records, gently inquire about it. It is important to ensure the patient does not feel uncomfortable admitting if they are not taking a medication as prescribed.

Remember, errors are most common after transitions of care, particularly when the patient is being admitted or discharged from a hospital or other inpatient care facility. Be cognizant of transitions of care and conduct medication reconciliation accordingly.

4. *Record discrepancies and inform all providers*

After discrepancies are identified, contact all of the patient's providers to discuss. This includes the primary care provider as well as any specialist providers (i.e. cardiology, endocrinology). During this time, pharmacists may also offer clinical recommendations to optimize disease state management, adherence, and/or reduce costs to review with prescribers.

5. *Provide an updated and accurate medication list to all of the patient's physicians (primary care doctor and specialists), patient and if applicable, patient caregivers*

After all discrepancies have been rectified, provide an updated and accurate medication list to the entire care team (primary care physician and all specialist providers) as well as the patient and if necessary or requested, caregiver(s).

The Pharmacy Technician's Role in Medication Reconciliation

Pharmacy technicians are developing an increasing role in the process of medication reconciliation. Familiarity with drug names, doses, directions, and pharmacy systems make technicians ideal candidates for conducting basic medication reconciliation. One study found pharmacy technicians conducting medication reconciliation for preoperative patients had a 5% error rate whereas anesthesiologists had a 38% error rate. ⁶ Likewise, a second study found pharmacy technicians conducting medication reconciliation in the emergency department had a similar accuracy to medication reconciliation conducted by a pharmacist. ⁷ In many institutes, medication reconciliation pharmacy technicians have become part of an inter-professional care team and work alongside physicians, pharmacists, and nurses to optimize patient care.

In Hospitals and Emergency Departments

Historically, medication reconciliation in the emergency department has been conducted by nurses or physicians; however heavy workloads and patient care responsibilities have been reported to limit the ability of clinical staff to conduct complete and accurate medication

reconciliation.⁸ To address this need and meet the Joint Commission's National Patient Safety goal of obtaining a full medication history within the first 24 hours of admission, hospitals are increasingly incorporating pharmacy technicians into medication reconciliation roles in emergency departments.⁹ Programs which have published results of medication reconciliation pharmacy technicians in emergency department discuss the importance of additional training^{8,10} Technicians receive training from pharmacists to learn the essential components of medication reconciliation as well as expand patient communication skills, utilization of the electronic medical record, and knowledge of high risk medications. Training may also include observing pharmacists conduct a medication reconciliation, role-playing, and conducting a medication reconciliation with a pharmacist present and receiving feedback after the encounter.

Rubin et al has reported the workflow of their successful incorporation of medication reconciliation pharmacy technicians in an emergency room.¹¹ After completing training, pharmacy technicians conducted medication reconciliation from 10 AM to 8 PM in the emergency room. Technicians interviewed patients and documented all prescription, over-the-counter, vitamin, and supplement use on a medication history form. The form included the dose, route of administration, instructions for use, and time of last dose. Patient reported allergies were also documented on this form along with the name and phone number of the patient's pharmacy. After completing the interview, technicians contacted the patient's pharmacy and if necessary, nursing home or outpatient clinic, to reconcile medications.

In Community Dispensing Pharmacies

Published reports of implementing medication reconciliation pharmacy technicians in community/dispensing pharmacies are sparse. While instituting technician-led medication reconciliation in dispensing pharmacies could help coordinate care and prevent medication-related adverse events, staffing issues, competing responsibilities, and lack of financial or institutional gains all remain barriers to implementation. Unlike hospitals, most dispensing pharmacies are not subject to Joint Commission requirements and therefore lack the same initiative to implement these services. Furthermore, a recent survey by Douchetteo et al found 40% of community pharmacies had minimal to no pharmacist overlap, almost 25%, had 0 or 1 technician on duty, and only 13% were integrated as part of an inter-professional team.¹² Each of these factors represents a substantial barrier to implementing technician-run medication reconciliation into community pharmacies.

Implementing Pharmacy Technician Medication Reconciliation as a Continuous Quality Improvement Project

Continuous quality improvement (CQI) projects are initiatives developed to improve the quality and/or safety of care provided in a healthcare setting. Quality improvement projects range in scale from initiatives that can be developed within a single unit or pharmacy, implemented throughout a hospital or change of pharmacies, or even implemented nation-wide. Quality improvement projects are usually considered pilot initiatives – meaning they are intended and funded for a short period of time (usually 12 months or less) to determine if the new service has, a clinical or financial benefit. If benefit is observed, the project may receive long-term

funding to continue. For this reason, it is highly important to clearly define the outcome of interest and carefully track and document encounters to measure success. As displayed in Table 3, there are many potential outcomes, which could be measured to determine the success of pharmacy technician medication reconciliation. Multiple outcomes can be measured and choosing outcomes depends on the goals of the institution and/or funding source.

<i>Table 3: Examples of Outcomes for Pharmacy Technician Medication Reconciliation Quality Improvement Projects</i>
Change in number of patients receiving medication reconciliation as compared to prior to program implementation
Change in number of medication discrepancies identified with technician conducted medication reconciliation as compared to standard of care (i.e. nurse conducted, physician conducted, no standard process, etc.)
Patient satisfaction as compared to standard of care or after implementation
Provider satisfaction as compared to standard of care or after implementation
Pharmacy technician professional satisfaction after implementation
Number of medication discrepancies identified by pharmacy technicians
Severity of medication discrepancies identified by pharmacy technicians (i.e. potential to cause minimal, moderate, or severe harm)
Type of medication discrepancies identified by pharmacy technicians (see Table 2)
Severity and type of medication discrepancies identified by pharmacy technicians as compared to standard of care
Return on investment

Careful thought and planning is essential for a successful quality improvement program. Primarily, the team must ensure the workflow of the initiative is designed to measure the outcome of interest. For example, if provider satisfaction is of importance, surveys should be developed prior to implementation whereas surveys would not be necessary if the primary outcome was number of medication discrepancies identified. Prior to beginning a quality improvement initiative, all variables of interest should be built into a database capable of recording relevant encounters. When determining variables of interest, it is better to include more than you may need in the event secondary outcomes are requested. The roles and expectations of each member of the quality improvement team should be clearly defined prior to implantation.

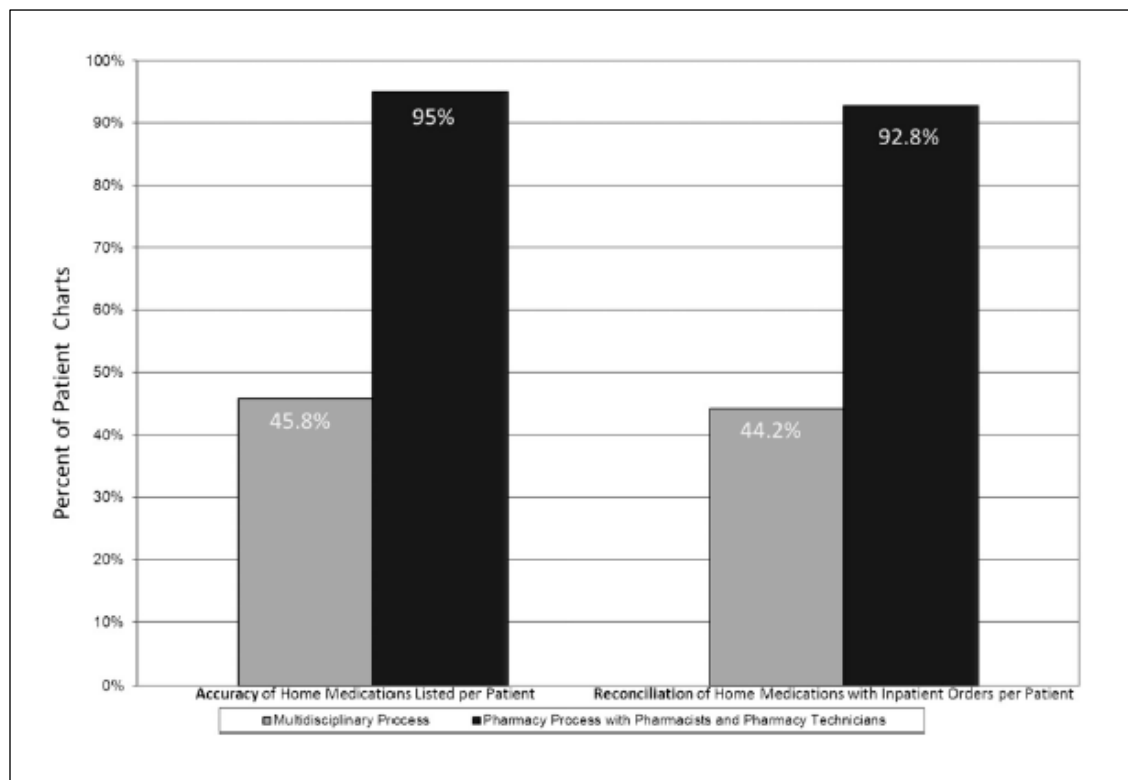
Example 1: Interdisciplinary Medication Reconciliation Quality Improvement Project Involving Pharmacy Technicians

A community hospital implementing a multidisciplinary program wanted to improve the proportion of admitted patients receiving medication reconciliation and the accuracy of the medication reconciliation conducted.¹³ Prior to quality improvement implementations, their process involved nurse obtained medication histories, physician reconciling and ordering medications, and pharmacist order verification. In 2009, hospital administration requested a

pilot program to achieve a 90% reconciliation rate and a 90% accuracy rate for medication reconciliation.

To meet this goal, two pharmacy technicians and one pharmacist were added to the reconciliation staff. The technicians obtained medication histories and the pharmacist reviewed the technician's report for completeness, safety, and clinical appropriateness. Physicians then wrote medication orders and the pharmacist checked the medications ordered against the home medication list obtained by technicians for discrepancies and/or omissions.

After 6 months, technician involvement improved the proportion of patients receiving medication reconciliation from 44.2% to 92.8% and the accuracy of the home medication list from 45.8% to 95%. After 3 months of implementation, the program achieved and maintained the 90% benchmark for both measures set by the institution.



Example 2: Pharmacist and Pharmacy Technician Medication Reconciliation Quality Improvement Project

An academic medical center wanted to improve the quality and cost-effectiveness of their medication reconciliation process. Prior to implementation, medication reconciliation was conducted by physicians and rarely involved verifying medication use with retail pharmacies and/or ambulatory physician practices.

The program began with one full time pharmacist and one full time pharmacy technician. Prior to implementation, the technician received training on patient interviewing and close mentorship from the pharmacist. When the pharmacist determined the technician was proficient in conducting medication reconciliation, the technician was permitted to work independently.

In preparation for patient interviews, the pharmacy technicians received a patient list and recorded the pre-admission medication from the electronic medical record on a medication reconciliation form. After reviewing this information, the technicians interviewed each patient regarding prescription, over-the-counter, supplement use, and medication allergies. The technician also requested information about all of the patient's pharmacies, healthcare providers, and, if applicable, long-term care facilities. When the interview was complete, the technician contacted the pharmacies, physician offices, and facilities to obtain medication lists. This information was reconciled with the list provided by the patient and all discrepancies were addressed under the supervision of the pharmacist.

After 1 year, the program was conducting an average of 522 medication reconciliations per month. During this time, a total of 1,748 medication discrepancies were identified. By involving pharmacy technicians, the program had successfully improved the cost-effectiveness of medication reconciliation by shifting responsibilities from physicians and nurses to pharmacists and to a higher degree, pharmacy technicians. The program was designed to allow physicians, nurses, pharmacists, and pharmacy technicians to work collaboratively, at the top of their license, and within the scope of their practice, to optimize patient care. Ultimately, the program was deemed successful and since implementation, has expanded to include 3 full time and 2 part-time pharmacy technicians supervised by 1–2 pharmacists. Pharmacists, pharmacy technicians, and physicians involved in the medication reconciliation process were surveyed regarding their perspectives on technician involvement in the program and all reported a high degree of satisfaction.

The Pharmacy Technician's Role in Preventing Errors After Reconciliation

In addition to conducting medication reconciliation, technicians in outpatient or "retail" pharmacies can help prevent future discrepancies by avoiding errors resulting from poor communication between prescribers, pharmacies, and patients. Frequently the pharmacy is not

informed by the provider or patient when a chronic medication is discontinued. This lack of communication is a large contributor to errors within the medication regimen.

- Do not “fill everything”: It is not uncommon for patients to request the pharmacy fill all medications available for refill. Understandably, they would like to avoid unnecessary trips to the pharmacy, however complying with this request risks providing the patient with a medication that may have been changed or discontinued entirely. Kindly request that for their own safety, the patient requests the specific medications they need, either verbally or using a medication list. If a patient is unable to comply with this request, it may indicate confusion within their medication regimen and requires pharmacist review.
- Verify all medications on autofill are necessary: Periodically verifying all medications placed on autofill is still necessary. Avoid placing medications on autofill without direct instruction by the patient.
- Encourage patients to use one pharmacy: Medication errors and discrepancies are more likely to occur if patients are using multiple pharmacies. Use of multiple pharmacies increases the risk of duplications in therapy or drug-drug interactions. If a patient must use two pharmacies, encourage them to stay within a single chain of stores where prescription profiles are available in “central view” (i.e. view medication filled at all pharmacies within the chain).

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Exam Questions:

- 1) Which of the following is not a common reason for errors or medication-related discrepancies?
 - A) The patient is filling medications at one pharmacy
 - B) The patient's cardiologist did not communicate a medication change to the primary care physician
 - C) The patient did not understand the instructions from their doctor that they were supposed to discontinue a medication and tells the pharmacy tech to "refill everything"
 - D) Medication changes made at hospital discharge are not fully communicated to the primary care provider

- 2) Which of the following best defines medication reconciliation?
 - A) The process of reviewing all the patient's medications from all doctors for drug interactions
 - B) The process of reviewing a patient's medication history to make sure all chronic medications are correctly placed on auto-refill
 - C) The process of reviewing a patient's medication regimen at a transition of care and comparing it to the regimen which will be used at the new setting of care
 - D) The process of reviewing a patient's medication regimen when they arrive at the hospital or emergency department and comparing it to the standard of care

- 3) Which of the following is an example of a transition of care?
 - A) A pharmacy transitioning from an old pharmacy software to new pharmacy software, including all patient medical records
 - B) A patient transferring from a retiring endocrinologist to a new endocrinologist
 - C) A doctor's office transitioning from one building to another
 - D) B and C

- 4) Which organization requires accredited healthcare facilities have a clear process for medication reconciliation?
- A) The Agency for Healthcare Research and Safety
 - B) The Agency for Healthcare Research and Quality
 - C) The Joint Commission
 - D) The Joint Commission for Healthcare Quality
- 5) Which of the follow best represents and action a pharmacy technician could take in a community dispensing pharmacy to reduce the potential for medication discrepancies?
- A) Contact the patient's primary care provider to advise them of a potential drug interaction with a new medication the patient received at the emergency department
 - B) Complying with a patient's request to refill any medications with available refills
 - C) Contact the patient's primary care physician to let them know the patient has an active script for lisinopril 20 mg once daily and Lisinopril 40 mg once daily
 - D) Discuss the importance of using a single pharmacy or chain of pharmacies with patients
- 6) Which of the following may be considered best practice for conducting medication reconciliation?
- A) Including only prescription medications that patient is actively or has previously taken
 - B) Ask the patient what they are taking and use information to build a medication list
 - C) Develop a list of medications based on pharmacy or medical records and compare to what the patient reports to be taking
 - D) A and C
- 7) Which of the following does not need to be addressed during medication reconciliation?
- A) Non-prescription topical products the patient uses on an as-needed basis
 - B) Supplements the patient purchased from the internet
 - C) Over the counter analgesics such as acetaminophen or ibuprofen which the patient takes on an as needed basis
 - D) All of the above should be addressed during medication reconciliation

- 8) When conducting a medication reconciliation, it is best to read the list of medications to a patient and ask them to report, yes or no, if they are taking each.
- A) True
 - B) False
- 9) A medication omission may be defined as:
- A) Patient reports taking a dose of a medication that is different from what is displayed in the prescription or medical history
 - B) Patient is taking a drug that does not appear in their pharmacy or medical history
 - C) The same medication appears on the medication list with a different dose or different directions
 - D) A and B
- 10) A dosing discrepancy may be defined as:
- A) Patient reports taking a dose of a medication that is different from what is displayed in the medical or prescription record
 - B) Patient reports taking the same dose of a medication, but in a different manner than what is documented in the medical or pharmacy record
 - C) Patient is taking a drug that does not appear in their pharmacy or medical records
 - D) A and B
- 11) After medication reconciliation is complete and discrepancies are identified, which of the following best describes what should occur?
- A) Provide the patient and any authorized care givers with an updated medication list
 - B) Provide the patient and primary care physician with an updated medication list, pointing out any discrepancies to the provider
 - C) Provide the patient and all of their providers with an updated medication list
 - D) Ask patient to explain discrepancies identified during the reconciliation process

12) Which of the following is true regarding the evidence supporting pharmacy technician-conducted medication reconciliation?

- A) Medication reconciliation conducted by pharmacy technicians was more accurate than physician-conducted reconciliation but less accurate than pharmacist-conducted reconciliation
- B) Medication reconciliation conducted by pharmacy technicians was more accurate than physician-conducted reconciliation and similar to pharmacist-conducted reconciliation
- C) Medication reconciliation conducted by pharmacy technicians was less accurate than physician-conducted reconciliation and similar to pharmacist-conducted reconciliation
- D) Medication reconciliation conducted by pharmacy technicians was similar to physician-conducted reconciliation and pharmacist-conducted reconciliation

13) Which of the following represents a barrier to implementing pharmacy technician conducted medication reconciliation in community dispensing pharmacies?

- A) Lack of incentive by an accrediting body
- B) Lack of integration in an inter-professional team
- C) Competing responsibilities within the pharmacy
- D) All of the above

14) The Joint Commission's National Patient Safety initiative requires

- A) Medication reconciliation be completed by a physician, nurse, pharmacist, or pharmacy technician within 48 hours of admission
- B) Medication reconciliation be complete by a member of the healthcare team within 24 hours of admission
- C) Medication reconciliation be completed by a nurse or pharmacist before the patient is admitted to a floor
- D) Pharmacy technicians become incorporated into the inter-professional team

15) The majority of evidence supporting the roll of a pharmacy technician in medication reconciliation occurred in which setting:

- A) Emergency rooms
- B) Hospitals
- C) Nursing homes
- D) A and B

- 16) Which of the following could be an example of a quality improvement project?
- A) An initiative to improve the quality of care being provided
 - B) An initiative to improve the safety of care being provided
 - C) An initiative to improve the quality or safety of care being provided
 - D) An initiative to improve the quality, safety, or cost of care being provided
- 17) Which would least likely be required to implement a quality improvement program to improve medication reconciliation using pharmacy technicians
- A) Hiring additional pharmacy technicians
 - B) Obtaining institutional buy-in
 - C) Additional training for pharmacy technicians
 - D) Additional training for pharmacists and pharmacy technicians
- 18) An institution wishes to begin a quality improvement project to improve the quality of medication reconciliation conducted at their institute. Which of the following would be the most appropriate outcome measure?
- A) Change in number of patients receiving medication reconciliation as compared to prior to program implementation
 - B) Change in number of medication discrepancies identified as compared to prior to program implementation
 - C) Total number of medication reconciliations conducted
 - D) Proportion of admitted patients for whom medication reconciliation was conducted
- 19) An institution wishes to begin a quality improvement project to improve the proportion of patients receiving medication reconciliation within 24 hours of admission. Which of the following would be the most appropriate outcome measure?
- A) Change in number of patients receiving medication reconciliation as compared to prior to program implementation
 - B) Change in proportion of patients receiving medication reconciliation during admission as compared to prior to program implementation
 - C) Change in proportion of patients receiving medication reconciliation within the first 24 hours of admission as compared to prior to program implementation
 - D) Severity and type of medication discrepancies identified by pharmacy technicians as compared to standard of care

20) Which of the following is true regarding quality improvement project?

- A) Since quality improvement initiatives are often pilot projects, they should be rolled out as quickly as possible
- B) Since quality improvement initiatives rarely lead to long-term changes in practice
- C) Specific goals need to be articulated before quality improvement projects are developed
- D) It is important to collect as many outcomes variables as possible since goals are often not articulated until the project is complete