



IMPROVING CARE TRANSITIONS:

# Optimizing Medication Reconciliation

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# Improving Care Transitions: Optimizing Medication Reconciliation

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## Executive Summary—Improving Care Transitions: Optimizing Medication Reconciliation

### INTRODUCTION

Medication reconciliation is an integral part of the care transitions process in which health care professionals collaborate to improve medication safety as the patient transitions between patient care settings or levels of care. In 2005, medication reconciliation came to the forefront of health care when The Joint Commission on Accreditation of Health-care Organizations, now known as The Joint Commission, designated it National Patient Safety Goal (NPSG) 8. The Joint Commission subsequently revised its requirements for medication reconciliation under NPSG 03.06.01, which became effective July 1, 2011. Although the new goal consists of only five elements of performance compared with 17 elements in the previous version, the implementation of medication reconciliation continues to be a complex process. Each health care professional may have a different role in the process, but the overall focus of medication reconciliation is on global patient safety and improved patient outcomes.<sup>1</sup>

The intent of this publication is to provide a better understanding of the medication reconciliation process, its effect on patient care and outcomes, and how pharmacists can contribute to improving this process using a standardized framework of service delivery defined in the context of medication therapy management (MTM). Common barriers to implementation of medication reconciliation and foundational concepts important to its adoption are presented.

### DEFINING MEDICATION RECONCILIATION

In early 2007, the American Pharmacists Association and the American Society of Health-System Pharmacists convened an expert panel to establish a shared vision of medication reconciliation. The goal was to develop a definition that the two organizations could use in discussions with both peers and interdisciplinary groups. The shared definition developed by the expert panel is:

*Medication reconciliation is the comprehensive evaluation of a patient's medication regimen any time there is a change in therapy in an effort to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions, as well as to observe compliance and adherence patterns. This process should include a comparison of the existing and previous medication regimens and should occur at every transition of care in which new medications are ordered, existing orders are rewritten or adjusted, or if the patient has added nonprescription medications to [his or her] self-care.<sup>2</sup>*

The health care team should consider adopting this definition and the medication reconciliation process described to improve communication among health care professionals during care transitions in all patient care settings.

## DEFINING MEDICATION RECONCILIATION AS A COMPONENT OF MEDICATION THERAPY MANAGEMENT

Although medication reconciliation may be inaccurately perceived as the mere compilation of a medication list, it is a critical, if not the primary, element in MTM. Effective medication reconciliation is composed of multiple processes that together reduce medication errors, support safe medication use by patients, and encourage community-based providers and those practicing in hospitals and health systems to collaborate in organized medication reconciliation programs to promote overall continuity of patient care. Medication reconciliation can be efficiently, effectively, and consistently performed by pharmacists or other qualified health care professionals using an established, standardized approach as a component of MTM.

The Patient Protection and Affordable Care Act of 2010, which provides grants or contracts for the implementation of MTM services by pharmacists in the treatment of chronic diseases, identifies 10 specific MTM service components.<sup>3</sup> These components are included in service models established for pharmacy for the provision of MTM services. One service model, *Medication Therapy Management in Pharmacy Practice: Core Elements of an MTM Service Model, Version 2.0*, includes the following five core elements: medication therapy review, personal medication record, medication-related action plan (MAP), intervention and/or referral, and documentation and follow-up. Pharmacists can use these five core elements of MTM to provide medication reconciliation in any patient care setting.<sup>4</sup>

MTM is vital to the contemporary model of patient care which allows for enhanced relationships among health care providers to optimize patient care through collaboration. This is particularly true for the rapidly emerging hospitalist model of inpatient care which offers new and significant opportunities to optimize patient care through collaboration among hospitalists, pharmacists, and other health care providers. As pharmacists in all practice settings join with prescribers and others to ensure safe and effective medication therapy, medication reconciliation becomes an increasingly important element of collaborative practice models, particularly during care transitions. The process of medication reconciliation is essential to the reduction of medication errors in prescribing, assurance of safe medication use by patients, and appropriate monitoring and adjustment of drug therapy.

## JUSTIFYING THE NEED FOR MEDICATION RECONCILIATION

The goal of medication reconciliation is to obtain and maintain accurate and complete medication information for a patient and use this information within and across the continuum of care to ensure safe and effective medication use. When there is a lack of consistency in documenting medication histories and performing medication reconciliation, a variety of medication-related problems (MRPs) occur. In recent years, numerous studies have demonstrated the need to address MRPs and improve patient safety through medication reconciliation and MTM. Evidence includes:

- Approximately 1.5 million preventable adverse drug events (ADEs) occur annually as a result of medication errors, at a cost of more than \$3 billion per year.<sup>5</sup>
- Approximately half of all hospital-related medication errors and 20% of all ADEs have been attributed to poor communication at the transitions and interfaces of care.<sup>6,7</sup>
- The average hospitalized patient is subject to at least one medication error per day.<sup>5</sup>
- ADEs account for 2.5% of estimated emergency department visits for all unintentional injuries and 6.7% of those leading to hospitalization.<sup>8</sup>
- The occurrence of unintended medication discrepancies at the time of hospital admission ranges from 30% to 70%, as reported in two literature reviews.<sup>9,10</sup>

## EVIDENCE SUPPORTING THE PHARMACIST'S CONTRIBUTION TO MEDICATION RECONCILIATION

Recent studies have demonstrated that the pharmacist's involvement in medication reconciliation during transitions of care results in improved patient outcomes and an overall reduction in health care costs. The following evidence supports pharmacist involvement in care transitions:

- Results of the largest medication reconciliation study to date indicate that 36% of patients had medication errors at admission, of which 85% originated from the patient's medication history.<sup>11</sup>
- Strategies shown to reduce medication errors at transitions include pharmacist medication review at discharge.<sup>12,13</sup>
- Pharmacist-provided medication therapy review and consultation in various settings resulted in reductions in physician visits, emergency department visits, hospital days, and overall health care costs.<sup>4</sup>
- Medication reconciliation reduced discharge medication errors from 90% to 47% on a surgical unit and from 57% to 33% on a medical unit of a large academic medical center.<sup>12</sup>

## THE ROLE OF THE PHARMACIST IN MEDICATION RECONCILIATION

Pharmacists have a pivotal role in collaborating with other health care providers to ensure that an effective process for medication reconciliation is in place and is used successfully to reduce MRPs across the continuum of care. To fulfill this role, pharmacists should lead the design and management of patient-centered medication reconciliation systems, educate patients and other health care providers about the benefits and limitations of the medication reconciliation process, and serve as patient advocates throughout transitions of care. Pharmacists must work in an interdependent fashion with pharmacy colleagues, hospitalists, primary care physicians, specialists, nurses, and other health care professionals in a wide variety of circumstances to facilitate communication among health care professionals, optimize the use of health information technology (HIT) to support safe care transitions, and ensure the bidirectional flow of medication, diagnostic, and laboratory information.

Pharmacists can consistently and effectively provide medication reconciliation for patients during care transitions by using a standardized approach to MTM service delivery that is consistent with services specified in federal legislation and

regulations. Beginning with a comprehensive medication therapy review and subsequently formulating a personal medication record and MAP, pharmacists can work with other members of the health care team to evaluate medication therapy, resolve identified problems, and refer the patient to an appropriate health care professional if needed. Proper documentation, including maximizing the use of HIT solutions, will allow the pharmacist to safely transition the patient to another health care professional or setting and can demonstrate improvements in clinical, economic, and humanistic outcomes.<sup>4</sup> The pharmacist's role in the provision of medication reconciliation is evident in each of the five components of the MTM service model.

## COMMON BARRIERS TO IMPLEMENTATION OF MEDICATION RECONCILIATION

It is important to explore potential barriers to the medication reconciliation process so the health care team can work together to address and overcome these issues. Common barriers to consider when designing and implementing the medication reconciliation process within a patient care setting include:

- Insufficient standardization of data elements in the medication record (list).
- Need for adoption of the standardized medication record (list) and sharing of appropriate information by both patients and health care professionals.
- Lack of established best practices.

## FOUNDATIONAL CONCEPTS FOR IMPROVING CARE TRANSITIONS THROUGH MEDICATION RECONCILIATION

Just as there are common barriers to the implementation of medication reconciliation, there also are foundational concepts for improving care transitions and reducing the impact of MRPs through medication reconciliation. The following foundational concepts outline the tenets of medication reconciliation and can be applied in collaboration with other health care professionals in the medication reconciliation process across the health care continuum. Health care professionals involved in medication reconciliation are encouraged to collaborate in implementing the foundational concepts by aligning standard operating procedures and assigning responsibilities in the overall process. Pharmacist involvement in each of the foundational concepts will further improve patient safety and the medication reconciliation process.

**Foundational Concept 1:** Medication reconciliation is a key process required to improve patient care and outcomes in care transitions.

**Foundational Concept 2:** Medication reconciliation is a patient-centered process focusing on patient safety.

**Foundational Concept 3:** Medication reconciliation requires an interdisciplinary, collaborative approach.

**Foundational Concept 4:** Medication reconciliation must be based on a culture of accountability.

**Foundational Concept 5:** Medication reconciliation should be standardized.

**Foundational Concept 6:** Effective medication reconciliation requires coordinated communication.

**Foundational Concept 7:** Medication reconciliation requires integration of health information technology solutions.

**Foundational Concept 8:** Medication reconciliation requires a process of continuous quality improvement.

## CONCLUSION

Although research on medication reconciliation has been increasing, more studies are needed on the implementation and adoption of effective medication reconciliation processes, with emphasis on the identification of current best practices for medication reconciliation. The information provided in this publication can be used to stimulate discussion among researchers and health care providers on how to best research and implement improvements in the medication reconciliation process. The application of the foundational concepts in this publication and future work on the enhancement of the medication reconciliation process will help to improve patient safety and patient care outcomes during care transitions.

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## Improving Care Transitions: Optimizing Medication Reconciliation

### INTRODUCTION

Medication reconciliation is an integral part of the care transitions process in which health care professionals collaborate to improve patient safety and clinical outcomes, specifically related to medications, as the patient transitions between patient care settings or levels of care. The goal of medication reconciliation is to improve “patient well-being through education, empowerment, and active involvement in the accurate transfer of medication information throughout transitions along the health care continuum.”<sup>1</sup> This process involves interventions by the health care team to identify and reconcile medication-related discrepancies. These interventions have been shown to reduce hospital readmission rates by 30%,<sup>2</sup> which demonstrates the importance of medication reconciliation across the continuum of care.

In 2005, medication reconciliation came to the forefront of health care when The Joint Commission on Accreditation of Healthcare Organizations, now known as The Joint Commission, designated it National Patient Safety Goal (NPSG) 8. Amid confusion about the definition, process, and implementation of NPSG 8,<sup>3</sup> The Joint Commission subsequently revoked medication reconciliation as a requirement for accreditation in January 2009 and announced its plans to revise the goal. The revised requirements for medication reconciliation under NPSG 03.06.01 became effective July 1, 2011. Although the new goal consists of only five elements of performance compared with 17 elements in the previ-

ous version, the implementation of medication reconciliation continues to be a complex process.

Much of the complexity surrounding medication reconciliation is a consequence of the number of individuals and practice settings involved in the process. The implementation of medication reconciliation often involves pharmacists, physicians, nurses, administrators, patients and their caregivers, and other health care professionals. Patient care settings that may be involved in the process include community pharmacies and other ambulatory care settings, hospitals and other acute care settings, home care, long-term care, medical offices/clinics, and hospice care. Although a myriad of health care professionals and patient care settings may be involved in the process, it is essential that the focus of medication reconciliation is on global patient safety and not the fulfillment of accreditation standards.<sup>3</sup>

Pharmacists are in the position to play a leadership role in collaborating with other health care professionals in the coordination and implementation of medication reconciliation in a variety of patient care settings. The intent of this publication is to provide a better understanding of the medication reconciliation process, its effect on patient care and outcomes, and how pharmacists can contribute to improving this process using a standardized framework of service delivery defined in the context of medication therapy management (MTM). Common barriers to implementation of medication reconciliation and foundational concepts important to its adoption are presented.

## DEFINING MEDICATION RECONCILIATION

Although the definition of medication reconciliation has been widely discussed among health care professionals, a consensus definition has not been reached. In early 2007, the American Pharmacists Association and the American Society of Health-System Pharmacists convened an expert panel to establish a shared vision of medication reconciliation. The goal was to develop a definition that the two organizations could use in discussions with both peers and interdisciplinary groups. The shared definition developed by the expert panel is:

*Medication reconciliation is the comprehensive evaluation of a patient's medication regimen any time there is a change in therapy in an effort to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions, as well as to observe compliance and adherence patterns. This process should include a comparison of the existing and previous medication regimens and should occur at every transition of care in which new medications are ordered, existing orders are rewritten or adjusted, or if the patient has added nonprescription medications to [his or her] self-care.<sup>1</sup>*

This definition agrees with the one used by the Pharmacy Quality Alliance<sup>4</sup> and the definition provided by The Joint Commission.<sup>5</sup> The health care team should consider using this definition and the medication reconciliation process described here to improve communication among health care professionals during transitions in all patient care settings.

According to The Joint Commission, the medication reconciliation process consists of five steps: (1) develop a list of current medications; (2) develop a list of medications to be prescribed; (3) compare the medications on the two lists; (4) make clinical decisions based on the comparison; and (5) communicate the new list to appropriate caregivers and to the patient.<sup>5</sup> The Institute for Healthcare Improvement has further simplified the process of medication reconciliation into three steps: (1) verification (collection of the medication history); (2) clarification (ensuring that the medications and doses are appropriate); and (3) reconciliation (documentation of changes in the orders).<sup>6</sup> Both views of the process should be considered when medication reconciliation is provided.

Medication reconciliation should be performed when the patient undergoes (1) a transition of care between care settings (e.g., an entry/admission or discharge to/from the hospital, ambulatory care setting, or long-term care facility)<sup>7-9</sup> or (2) a new level of care within a setting or a change of care location in a setting<sup>9</sup> and/or change in care providers. A transition of care, defined as "the movement of patients between health care locations, providers, or different levels of care within the same location as their conditions and care needs change, frequently involves multiple persons, including

the patient, the family member or other caregiver(s), nurse(s), social worker(s), case manager(s), pharmacist(s), physician(s), and other providers."<sup>10</sup> The medication reconciliation processes described should be performed at each transition of care to ensure medication safety for the patient in all health care settings. The collaboration of pharmacists with the patient, caregivers, and other health care providers is critical for the provision of successful medication reconciliation.

## DEFINING MEDICATION RECONCILIATION AS A COMPONENT OF MEDICATION THERAPY MANAGEMENT

Although medication reconciliation is sometimes inaccurately perceived as the mere compilation of a medication list, it is a critical, if not the primary, element in MTM. Effective medication reconciliation is composed of multiple processes that together reduce medication errors, support safe medication use by patients, and encourage community-based providers and those practicing in hospitals and health systems to collaborate in organized medication reconciliation programs to promote overall continuity of patient care. Medication reconciliation can be efficiently, effectively, and consistently performed by pharmacists or other qualified health care professionals using an established, standardized approach as a component of MTM.

"Medication therapy management" has been defined by the pharmacy profession as "a service or distinct group of services that optimize therapeutic outcomes for individual patients." MTM services are independent of, but can occur with, the provision of a medication product. They encompass a broad range of professional activities and responsibilities within the licensed pharmacist's or other health care provider's scope of practice.<sup>11</sup> The Patient Protection and Affordable Care Act of 2010, which provides grants or contracts for the implementation of MTM services in the treatment of chronic diseases, identifies 10 MTM service components and specifies that MTM services shall include<sup>12</sup>:

- Performing or obtaining necessary assessments of the health and functional status of each patient receiving such MTM services.
- Formulating a medication treatment plan according to therapeutic goals agreed upon by the prescriber and the patient or caregiver or authorized representative of the patient.
- Selecting, initiating, modifying, recommending changes to, or administering medication therapy.
- Monitoring, which may include access to, ordering, or performing laboratory assessments, and evaluating the response of the patient to therapy, including safety and effectiveness.

- Performing an initial comprehensive medication review to identify, resolve, and prevent medication-related problems (MRPs), including adverse drug events (ADEs), quarterly targeted medication reviews for ongoing monitoring, and additional follow-up interventions on a schedule developed collaboratively with the prescriber.
- Documenting the care delivered and communicating essential information about such care, including a summary of the medication review, and the recommendations of the pharmacist to the patient's other health care providers in a timely fashion.
- Providing education and training designed to enhance the understanding and appropriate use of the medications by the patient, caregiver, and other authorized representative.
- Providing information, support services, and resources and strategies designed to enhance patient adherence with therapeutic regimens.
- Coordinating and integrating MTM services within the broader health care management services provided to the patient.
- Such other patient care services allowed under pharmacist scopes of practice in use in other federal programs that have implemented MTM services.

A foundational service model for the provision of MTM, *Medication Therapy Management in Pharmacy Practice: Core Elements of an MTM Service Model, Version 2.0*, incorporates these 10 MTM service components into the following five core elements:

- Medication therapy review—a systematic process of collecting patient-specific information, assessing medication therapies to identify MRPs, and creating a plan to resolve them.
- Personal medication record—a comprehensive record of the patient's medications.
- Medication-related action plan (MAP)—a patient-centric document containing a list of actions for the patient to use in tracking progress for self-management.
- Intervention and/or referral—pharmacist-provided consultative services to address MRPs; when necessary, referral of the patient to a physician or other health care provider.
- Documentation and follow-up—documentation in a consistent manner and follow-up or transition of the patient from one care setting to another.<sup>13</sup>

Pharmacists can use these five core elements of MTM to provide medication reconciliation in any patient care setting. An effective medication reconciliation process following these MTM core elements reduces medication errors, supports safe medication use by patients, and encourages both community-based providers and those in hospitals and

health systems to collaborate in organized medication reconciliation programs to promote overall continuity of patient care.

MTM is vital to the contemporary model of patient care which allows for enhanced relationships among health care providers to optimize patient care through collaboration. This is particularly true for the rapidly emerging hospitalist model of inpatient care which offers new and significant opportunities to optimize patient care through collaboration among hospitalists, pharmacists, and other health care providers. As pharmacists in all practice settings join with prescribers and others to ensure safe and effective medication therapy, medication reconciliation becomes an increasingly important element of medication therapy management particularly during care transitions.

The pharmacist's activities in MTM include, but are not limited to, initiating and modifying the patient's drug therapy under collaborative agreements with prescribers; monitoring the patient's response to drug therapy; ordering and performing laboratory and related tests; assessing patient response to therapy; counseling and educating the patient on medications; and administering medications. As a component of MTM, medication reconciliation is an especially important step in the provision of safe and effective medication therapy as a growing number of providers and specialists are responsible for patient care by means of an interdisciplinary team approach.

## JUSTIFYING THE NEED FOR MEDICATION RECONCILIATION

The goal of medication reconciliation is to obtain and maintain accurate and complete medication information for a patient and use this information within and across the continuum of care to ensure safe and effective medication use. When there is a lack of consistency in collecting and documenting medication histories and performing medication reconciliation, a variety of MRPs occur. Potential MRPs that can be prevented by medication reconciliation include failure to receive a medication (for pharmaceutical, psychological, sociological, or economic reasons), ADEs, drug interactions, and medication use without indication.

Patients are particularly vulnerable to ADEs during transitions of care, when communication about medications is more likely to break down across the care continuum. An estimated 60% of all medication errors occur during times of care transitions.<sup>14</sup> In recent years, studies have demonstrated the need to address MRPs and improve patient safety through medication reconciliation. Study results indicate:

- Approximately 1.5 million preventable ADEs occur annually as a result of medication errors, at a cost of more than \$3 billion per year.<sup>15</sup>

- Approximately half of all hospital-related medication errors and 20% of all ADEs have been attributed to poor communication at the transitions and interfaces of care.<sup>16,17</sup>
- The average hospitalized patient is subject to at least one medication error per day.<sup>15</sup>
- One in five patients discharged from hospitals suffers an adverse event, 72% of which are related to medications.<sup>18,19</sup>
- Seventy-six percent of Medicare re-hospitalizations in 2007 were potentially preventable, suggesting that \$13 billion of the \$15 billion in readmission costs may be unnecessary and preventable.<sup>20</sup>
- ADEs account for 2.5% of estimated emergency department visits for all unintentional injuries and 6.7% of those leading to hospitalization.<sup>21</sup>
- The occurrence of unintended medication discrepancies at the time of hospital admission ranges from 30% to 70%, as reported in two literature reviews.<sup>22,23</sup>

These examples illustrate the need for medication reconciliation to ensure patient safety during transitions of care.

## EVIDENCE SUPPORTING THE PHARMACIST'S CONTRIBUTION TO MEDICATION RECONCILIATION

Pharmacists have a unique combination of knowledge, skills, and position in the medication-use process to facilitate the implementation of effective medication reconciliation processes.<sup>1</sup> Although the process may vary with practice settings and available resources, pharmacists can serve an important role in care transitions by providing MTM services and facilitating medication reconciliation across the continuum of care. As a key member of the health care team, the pharmacist, as a medication expert, can work with the patient's other health care providers to prevent morbidity and mortality by identifying and resolving MRPs, including improper drug selection, sub- and supratherapeutic dosages, medication non-adherence, therapeutic duplication or omission, drug interactions, drug use without indication, and treatment failures.

Recent studies have demonstrated that the pharmacist's involvement in medication reconciliation during transitions of care results in improved patient outcomes and an overall reduction in health care costs. The following evidence supports pharmacist involvement in care transitions:

- Results of the largest medication reconciliation study to date indicate that 36% of patients had medication errors at admission, of which 85% originated from the patient's medication history.<sup>24</sup>
- Strategies shown to reduce medication errors at transi-

tions include the involvement of pharmacist medication review at discharge.<sup>25,26</sup>

- Pharmacist-provided medication therapy review and consultation in various settings resulted in reductions in physician visits, emergency department visits, hospital days, and overall health care costs.<sup>13</sup>
- Medication reconciliation reduced discharge medication errors from 90% to 47% on a surgical unit and from 57% to 33% on a medical unit of a large academic medical center.<sup>25</sup>

## THE ROLE OF THE PHARMACIST IN MEDICATION RECONCILIATION

The pharmacist's provision of MTM is based on a commitment to continuous care on behalf of the patient, including the assurance that continuity of care is maintained when a patient moves from one component of a health care system to another.<sup>27</sup> Pharmacists have a pivotal role in the advancement of collaboration among health care providers to ensure that an effective process for medication reconciliation is in place and is used successfully to reduce MRPs during care transitions in all practice settings. To fulfill this role, pharmacists should provide leadership in the design and management of patient-centered medication reconciliation systems, educate patients and other health care providers about the benefits and limitations of the medication reconciliation process, and serve as patient advocates throughout transitions of care. Pharmacists must work in an interdependent fashion with pharmacy colleagues, hospitalists, primary care physicians, specialists, nurses, and other health care professionals in a wide variety of circumstances to facilitate communication among health care professionals, optimize the use of health information technology (HIT) to support safe care transitions, and ensure the bidirectional flow of medication, diagnostic, and laboratory information.

As stated in a draft ASHP Statement on the Pharmacists Role in Medication Reconciliation (in development as of October 2011) pharmacists should take a leadership role in system-based medication reconciliation activities, including:

- Development of policies and procedures for patient-centered medication reconciliation systems.
- Implementation and performance improvement of systems, including workflow development.
- Training and competency assessment of those performing medication reconciliation activities.
- Development of electronic medication record applications.
- Professional and community advocacy.

Pharmacists can consistently and effectively provide medication reconciliation for patients during care transitions by using a standardized approach to MTM service delivery that

is consistent with federal legislation and regulations. Beginning with a comprehensive medication therapy review and subsequently formulating a personal medication record and MAP, pharmacists can work with other members of the health care team to evaluate medication therapy, resolve identified problems, and refer the patient to an appropriate health care professional if needed. Proper documentation, including optimizing the use of HIT, will allow the pharmacist to safely transition the patient to another health care professional or setting and can demonstrate improvements in clinical, economic, and humanistic outcomes.<sup>13</sup> The pharmacist's role in the provision of medication reconciliation is presented below for each of the five components of the MTM service model.

### Performing A Medication Therapy Review

- Gather relevant information from the patient and/or the patient's family as needed to start the medication reconciliation process.
- Obtain a complete and accurate list of medications that the patient is currently taking and document the information in the medical record.
- Develop a medication list<sup>a</sup> to include "all medications as defined by accrediting organizations such as The Joint Commission, including, at a minimum, prescription medications; sample medications; vitamins and nutraceuticals; over-the-counter (OTC) drugs; complementary and alternative medications; radioactive medications; respiratory therapy-related medications; parenteral nutrition; blood derivatives; intravenous solutions (plain or with additives); investigational agents; and any product designated by the Food and Drug Administration as a drug."<sup>8</sup>
- Assess the patient's medications for the presence of any MRPs, develop a prioritized list of MRPs, and create a plan to resolve them by:
  - Comparing current medications with new medication orders and new OTC medications. Medications that need to be discontinued should be documented along with the reason for the discontinuation.<sup>5</sup>
  - Making and documenting clinical decisions based on the comparison of the two medication lists.<sup>5</sup>
  - Identifying and resolving discrepancies identified through clinical decision processes (reviewing any MRPs or discrepancies, such as omissions, duplications, contraindications, adjustments, deletions, additions, and unclear information).<sup>7</sup>
- Assess cultural issues, education level, language barriers, literacy level, and other characteristics of the patient's communication abilities that could affect outcomes.

### Providing A Personal Medication Record

- Provide the patient with an up-to-date personal medication record<sup>b</sup> by:
  - Instructing patients being transitioned between community ambulatory (home) settings and inpatient care settings to share the current personal medication record with their community or inpatient pharmacist, physicians, and other health care providers.
  - Following up with patients to provide up-to-date personal medication records as MRPs are resolved.
  - Including the following information in addition to medication-related information:
    - Patient name
    - Patient birth date
    - Patient phone number
    - Emergency contact information
    - Primary care physician contact information
    - Pharmacy/pharmacist contact information
    - Allergies
    - Date last updated
    - Date last reviewed by the pharmacist, physician, or other health care professional
    - Patient's signature
  - Obtaining the health care provider's signature.
  - Providing special instructions.

<sup>a</sup> In addition to the medication name, complete and accurate information should be noted pertaining to the route and frequency of administration, indication for use, patient allergies, prescriber, pharmacy name, and other medication-related information (at a minimum include the dose, route, and dosing interval in addition to the medication name).<sup>8</sup>

<sup>b</sup> The maintenance of the medication list is a collaborative effort among the patient, pharmacist, physician, and other health care professionals. Patients should be educated to carry their medication list with them at all times and share it at all health care visits and at all admissions to or discharges from institutional settings to help ensure that all health care professionals are aware of their current medication regimen.<sup>13</sup>

## Creating A Medication-Related Action Plan

- Provide the patient with a medication-related action plan (MAP)<sup>c</sup> that includes the following:
  - Patient name
  - Primary care physician contact information
  - Pharmacy/pharmacist contact information
  - Date of MAP creation
  - Action steps for the patient
  - Notes for the patient
  - Appointment information, if applicable
  - Specific items that require intervention

## Intervention and/or Referral and Documentation/Follow-Up

- Communicate with appropriate health care professionals (e.g., prescribing physician, pharmacists) as needed to resolve MRPs and discrepancies and document interaction.
- Clarify or resolve MRPs with the prescriber.
- Document the resolution to update the medication list accordingly and communicate with relevant prescribers as appropriate.<sup>5,7,9</sup>

## COMMON BARRIERS TO IMPLEMENTATION OF MEDICATION RECONCILIATION

It is important to explore potential barriers to the medication reconciliation process so the health care team can work together to address and overcome these issues. There are several common barriers to consider when designing and implementing the medication reconciliation process within a patient care setting.

### Insufficient Standardization of Data Elements in the Medication Record (List)

Providing the patient with an updated medication list is an integral part of the medication reconciliation process. In order to improve communication and the exchange of information among different patient care settings, a standardized approach for the medication list should be developed. A medication list is defined as “a record of current medications that an individual carries across the continuum of care to stimulate conversation between the individual and his or her health care providers regarding the patient’s current medications.”<sup>28</sup> A standardized data set for the medication list that can serve as a tool of verification should be used to

accelerate the initiation of patient care and to encourage consistency.<sup>29</sup>

By working with community pharmacies, ambulatory care centers, hospitals, physician offices/clinics, and other patient care settings in the nearby and surrounding area, the health care team can effectively implement the use of a standardized medication list. In addition to employing the data elements presented previously under “Providing a Personal Medication Record,” (example available at [www.pharmacist.com/MTM/PMR](http://www.pharmacist.com/MTM/PMR)) the health care team can utilize the proposed draft of the standardized personal medication list<sup>30</sup> to be used for Part D beneficiaries receiving MTM from a health care professional. The team can also reference the ASHP My Medicine List, available at [www.ashp.org/MyMedicineList](http://www.ashp.org/MyMedicineList), which was developed through a consensus process. It is anticipated that over time a standardized format that meets the needs of both patients and providers will be adopted universally. In addition to written versions, teams can build electronic versions capable of being integrated into electronic health records (EHRs).

### Need for Adoption of the Standardized Medication Record (List) and Sharing of the Appropriate Information by Both Patients and Health Care Professionals

Lack of use of the medication list by the patient and health care professionals hinders the widespread adoption of medication reconciliation. Patients must present the medication list to their health care professionals, and health care professionals should inquire about the medication list during care transitions. When both parties participate in this manner, widespread adoption of this integral part of the medication reconciliation process can be established.

The main barriers to the adoption of a medication list by patients are the perceived value, usability, and portability of the medication list. Through education, pharmacists and other health care professionals can convey to patients and caregivers the importance and value of carrying a medication list with them throughout the continuum of care. To ensure that the patient can easily access and use the medication list, the health care team should consider the “consumer’s vision, literacy level, language spoken, cognitive ability, and assistance of a provider or caregiver” when developing the list.<sup>28</sup> The size of the list and medium used also should be considered so it can be portable across all patient care settings. Engaging the patient in each of these areas can lead to the adoption and increased use of the medication list by the patient. In addition, stakeholder organizations can develop incentives, conduct social marketing, and educational campaigns to target this issue.

Health care professionals also must fully utilize the medication list and share appropriate information for optimal

<sup>c</sup> In institutional settings, the MAP could be established at the time the patient is discharged for use by the patient in medication self-management.<sup>13</sup>

success in medication reconciliation. Barriers to the use of the medication list by health care professionals include “duplicative and additive workflow, misaligned financial incentives across the continuum of care, low reliability of the current health care system, misperception of increased liability, lack of evidence to validate the importance of the medication list, and failure by the public to adopt the list.”<sup>28</sup> Potential resolutions to these barriers include:

- Incorporating the medication list into the patient’s health record.
- Implementing financial incentives for health care professionals who update and provide medication lists as part of medication reconciliation.
- Developing a culture of accountability.
- Promoting the adoption of legislation to ease provider liability.
- Conducting research that validates the use of the medication list.
- Promoting legislation and regulation that encourages the use of medication lists that can be integrated into an electronic health care record infrastructure.

In order for effective medication reconciliation to occur, providers, including pharmacists, need access to appropriate clinical information (e.g. diagnosis and laboratory values). The emerging health-information technology infrastructure will help to support connectivity between all entities.

The health care team should openly discuss these barriers as well as barriers specific to patient care settings to determine how to best address them.

### Lack of Established Best Practices

Pilot programs exploring the implementation of medication reconciliation have been conducted, but further research is needed to address the lack of established best practices for medication reconciliation. Research should focus on implementation strategies for medication reconciliation, integration of HIT-based innovations, addressing patient privacy concerns including requirements stemming from the Health Insurance Portability and Accountability Act (HIPAA), identification and development of best practices, and potential solutions to overcome barriers to providing medication reconciliation.<sup>3</sup> Results from future studies should be communicated to the entire health care community. It is anticipated that the research provided from such studies will translate into recommendations that can be developed into established practice models for various patient care settings. These models can then be adapted and adopted accordingly by the health care team to fit the needs of the patient and the institution.

## FOUNDATIONAL CONCEPTS FOR IMPROVING CARE TRANSITIONS THROUGH MEDICATION RECONCILIATION

Just as there are common barriers to the implementation of medication reconciliation, there also are foundational concepts for improving care transitions through medication reconciliation. The following foundational concepts outline the tenets of medication reconciliation and can be applied in collaboration with other health care professionals in the medication reconciliation process across the health care continuum. Health care professionals involved in medication reconciliation are expected to work together in implementing the foundational concepts by aligning standard operating procedures and assigning responsibilities in the overall process.<sup>31</sup>

The foundational concepts are intentionally broad to facilitate medication reconciliation in a variety of patient care settings. Implementing these foundational concepts will vary with respect to the patient care setting, resource availability, patient population, and HIT capacity.

Methods pertaining to the specific implementation of each foundational concept are beyond the scope of this publication. The foundational concepts are presented here as the underpinnings for the design and implementation of medication reconciliation in a variety of patient care settings.

### Foundational Concept 1: Medication reconciliation is a key process required to improve patient care and outcomes in care transitions.

Studies have shown that performing interventions such as medication reconciliation during care transitions can significantly improve patient care.<sup>2,24,25,32,33</sup> The benefits of providing medication reconciliation, such as reducing ADEs and medication-related errors, extend beyond the hospital environment as health care continues to evolve to include a variety of patient care settings and services. The health care team must keep pace with this increased complexity and provide medication reconciliation during each step of the patient care continuum to maintain continuity and improve patient safety.

*Owing to their involvement with patients throughout the health care continuum, pharmacists should take a lead role in the establishment and optimization of medication reconciliation during care transitions.*

**Foundational Concept 2: Medication reconciliation is a patient-centered process focusing on patient safety.**

Although medication reconciliation has been linked to accreditation standards, the focus should always be on the safety of the patient. The health care team should engage the patient in the process to address individual concerns and empower the patient to take a more active role in his or her medication management. Patient participation is fundamental in having the patient take ownership of his or her medication regimen and be accountable in the medication reconciliation process.

A patient-centric approach fosters a stronger rapport between the patient and health care professional during care transitions. One of the goals of establishing this relationship is to instill competence and confidence in the patient to update his or her medication list, adhere to the MAP, and properly manage the medication list when changes are made. These patient-oriented documents will facilitate communication during care transitions and serve as important tools for the safety of the patient.

*As one of the most accessible and trusted health care professionals, pharmacists are in the position to help improve patient safety by further developing the pharmacist-patient relationship and empowering the patient to take responsibility for his or her medication management.*

**Foundational Concept 3: Medication reconciliation requires an interdisciplinary, collaborative approach.**

An interdisciplinary, collaborative approach involves clearly defined roles within the medication reconciliation process. The definitions of these roles should include those of the patient and should be understood by each member of the health care team. Notably, participants in the process must “recognize that these responsibilities may change depending on the dependency or vulnerability of the patient (e.g., children or geriatric patients) or the transition of care being undertaken by the patient (i.e., admission, transfer, or discharge), thus requiring sites to develop clear policies about these roles and responsibilities and how they may change in various situations.”<sup>3</sup>

To ensure that clear policies and roles are developed and defined, it is important to engage higher administration in the process. Upper management can provide critical support and guidance and can remove barriers to help the health care team effectively implement medication reconciliation.<sup>3</sup> Higher administration and the health care team should collaborate across patient care settings to develop cooperative goals for medication reconciliation and use this shared vision to help shape policies and procedures. Modification of medication reconciliation policies and procedures may need to occur if obstacles are encountered.

*Medication reconciliation under the scope of MTM services is dependent upon pharmacists working collaboratively with physicians and other health care professionals to optimize medication use in accordance with evidence-based guidelines.<sup>13</sup> Pharmacists are primed to lead the health care team in collectively determining the roles and responsibilities of each member, including those of the patient.*

**Foundational Concept 4: Medication reconciliation must be based on a culture of accountability.**

With the variety of health disciplines involved in a patient's care, it is crucial that all members of the health care team and the patient be accountable and take responsibility for medication reconciliation. Established policies and procedures that outline each member's role and responsibilities during different care transitions set the framework for building a culture of accountability. Having the health care team periodically come together to review the roles and responsibilities can reinforce the health care team being accountable for executing a shared vision and reaching cooperative goals to improve patient safety. Patient care settings also can develop an incentive or reward system in order to align accountability with one's actions and to further instill a sense of ownership for each step in the process.

*Pharmacists, in collaboration with each member of the health care team, can foster a culture of accountability for providing medication reconciliation in accordance with the policies and procedures developed for a particular patient care setting.*

**Foundational Concept 5: Medication reconciliation should be standardized.**

The framework of the service model for MTM can and should be adopted by patient care settings to allow for a more standardized approach to the delivery of medication reconciliation across the health care continuum. A standardized approach will increase uniformity and potentially lead to widespread adoption by both patients and other health care professionals. By starting with a medication therapy review and then providing the patient with a personal medication list and MAP, the health care team can rely on a proven service model that can be easily adapted to each care episode. Using an established foundational MTM service model allows for research to be conducted and used across care transitions to help identify areas in need of improvement for patient safety.

*As a leader in MTM, the pharmacist can perform medication reconciliation using a standardized approach to the provision of MTM as a framework to reduce medication-related issues, improve health outcomes, and standardize the process of medication reconciliation. Medication Therapy Management in Pharmacy Practice: Core Elements of an MTM Service Model, Version 2.0, is a prime example of such a standardized approach.<sup>13</sup>*

**Foundational Concept 6: Effective medication reconciliation requires coordinated communication.**

To ensure a seamless transition for the patient, members of the health care team must communicate with each other in an effective and reliable manner. After medication reconciliation has been performed, documentation needs to be provided to the patient, current health care professional, and the next health care professional(s) in the patient's continuity of care. Standardized documents, such as the medication list and MAP, as well as any interventions or referrals made by the health care professional performing medication reconciliation, will facilitate effective, bidirectional communication. Members of the health care team should hold each other accountable for this documentation and communication transfer to ensure that any noted discrepancies are resolved in a timely fashion.

*During care transitions, the pharmacist or transferring health care professional(s) should provide comprehensive and accurate information to the health care professional(s) responsible for continuing or maintaining medication management in accordance with the patient's MAP.<sup>31</sup>*

**Foundational Concept 7: Medication reconciliation requires integration of health information technology solutions.**

Despite the increased use of EHRs and electronic MTM documentation forms, a disparity in communication among health care professionals still exists. The use of HIT can close this gap by expediting the transfer of information among health care professionals with increased reliability, consistency, and quality. This communication gap emphasizes the importance of electronic interoperability among community pharmacies, hospitals, physician offices/clinics, insurers, and other key stakeholders in order to improve the medication reconciliation process. Once interoperability in HIT becomes widespread, the consistency of the medication reconciliation process can vastly improve. Stakeholder organizations should convey to legislators the importance of interoperability across patient care settings in alignment with the 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act Final Rule for EHR certification.<sup>3</sup>

*Pharmacists have the technological knowledge and expertise of using multiple health information platforms that can assist in the development and standardization of medication reconciliation by integrating HIT solutions into patient care setting infrastructures. With this skill set, pharmacists should be included as "meaningful use" eligible providers to enhance the medication reconciliation process.*



**Foundational Concept 8: Medication reconciliation requires a process of continuous quality improvement.**

Medication reconciliation often involves a phased implementation to identify areas for quality improvement before expanding into the next area or service of a particular patient care setting. This process of continuous quality improvement should continue to be performed once medication reconciliation is fully implemented. It is the responsibility of the transferring health care professional to evaluate the completeness of the medication reconciliation process to ensure that continuity of care has been achieved.<sup>31</sup> At each step, the health care professional performing medication reconciliation should note areas for improvement and relay that information to the health care team for continuous quality improvement. As a patient-centered process focusing on patient safety, medication reconciliation also should include the patient for feedback regarding how to improve the current process. Systems should be in place to facilitate data collection from both patients and other health care professionals to measure and evaluate the success of the current process.

*Pharmacists, often the last health care professional the patient sees before the next care episode, are in the position to evaluate data and outcomes to ensure that medication reconciliation is achieving its intended outcome of improving patient safety.*

**CONCLUSION**

Since its introduction as a NPSG by The Joint Commission in 2005, medication reconciliation has continued to be a high priority in the assurance of patient safety during transitions of care. Although research on medication reconciliation has been increasing, more studies are needed on the successful implementation and adoption of medication reconciliation processes, with emphasis on the identification of current best practices for medication reconciliation. The information provided in this publication can be used to stimulate discussion among researchers and health care providers on how to best research and implement improvements in the medication reconciliation process. The application of the foundational concepts in this publication and future work on the enhancement of the medication reconciliation process will help to improve patient safety and patient care outcomes during care transitions.

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