Medications at Transitions and Clinical Handoffs (MATCH) Toolkit for Medication Reconciliation

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Contents

Introduction

Medication reconciliation is a complex process that affects all patients as they move through all health care settings. It is a comparison of the patient's current medication regimen against the physician's admission, transfer, and/or discharge orders to identify discrepancies. Any discrepancies noted are discussed with the prescriber, and the order is modified, if necessary. (A complete definition of medication reconciliation is available in the Appendix at pg. A-25)

Although this toolkit is based on processes developed in acute-care settings, the core processes, tools, and resources can be adapted for use in non-acute facilities.

Medication reconciliation is a process to decrease medication errors and patient harm in the following ways:

- Obtaining, verifying, and documenting the patient's current prescription and over-the-counter medications—including vitamins, supplements, eye drops, creams, ointments, and herbals—when he or she is admitted to the hospital or is seen in an outpatient setting.
- Considering the patient's pre-admission/home medication list when ordering medicines during a hospital encounter and continuing home medications as appropriate, and comparing the patient's pre-admission/home medication list to ordered medicines and treatment plans to identify unintended discrepancies (i.e., those not explained by the patient's clinical condition or formulary status).
- Verifying the patient's home medication list and discussing unintended discrepancies with the physician for resolution.
- Providing an updated medication list and communicating the importance of managing medication information to the patient when he or she is discharged from the hospital or at the end of an outpatient encounter.

The effectiveness of a sound medication reconciliation process within and among care settings is an important component of patient safety goals. While many health care providers already have medication reconciliation processes in place, this toolkit helps facilitate a review and improvement of current practices to strengthen the process with the result of improved patient safety.

This toolkit is based on the Medications at Transitions and Clinical Handoffs (MATCH) Web site developed through the support of the Agency for Healthcare Research and Quality (AHRQ) and collaboration between Northwestern Memorial Hospital, Northwestern University Feinberg School of Medicine in Chicago, Illinois, and The Joint Commission. It is available at http://www.nmh.org/ (search for "toolkit"). In addition to elements from the MATCH Web site, this toolkit also incorporates the experiences and lessons learned from staff of facilities that have implemented MATCH and facilities that received technical asssistance on MATCH through the AHRQ Quality Improvement Organization (QIO) Learning Network.

While your facility may already have a medication reconciliation process in place, this toolkit will help you evaluate the effectiveness of the existing process, as well as identify and respond to any gaps. It promotes a successful approach to medication management and reconciliation that emphasizes standardization of the process for doctors, nurses, and pharmacists within the facility to document

and confirm a patient's home medication list upon admission. It also emphasizes the need to clearly define roles and responsibilities of clinical staff. Standardizing the process for collecting home medication lists, as well as the location and means of documenting this information, ensures that the most accurate, complete medication history is documented for each patient; all the inpatient and home medications are reconciled; and the information is accessible to the entire health team.

How to Use This Toolkit

This toolkit provides a step-by-step guide to improving the medication reconciliation process. Users are encouraged to follow the steps in the order presented. Each step builds upon the next to present a systematic methodology for critically reviewing and improving the medication reconciliation processes.

This toolkit is divided into seven components to assist with improvement:

1. Building the Project Foundation: Gaining Leadership Support within the Organization
2. Building the Project Foundation: Project Teams and Scope
3. Developing Change: Designing the Medication Reconciliation Process
4. Developing and Pilot Testing Change: Implementing the Medication Reconciliation Process
5. Education and Training
6. Assessment and Process Evaluation
7. High-Risk Situations for Medication Reconciliation

The Appendix also functions as a Work Plan to implement medication reconciliation in your facility according to the MATCH principles. The Work Plan is available as a standalone file on the AHRQ Web site at http://www.ahrq.gov/qual/match/ so you can print multiple copies for use with leadership, design, and implementation teams.

Chapter 1: Building the Project Foundation: Gaining Leadership Support Within the Organization

An essential first step in implementing a successful medication reconciliation performance improvement project is to gain support within the organization. To be successful, you need the support of leadership, physicians, nurses, pharmacists, and other stakeholders that play a role in medication management practices.

This section presents talking points for making a sound argument for undertaking a medication reconciliation project. Making the connection to other ongoing patient safety initiatives, regulatory/accreditation requirements, and operational efficiencies are important elements that can help you obtain support. Talking points should address all or part of the following components:

- Medication reconciliation as a patient safety issue
- Resource justification to produce a successful project
- Linking medication reconciliation with other initiatives

Medication Reconciliation as a Patient Safety Issue

A review of the literature notes several decades worth of articles describing medication discrepancies or lack of concordance, while few have addressed solutions to the problem. A publication in 2001 by Rozich and Resar[1] quantified discrepancies during key transition points such as hospital admission, intra-hospital transfer, and discharge. Additional studies have validated vulnerabilities during these transition points:

- Variances between medications patients were taking prior to admission and their admission orders ranged from 30 percent to 70 percent in two literature reviews.[2,3]
- A study of medication reconciliation errors and risk factors at hospital admission noted that 36 percent of patients had errors in their admission medication orders with the majority of these occurring during the medication history gathering phase.[4]
- A study utilized 12 years of administrative records of all hospitalizations and outpatient prescriptions for almost 400,000 patients age 66 older to determine (1) continuous use of at least 1 of 5 medication classes and (2) failure to renew prescriptions within 90 days post-hospital discharge.[5] Patients prescribed chronic medications were at higher risk for unintentional discontinuation following hospital discharge, and intensive care unit (ICU) stay during hospitalization increased the risk of medication discontinuation even further.

Findings from these studies as well as many others reinforce the need for a structured process of comparison and resolution—such as medication reconciliation—to help ensure patient safety and medication continuity during care transitions.

Resource Justification to Produce a Successful Project

Most health care facilities today are operating with limited resources, including financial and staffing limitations. A sound project plan helps to identify roles, responsibilities, and staff resources. A strong business case outlines the financial incentives for the facility.

Examples of two models to calculate potential gross savings of a newly designed or improved medication reconciliation process are provided. Specifically, the first model demonstrates a cost-benefit analysis of reducing preventable adverse drug events (ADEs); the second model demonstrates a cost-benefit analysis of the use of pharmacists or other staff to perform medication reconciliation.

The first is a financial model developed by Steven B. Meisel, PharmD, Director of Medication Safety at Fairview Health Services in Minneapolis, Minnesota. This example is also contained on the MATCH Web site and reproduced with permission in this toolkit.

Published data from the Institute of Medicine[6] and others demonstrate discrepancies in medication regimens among people admitted to health care facilities, and some of those discrepancies will lead to an ADE that could seriously harm a patient. The estimated cost of a preventable ADE was $4,800 per event, based on a 1997 study done by Bates et al.[7] Some organizations have calculated an ADE cost as high as $10,375.[8] Dr. Meisel's internal data show that an effective medication reconciliation process can detect and avert up to 85 percent of medication discrepancies. Conducting effective medication reconciliation on admission is estimated to take 15 to 30 minutes. With these assumptions in mind, Meisel outlines the calculations shown in Model 1.

Model 1: Financial Model for Medication Reconciliation

	Number of discrepancies per patient
X	Number of patients per year that one person can reconcile
X	Percent of patients with discrepancies that would result in an ADE
X	Percent effectiveness of process
X	Cost of an average ADE
=	Annual gross cost savings
-	Salary of Employee
=	Annual Net Savings

Source: Presented by Steven B. Meisel, PharmD, at The Joint Commission/Institute for Safe Medication Practices Medication Reconciliation Conference, Nov. 14, 2005.

To calculate the net cost savings, subtract the cost of the anticipated resource investment (staff, equipment, IT) from the gross cost savings. Net savings will vary depending on the type of staff designated to perform medication reconciliation (nurse, pharmacist, pharmacy technician, or physician), as shown in Table 1 (pg. 5).

Table 1: Net Savings for Medication Reconciliation

	1.5 (discrepancies per patient admitted to Fairview)
X	6000 patients (average of 20 minutes/patient to complete medication reconciliation)
X	0.01 (1% of Fairview admissions experience discrepancies that would result in an ADE)
X	0.85 (85% of discrepancies avoided through medication reconciliation process)
X	$2500 (conservative cost of an ADE)
=	$191,250 annual gross savings
-	$45,000 (salary and benefits of an incremental pharmacy technician)
=	$146,250 annual net savings (325% return on investment in a new staff member)

The second model, developed by Steve Rough, M.S., R.Ph., Director of Pharmacy at the University of Wisconsin Hospital and Clinics, includes a template for pharmacist justification to collect and reconcile medication history on admission to a facility. Table 2 (pg. 6), indicates average time requirements for pharmacists performing various levels of interaction with patients, records, and interventions.

Model 2 is an adaptation of the template based on sample data collection at Northwestern Memorial Hospital.

Model 2: Pharmacist Justification for Medication History Collection and Reconciliation on Admission

Average # of discrepancies/medication errors per patient	2.2
Number of inpatient admissions per year	43,312 (2006)
Potential medication errors per year that can be avoided	95,286 (2.2 x 43,312)
Percent of medications that were potentially harmful to patient during hospitalization*	2.5%
Number of harmful medication errors avoided per year	2,382
Annual gross savings to hospital ($4,800 per harmful error)*	$11,434,320
Average pharmacist time requirement per admission*	21 minutes
Additional pharmacist FTE needed to provide service (based on 115 admissions daily)	~ 5 FTE
Cost of additional pharmacist FTE (salary + benefits)	$625,000
Annual Net Savings/Cost Avoidance	**$11.4M**

Source: This template was presented by Steve Rough, MS, RPh at the American Society of Health-System Pharmacists Summer Meeting, June 26, 2006. Used with permission.

Table 2: Time Requirements for Pharmacist-Obtained Medication Histories and Reconciliation*

Average time to obtain medication history	9 minutes/patient
Average time to obtain medication history and provide necessary interventions/documentation	12 minutes/patient
Average time for chart review prior to medication history, medication history interview and necessary interventions/documentation	21 minutes/patient

*Based on an evaluation of 651 general medicine patients interviewed by a research pharmacist at Northwestern Memorial Hospital, Chicago, IL, who obtained a complete medication history and reconciled medications with other documented medication histories and current orders.

These templates can be applied to other disciplines, as well as other transitions in care, using published error data or by looking at error data at your own institution.

Linking Medication Reconciliation with Other Initiatives

Making the connection to other ongoing quality and patient safety initiatives, regulatory/accreditation requirements, and operational efficiencies is important for garnering support and achieving a successful medication reconciliation process. Other initiatives that can be linked to your medication reconciliation efforts may include: The Joint Commission (TJC) National Patient Safety Goals (NPSGs), Centers for Medicare and Medicaid Services (CMS) process of care (core) measures, the Survey of Patients Hospital Experience, hospital readmissions, and other national quality improvement activities.

The Joint Commission Accreditation and Other National Quality Improvement Activities. TJC continues to recognize the importance of medication reconciliation, despite the need for several iterations to its NPSGs. The revised NPSG 03.06.01, which went into effect July 1, 2011, requires facilities to "maintain and communicate accurate patient medication information."[9] This revised goal preserves the intent of the original NPSG while creating a more reasonable approach to tailor the process to meet specific medication management needs for a patient within a particular care setting. The MATCH toolkit can help facilities work toward meeting this patient safety goal.

Recent revisions to TJC NPSG take into account feedback from accredited organizations of the complexity of meeting the retired goal #8. Scoring for NPSG 03.06.01 resumed July 2011, and the elements of performance are noted below:

- Obtain and document or verify patient's medication list when admitted or seen as an outpatient. Medications to inquire about should include current prescription and over-the-counter (OTC) medications, such as vitamins, supplements, eye drops, creams, ointments, and herbals.
- Define the types of medication information to be collected in non-24-hour settings and different patient circumstances.

- Compare medication information the patient brought to the hospital with those ordered to identify unintended discrepancies (e.g., those not explained by the patient's clinical condition or formulary status). A qualified individual conducts the comparison, per TJC requirements. Discuss unintended discrepancies with the physician for resolution.
- Provide the patient/family with written information on the medications the patient should be taking when discharged from the hospital, or at the end of an outpatient encounter.
- Explain the importance of managing medication information to the patient when discharged or at the end of an outpatient encounter. Instruct the patient to:
  - Give a list to their primary care provider.
  - Update the list when medications are discontinued, doses are changed, or new medications (including OTC medications) are added.
  - Carry medication information at all times in case of an emergency.

Centers for Medicare and Medicaid Services Process of Care (Core) Measures. Process of care (core) measures demonstrate how often hospitals adhere to recommended treatments for certain medical conditions, such as acute myocardial infarction, heart failure, and pneumonia, or for surgical procedures. Hospital performance is publicly reported on the CMS Web site Hospital Compare (http://www.hospitalcompare.hhs.gov/). Soon, several of these measures will move from a pay-for-reporting structure to reimbursement based on performance (value-based purchasing), rewarding hospitals for their achievements as well as improvements. Higher performance scores may be realized by applying medication reconciliation elements, for example:

- Incorporating a reconciled medication list into the discharge instructions for heart failure patients.
- Obtaining a vaccination history to determine eligibility to receive influenza vaccination or pneumococcal vaccination.
- Determining whether patients were taking a beta-blocker prior to surgery and reconciling post-operative orders to ensure beta-blocker continuation after surgery.

Survey of Patients' Hospital Experience. Hospitals use the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, which is the first national, standardized, publicly reported survey of patients' perspectives of hospital care. While many hospitals have collected information on patient satisfaction for their own internal use, until HCAHPS there was no national standard for collecting and publicly reporting information about patient experience of care that allowed valid comparisons to be made across hospitals locally, regionally, and nationally. In the future, other health care settings (e.g., nursing homes, home health) will have similar requirements.

HCAHPS contains 18 patient perspectives on care and patient rating items that encompass eight key topics: Communication with doctors, communication with nurses, responsiveness of hospital staff, pain management, communication about medicines, discharge information, cleanliness of the hospital environment, and quietness of the hospital environment.

Sample survey questions pertaining to medications include:

- During this hospital stay, did you need medicine for pain?
- During this hospital stay, how often was your pain well controlled?
- During this hospital stay, were you given any medicine that you had not taken before?
- Before giving you any new medicine, how often did hospital staff tell you what the medicine was for?
- Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?

A complete list of HCAHPS survey questions is at http://www.hcahpsonline.org/home.aspx.

Meaningful Use of Electronic Health Records. Many health care providers utilize paper-based medical record systems. New government incentives and programs are encouraging health care providers across the country to convert to or adopt electronic health records (EHRs). Specifically, the Health Information Technology for Economic and Clinical Health (HITECH) Act provides the U.S. Department of Health and Human Services (HHS) with the authority to establish programs to improve health care quality, safety, and efficiency through the promotion of health information technology (IT), including EHRs and private and secure electronic health information exchange. Under HITECH, eligible health care professionals and hospitals can qualify for Medicare and Medicaid incentive payments when they adopt certified EHR technology and use it to achieve specified objectives. With respect to EHRs, health care providers are required to succeed in each of these three areas:

1. Gathering of complete and accurate information.
2. Achieving improved access to patient information.
3. Empowering patients.

The MATCH toolkit can be implemented through an EHR (see examples in Chapter 3, pgs. 28-33) or to help health care providers meet these goals. It provides a framework to capture complete and accurate medication information, improves communication of that information among health care providers, and empowers the patient to know what medications are needed after leaving a care setting.

For more specific details on Meaningful Use, visit the HHS Office of the National Coordinator for Health IT (ONC) Web site at http://healthit.hhs.gov/portal/server.pt?open=512&objID=2996&mode=2. The ONC Health IT Web site also includes information on how to qualify for Medicare/Medicaid incentive payments related to Meaningful Use.

Reducing Readmissions and Other National Initiatives. A successful business case should help leadership make the connection between clinical quality, medication reconciliation, and medication safety by highlighting outcomes such as a reduction of ADEs or hospital readmissions due to medication discrepancies carried across the continuum of care. In 2011, HHS launched the largest national quality improvement initiative in the history of our health system. The Partnership for Patients initiative has challenged hospitals to improve the quality, safety, and affordability of health care for all Americans. This public-private partnership has two main goals: To keep patients from getting injured or sicker from the care they receive by reducing preventable hospital acquired conditions and to help patients heal without complication by improving the transition process. More information on the Partnership for Patients is available at http://www.healthcare.gov/compare/partnership-for-patients/.

Chapter 1 Lessons Learned

Lessons learned from staff of facilities that have implemented MATCH and facilities that received technical assistance on MATCH through the AHRQ QIO Learning Network include:

- Leaders who attended MATCH trainings were able to achieve a high level of success as well as generate excitement around their medication reconciliation initiatives in their facilities.
- Leadership support should encompass more than an organizational endorsement; the support requires a sustained commitment of resources and time through the continuum of care.
- A leadership team with continual involvement, focus, and commitment is integral to the success of a medication reconciliation project.
- A multidisciplinary team, including patient involvement, ensures the project design incorporates diverse perspectives and practice settings.
- The leadership team should promote the concepts of this toolkit into culture and practice for safe medication management in the facility.
- Follow the steps in the toolkit sequentially to establish a foundation for the project. Overlooking one step can hinder progress toward the established goal(s).

Chapter 2: Building the Project Foundation: Project Teams and Scope

Once the business case has been made for medication reconciliation and leadership support has been obtained, the next steps toward building the foundation for your project include:

1. Identify and assemble an interdisciplinary team.
2. Create a flowchart of the current medication reconciliation process.
3. Develop a project charter or work plan for improvements.
4. Establish a measurement strategy.

The above steps build on one another and are essential in establishing a solid foundation to support improvement efforts.

Step 1: Identify and Assemble an Interdisciplinary Team

Assembling a medication reconciliation team is an important first step. The team will be responsible for reviewing the current medication reconciliation process, identifying gaps and opportunities for improvement, and taking the lead on process design/re-design within the health care facility.

The medication reconciliation team may be subdivided into three core groups:

- Leadership Team
- Design Team
- Additional Stakeholders

A "stakeholder's analysis" helps identify key people in the facility who will be affected by the project; these individuals can range from hospital leadership to frontline staff to patients. List each stakeholder's role, impact, and interest in the project.

Roles and Responsibilities of Team Members

To gain support, team members must be clear about their role on the committee; being specific about the expectations of the project will allow each member to decide if they can handle the assignment before it is given. This will also allow each member to make a commitment to the team and carry out this responsibility to the end. Examples of establishing defined roles may include: conducting baseline audits, collecting and analyzing subsequent data, and leading the task of flowcharting.

Leadership Team. The Leadership Team provides oversight for the medication reconciliation project. The Leadership Team should include Executive Sponsors, Project Sponsors, and Improvement Leaders. The characteristics, roles, and responsibilities include the following:

Executive Sponsor(s):

- Member(s) of the senior management team (e.g., physician, nursing, and executive leaders in the organization).
- Provide executive oversight.
- Provide guidance and accountability and endorse recommendations.
- Identify and remove organizational barriers.
- May represent inpatient and outpatient practice settings depending on the project's scope; representation from both settings may help bridge the gap during transitions from hospital to home.

Project Sponsor(s):

- Leader(s) from various disciplines such as the pharmacy director, nursing director, hospitalists, department chiefs, director of information systems, chair of the pharmacy and therapeutics committee, etc.
- Provide support for a timely and successful implementation.
- Provide insights from the perspective of the practices they represent.
- Remove discipline-specific barriers.
- Approve final recommendations.

Improvement Leader(s):

- Possess operational and quality improvement expertise as well as patient safety and medication management knowledge to lead medication reconciliation efforts.
- Ensure project goals and training are met within established timeframes.
- Help integrate operational changes into clinical workflow.

Design Team. The Design Team will play an integral role in the development or redesign of the medication reconciliation process. When assembling this team, it is important to include individuals with actual knowledge of the current medication reconciliation process. The Design Team should be comprised of multidisciplinary members with a strong knowledge of current workflow, recognition of the problem, and buy-in for improvement. Members may include:

- Physicians, nurses, pharmacists, discharge planners, and others representing areas of focus (e.g., inpatient units, outpatient clinics, procedural areas).
- Representatives from information systems, the emergency department, and patient safety and quality departments.
- Patients, to ensure the design is approached from their perspective.

The Design Team's makeup may evolve over time as you work through the process and determine additional resource requirements

The tool "Questions to Ask When Developing the Design Team and Rationale" is located in the Appendix (pg. A-2).

Additional Stakeholders. Additional stakeholders who will be directly or indirectly involved with enforcement of the new or redesigned process once implemented should be engaged early on. Engagement of these key stakeholders is important to gain facility wide support for the medication reconciliation project. Additional stakeholders in the facility may include:

- Managers or directors that oversee frontline staff to ensure final design is carried out.
- Department chiefs, chairs, and clinical program leaders overseeing physician participation in the design and implementation.
- Leaders from medical records to ensure forms and documentation are consistent with hospital policies.
- Individuals overseeing quality, licensure, and accreditation to ensure the process meets regulatory requirements.
- Frontline staff, quality committees, patients, etc., that may require periodic communication and progress reports in preparation for implementation.

Establish a reporting mechanism to keep stakeholders informed on the team's progress. It will be easier to understand barriers from their perspectives and work to develop solutions early on than it will be much later during rollout and implementation.

Step 2: Create a Flowchart of the Current Medication Reconciliation Process

The second step in creating an infrastructure to support improvement of the medication reconciliation process is to create a flowchart of the current process. A flowchart serves as a guide for developing the charter (see Step 3, pg. 17). In addition, it may help you determine whether to design a new process or redesign the existing medication reconciliation process.

A flowchart outlines current workflow and helps identify:

- Successful medication reconciliation practices.
- Current roles and responsibilities for each discipline at admission, transfer, and discharge.
- Potential failures.
- Unnecessary redundancies and gaps in the process.

A flowchart of current practices can be modified during the design or redesign to highlight:

- Elimination of unnecessary steps (i.e., simplification of process).
- Defining roles and responsibilities in policy and procedure.
- Standardization across disciplines and/or practice settings.
- How new design steps integrate into existing workflow.

The tool "Develop a Flowchart of Your Current Medication Reconciliation Process" in the Appendix (pg. A-12) provides questions to guide you in developing the flow diagram for medication reconciliation at each critical handoff point: admission, intra-facility transfer, and discharge.

Benefits of Creating a Flowchart

After creating a flowchart of current practices, facilities reported the following findings:

- Multiple disciplines obtained independent medication histories from the patient.
- Each independent medication history was documented in various discipline-dependent sections throughout the medical record.
- No prompts were in place to cross-reference information or documentation.
- Multiple medication histories were often conflicting.

The sample process maps at Figure 1 (pg. 15) and Figure 2 (pg. 16) demonstrate how flowcharting the process can highlight and identify redundancies as well as gaps in the medication reconciliation process.

Figure 1: Medication Reconciliation Upon Admission: High-Level Process Map Before Redesign

- Multiple, independent medication histories obtained from patient and documented throughout the medical record.
- No prompts to cross-reference documentation, which may be conflicting.

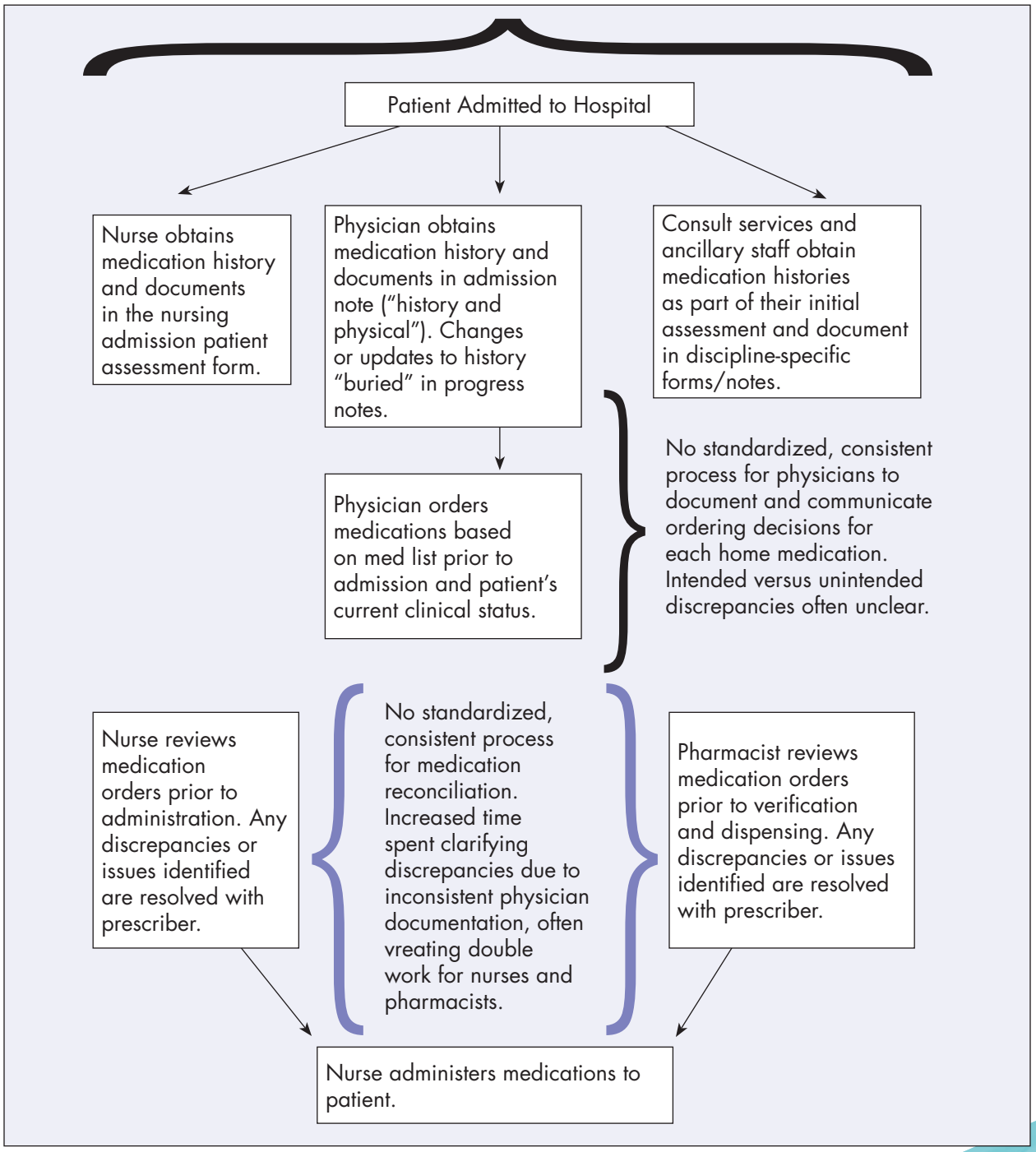
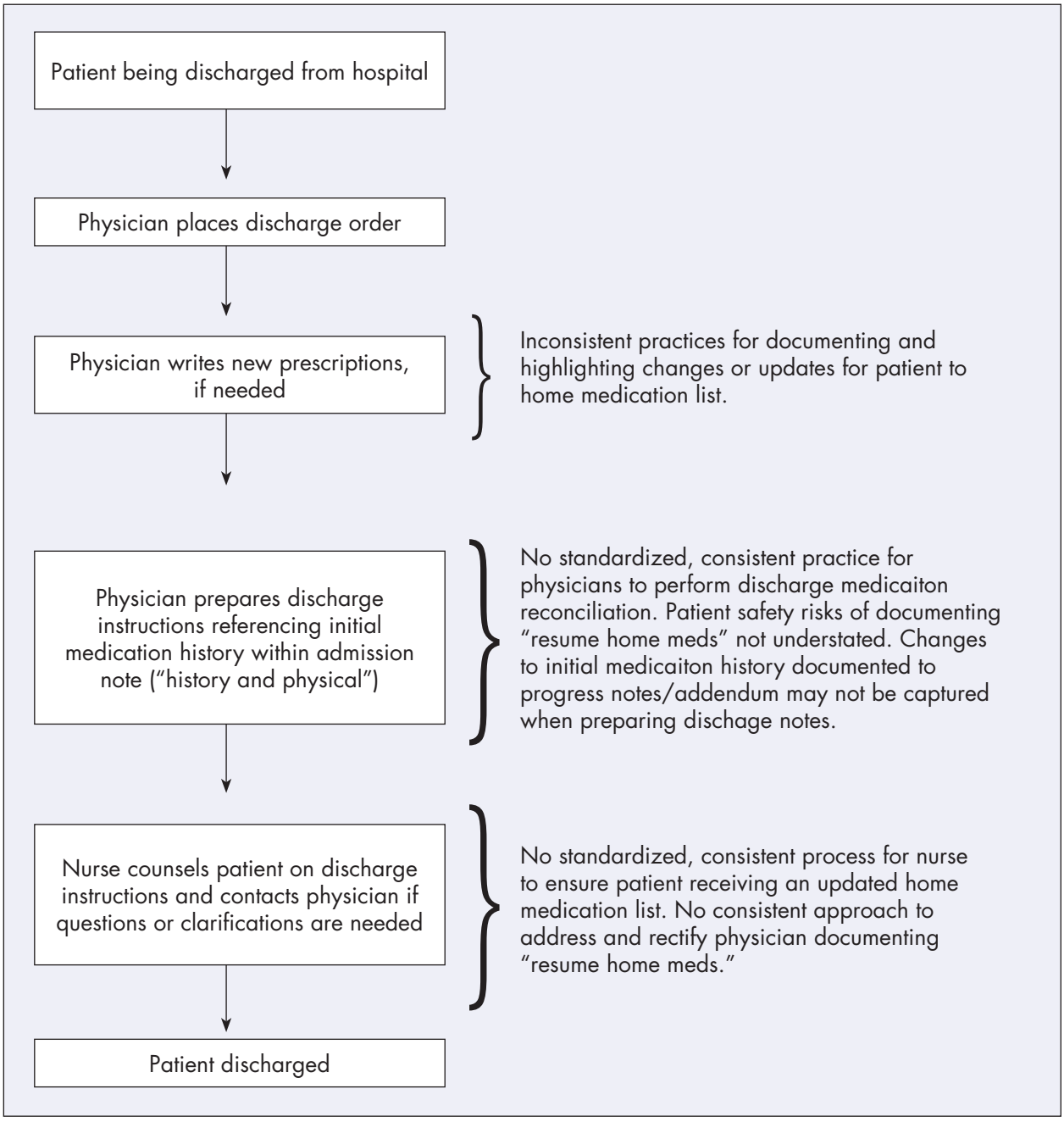


Figure 2: Medication Reconciliation Upon Discharge High-Level Process Map Before Redesign



Step 3: Develop a Project Charter or Work Plan for Improvements

A project charter provides a summary and high-level roadmap for your work. The importance of utilizing a charter throughout the project is often underappreciated, but its use is paramount in keeping the project focused, and it provides a work plan for the design team. The charter will be a dynamic document that encompasses the following elements:

- Problem statement.
- Goals and objectives.
- Regulatory and accreditation requirements.
- Project scope.
- System capabilities/deliverables.
- Resources needed for a successful project.
- Project milestones (achievements throughout the project) and timeline.

See "Developing Your Charter" in the Appendix (pg. A-7) for a template charter that can be used as a starting point for the project.

Problem Statement. A problem statement is a concise description of the issues that need to be addressed by the team and should be presented to them or created by them. A good problem statement should consider the nature of the problem and how it impacts patient care.

Goals and Objectives. The team should establish goals and objectives that directly relate to the problem statement. This component of the charter will keep the team focused on the strategies that were determined by the design team to improve medication reconciliation. Goals should be specific, measurable, attainable, realistic, and timely. A template for recording goals and objectives is available in the Appendix (pg. A-9)

Regulatory and Accreditation Requirements. While developing the medication reconciliation charter, medication policies and procedures and regulatory and accreditation requirements must be considered. Ensure that:

- Individuals responsible for accreditation and licensure in your organization are integrated into the team.
- The process is designed to meet these requirements.
- The design plan incorporates practice settings affected by these criteria.

Project Scope. Before determining the scope of the project, you may find it helpful to create a list of all areas within your facility where patients receive medications. Create a list of practice settings that administer medications, and organize it by the type of patients they serve (inpatient, outpatient, both) and whether they admit and/or discharge patients to assist in prioritization.

"Determining the Scope of the Project," located in the Appendix (pg. A-8), will assist in defining the scope of the project.

Additional questions to consider when determining the scope of the medication reconciliation project include:

- Should the project encompass the entire facility, one practice setting, or several departments?
- Should the project focus on one specific area of identified risk (i.e., inpatient only) or more?
- Should the project focus on one service or unit at a time or more?
- Should the focus start with an admission process then move to discharge or should your project concentrate on both at the same time?
- Should the initial scope include patients admitted through the emergency department or from procedural areas, such as ambulatory surgery?

These questions can guide the development of the scope and charter of the project based on the individuality of the facility and areas with the greatest need.

System Capabilities/Deliverables. The team should understand system level capabilities and/or barriers that may impact the project and use the charter to communicate this information to all team members. An example of this may be leveraging the charter for communicating upcoming conversions from a paper medical record to an EHR or EHR updates and how the medication reconciliation process integrates into these conversations and necessary steps to be taken to make this happen. The charter also outlines upcoming deliverable dates to keep the medication reconciliation project on track.

Resources Needed for a Successful Project. As you begin the journey to improve your facility's medication reconciliation process, you should address resource support with the leadership team from the beginning of the project. Depending on the area of focus, process design or redesign plans, budget constraints, and resource availability, it is crucial to think through each discipline's role (currently and ideally), current workflow practices, and how medication reconciliation can be better integrated in a more efficient, effective manner. For example, for pre-scheduled surgeries that will result in a planned admission post-operatively, is there a better way to obtain a patient's current medication information during presurgical workups and medical clearance appointments, rather than trying to gather this type of information on the day the patient presents for surgery, when they may be anxious about their procedure?

Project Milestones and Timeline. Milestones are frequently used to monitor progress. Broad project milestones can be developed initially and modified as the team begins to better understand the issues at hand. Reviewing project timelines and milestones achieved also keeps the team energized and focused as progress is made.

Step 4: Establish a Measurement Strategy

At the start of the project, create a list of data that will be needed and the departments and people who should be in charge of developing the measurement strategy. For organizations with an established EHR, inviting a representative from your facility's IT department from the beginning of project planning is strongly advised. Share with the IT representative the list of data needed to drive decisions regarding the needs of the facility and staff, or to understand where to direct the project

attention first to explore ways to leverage your EHR to collect this type of information electronically. Data that can serve as a starting point could be the facility's readmission rates (the Finance department usually creates these data), ADEs for the facility (the Pharmacy department usually collects these data), or data specific to the facility's current process for medication reconciliation. Consider using the audit tool and measures that are used in this toolkit. Chapter 6 (pg. 49) reviews project metrics in greater detail.

Collecting baseline data will allow you to determine where to focus the project initially. Your initial proposal should include baseline data you collected in order to strengthen and support the business case you present to senior leadership.

Integrating team members who can assist with performance measurement will allow each team member to carry out their role in the project with ease.

Chapter 2 Lessons Learned

Lessons learned from staff of facilities that have implemented MATCH and facilities that received technical assistance on MATCH through the AHRQ QIO Learning Network include:

- A multidisciplinary team fostered a facility-wide team environment for process improvements. Frontline staff felt more "ownership" and involvement in the change.
- Facilities that developed a project charter, articulated a problem statement, and set goals and objectives were better prepared to stay on task with the project.
- Using the project charter to provide periodic reports to the leadership team supported the dynamic use of the document
- Including a review of the project charter at each project meeting kept the team on task.
- Process mapping is a critical element for success. Project participants found that walking through the medication reconciliation process and confirming each step with frontline staff was an eye-opening experience. Many times the process that is on paper is not what is being done on the ward, and identification of workarounds is pivotal.
- Participants who used this toolkit found staff workarounds of a process were not necessarily negative findings.
- Determining the size or scope of the project should be done early in the planning stage. Keeping the initial project focus reasonable in size and scope is pivotal to the success of the project. Broad scale efforts consume many resources and can make it difficult to secure and maintain leadership support. Implementing a successful project on a limited scale often leads to a larger effort.
- Measurement of baseline data was a necessary and crucial element of the project. This helped identify areas of focus, explored depth of issues, and provided the team with a realistic idea of the improvements they were proposing.

Chapter 3: Developing Change: Designing the Medication Reconciliation Process

Many organizations are uncertain about how to proceed with designing a workable solution for medication reconciliation. This chapter provides helpful information and tools for designing or redesigning a medication reconciliation process including:

- Guiding principles for designing a successful medication reconciliation process.
- "One Source of Truth."
- Defining roles and responsibilities for medication reconciliation.
- Integrating medication reconciliation into existing workflow.
- Flowcharting the design or redesign for medication reconciliation.
- Designing the process—considerations for various practice settings.
- Examples of electronic, paper-based, or hybrid (electronic plus paper-based) systems.

Guiding Principles for Designing a Successful Medication Reconciliation Process

These essential principles should be considered as you design the medication reconciliation process:

- Develop a single medication list ("One Source of Truth"), shared by all disciplines for documenting the patient's current medications.
- Clearly define roles and responsibilities for each discipline involved in medication reconciliation.
- Standardize and simplify the medication reconciliation process throughout the organization, and eliminate unnecessary redundancies (the flowchart of the current process can help you identify these redundancies).
- Make the right thing to do the easiest thing to do within the patterns of normal practice.
- Develop effective prompts or reminders for consistent behavior if true forcing functions (i.e., required reconciliation step presented to the physician during admission order entry within an EHR are not possible.
- Educate patients and their families or caregivers on medication reconciliation and the important role they play in the process.
- Ensure process design meets all pertinent local laws or regulatory requirements. Linking medication reconciliation to other strategic goals (e.g., heart failure publicly reported process of care measures related to discharge instructions on medications) and/or other initiatives (e.g., a hospital project working on improving patient satisfaction related to pain

management or patient communication regarding medications) when appropriate can also strengthen the importance of this process.

"One Source of Truth"

Medication reconciliation process design should center on the concept of a single list to document patient's current medications. This will be referred to as "One Source of Truth." This list should be shared and utilized by all physicians, nurses, pharmacists, and others caring for the patient.

- All disciplines caring for the patient should be working from the same medication list, regardless of the format (electronic or paper-based).
- The list should be centrally located and easily visible within the patient's medical record.
- This list becomes the reference point for ordering decisions and reconciliation, screening medications to be administered during a procedure/episode of care, and determining the patient's medication regimen upon discharge.
- Each discipline should have the ability to update the home medications as new or more reliable information becomes available.
- In a paper-based format, old or modified information could be crossed out, new information can be added, and each change can be dated, timed, and signed.
- In an electronic system, changes would be date and time stamped, and the prescriber's name automatically captured. If the patient's medication list requires changes at discharge, updated information will remain stored for review and modification for future admissions.

Samples of "One Source of Truth" to document and verify a patient's current medications upon admission to the organization are in Figure 3 (pg. 23) and Figure 4 (pg. 24).

Figure 3: Medication Reconciliation Upon Admission: High-Level Process Map After Redesign

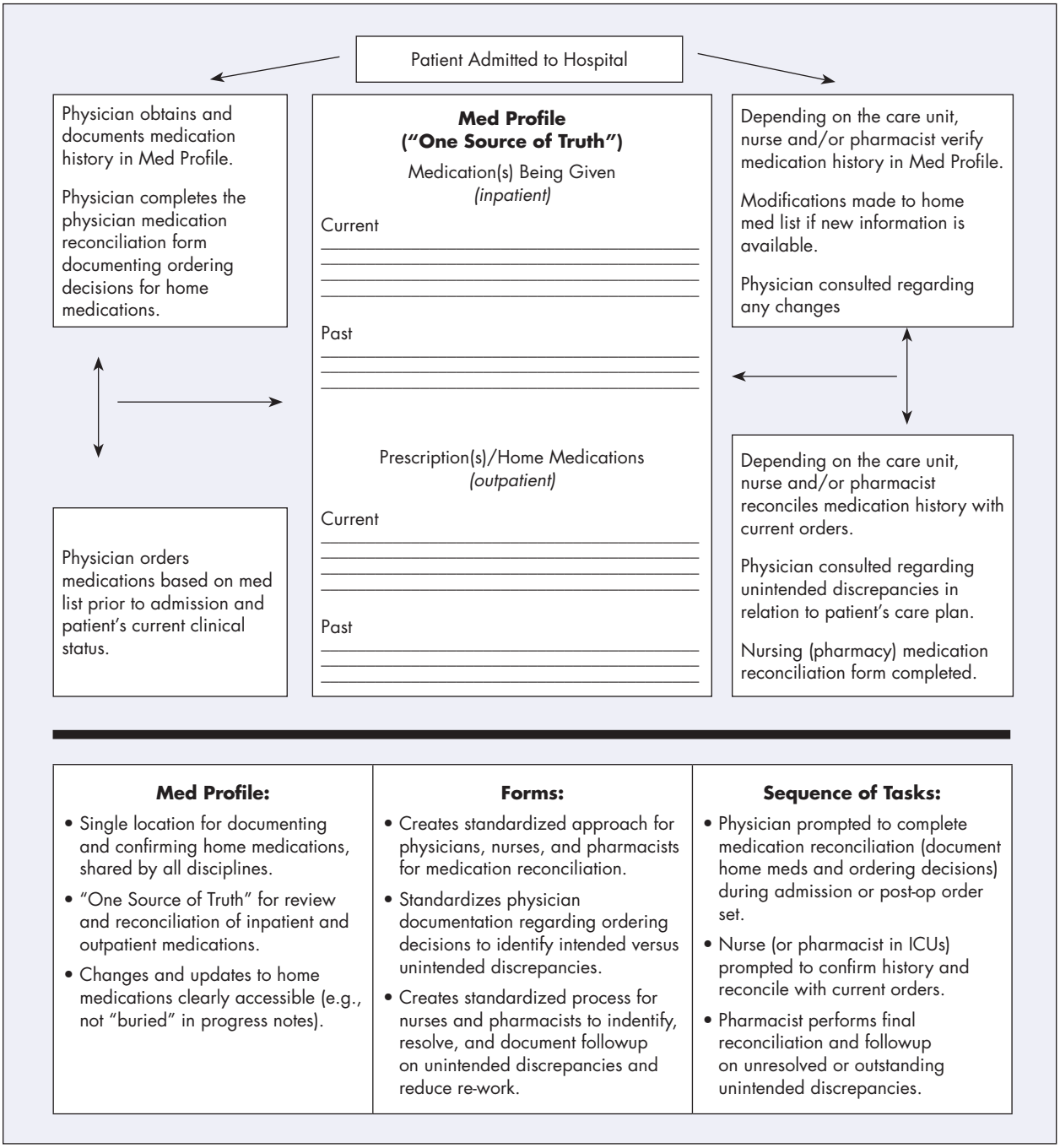
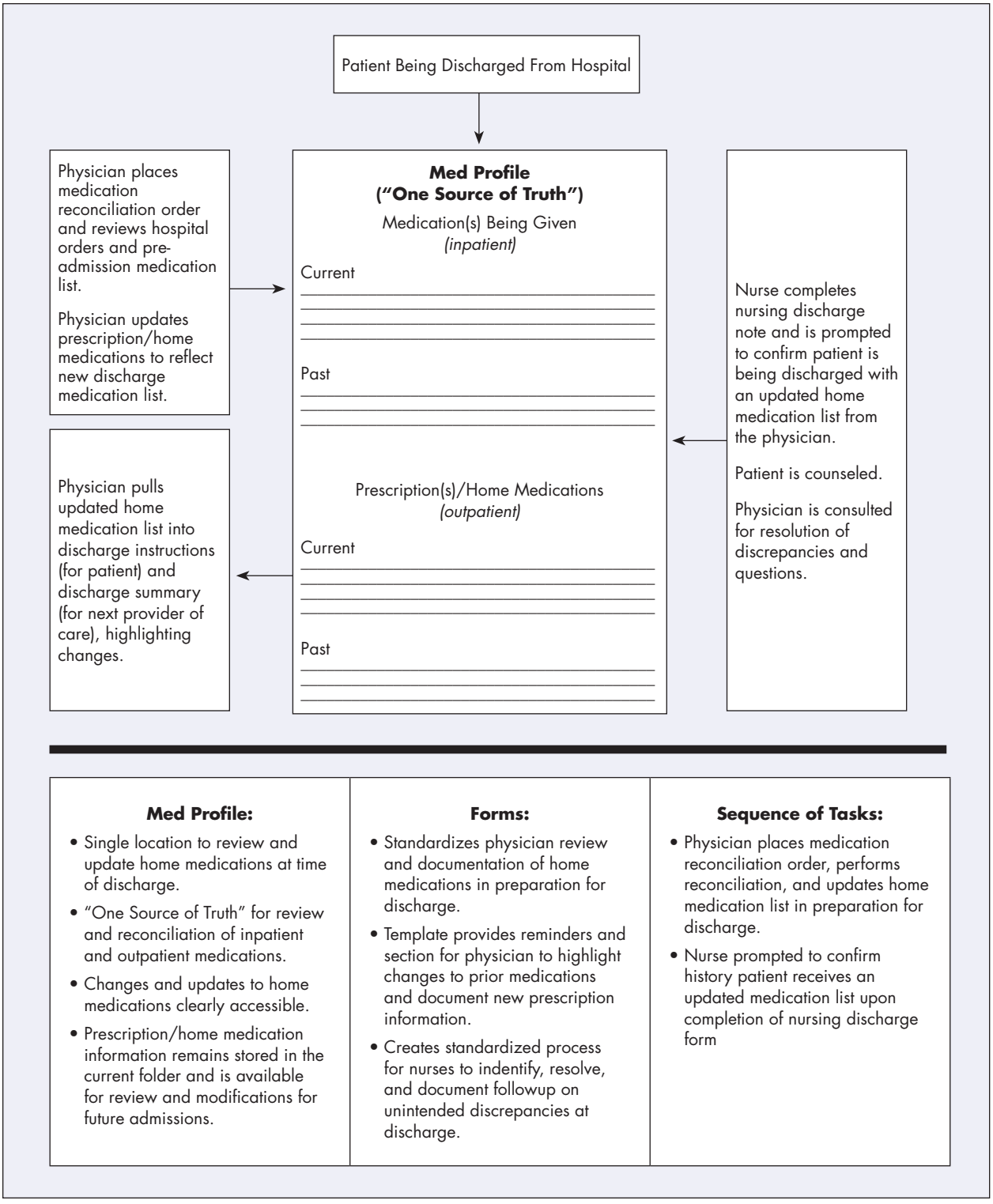


Figure 4: Medication Reconciliation Upon Discharge: High-Level Process Map After Redesign



Defining Roles and Responsibilities for Medication Reconciliation

Now, it's time to determine which discipline(s) should be involved in each step of the medication reconciliation process, including their respective roles and responsibilities. Consider some of the following questions:

- Which discipline could start building the "One Source of Truth" upon admission (entry) to the organization? How will information be validated as necessary toward establishing a good faith effort in building an accurate, complete medication list?
- What process steps are needed to perform medication reconciliation on outpatients and inpatients upon admission (entry), intra-hospital transfers (if applicable during a patient's stay), and discharge (exit)?
- What are the required elements for The Joint Commission's National Patient Safety Goal on medication reconciliation?
- What resources are available within the organization to perform required steps in the process?

During admission and at any point during the episode of care, various disciplines may learn new information regarding a patient's home medications. In addition, physicians, nurses, and pharmacists have an active role in reviewing, managing, and monitoring a patient's medications. Therefore, consider adopting a team approach for medication reconciliation. Remember, for a team approach to be effective, it is imperative that roles are clearly defined. If there is ambiguity around an individual's role, the process cannot be successful. To help drive this point home, here is an often-shared story about four people: Everybody, Somebody, Anybody, and Nobody.

> "There was an important job to be done and Everybody was asked to do it. Anybody could have done it, but Nobody did it. Somebody got angry about that because it was Everybody's job. Everybody thought Anybody could do it, but Nobody realized that Everybody wouldn't do it. It ended up that Everybody blamed Somebody when actually Nobody did what Anybody could have done." (Anonymous)

Therefore, individual roles and responsibilities need to be clearly defined and understood by all disciplines participating on the medication reconciliation team.

To help determine roles and responsibilities, map out the various admission points in your organization. For procedural areas, consider clinics involved with pre-procedural appointments or areas that register patients and may be able to contribute to your process. Your list may look something like:

- Direct Admission (usually from a doctor's office) → Inpatient Unit
- Procedural Area or Ambulatory Surgery Unit (pre-registered, early morning admissions) → Inpatient Unit
- Emergency Department → Inpatient Unit
- Triage/Labor and Delivery Unit → Inpatient Obstetrical Unit
- External Transfers (patients transferred from an outside hospital) → Inpatient Unit

See the Appendix (pgs. A-10 and A-11) for a sample worksheet and for an example of admission, intra-facility transfer and discharge process steps to determine disciplines roles and responsibilities for medication reconciliation.

Second, determine which discipline(s) within each admission point could initiate building the "One Source of Truth," and then confirm the list with the patient for accuracy and completeness. A good-faith effort should be made toward this goal with staff understanding of expectations.

Third, make sure you communicate roles and responsibilities for medication reconciliation clearly and effectively. After determining which discipline will be responsible for implementing medication reconciliation at certain admission points, make sure to update the policies and procedures to reflect this designation.

Integrating Medication Reconciliation into Existing Workflow

Prompts to complete required steps for medication reconciliation are essential. To be effective, prompts or reminders need to occur during the appropriate time within the clinician's workflow. Also, prompts or reminders decrease reliance on memory to perform required steps.

Incorporating prompts or reminders into a clinician's workflow is one example where automation is beneficial. For instance, during the admission order entry phase for a newly hospitalized patient, a physician could be prompted to complete medication reconciliation by documenting the patient's pre-admission medications and indicating ordering decisions for each medicine (i.e., continue, discontinue, modify, etc.). When the physician signs off on the admission order set, this could trigger a task for the nurse and/or pharmacist to communicate and educate the patient regarding new medications that were added or changes that were made in relation to desired treatment plans to identify unintended discrepancies.

If an organization has a paper-based system, medication reconciliation forms should be kept in the medical record in a highly visible, specified location to serve as a reminder to perform medication reconciliation during the episode of care. Regardless of practice settings, clinicians need effective reminders at the appropriate times within their workflow for consistent behavior if true forcing functions are not possible.

Flowcharting the Design or Redesign for Medication Reconciliation

Once roles and responsibilities are established and you've determined how the new design or redesign of an existing process can be integrated into workflow, a flowchart can be created. This new flowchart should be compared to the initial flowchart developed before redesign to highlight efficiencies through streamlined process steps and integration into existing workflow with consideration to transition points as applicable.

Designing the Process—Considerations for Various Practice Settings

Finding a starting point for improving the medication reconciliation project should be driven by understanding the needs of various departments and clinical roles and responsibilities of staff at each transition point is a great way to begin. Below are various transition points that should be considered as you build a plan to improve the medication reconciliation process.

Inpatient Practice Setting. One goal for medication reconciliation is to standardize and simplify the process throughout the organization. Often, nuances within various practice settings create challenges for medication reconciliation when patients transition through the hospital. It is important to recognize and understand these nuances, modify them as appropriate to minimize variations, and then integrate them into the overall process design. Begin by designing a core or primary process.

- How can each of the admission points be integrated into a primary or core process?
- Could one or more disciplines within each admission point initiate a "One Source of Truth" or confirm the list with the patient for accuracy and completeness?

Often, the flowchart is the primary process that encompasses the most high-volume entry points into the facility. Sample flowcharts by practice setting are provided for reference in the Appendix (pgs. A-16–A-18).

"One Source of Truth" Ambulatory Surgery or Procedural Area, the Emergency Department, and Triage/Labor and Delivery Unit. Ambulatory surgery can be a successful starting point of the "One Source of Truth" medication list. It is a relatively controlled environment that pre-schedules patient-nurse interactions and that commonly encompasses a medication review with each patient. In most cases, the patient is not acutely ill and can provide accurate information when given adequate time. Piloting the improved process in this department is a good way to establish the culture of using a "One Source of Truth."

Post-Acute Care Settings. While the majority of discussion and examples within this toolkit focus on inpatient settings, post-acute care facilities can adapt the same concepts to strengthen or implement a medication reconciliation process. A skilled nursing facility would look at all the processes that are common conduits for nursing home placement. Using admission directly from a hospital as the core process, the facility could then look at all variations on admissions that are encountered and make changes to the core process similar to the examples provided. Some variables may include admissions directly from home, admissions and referrals from home with the involvement of a home health provider, and even respite stays.

Similarly, a home health care provider could define its core process as an admission directly from an inpatient hospital stay to the services to be provided. In mapping out their process, the home health care provider could determine variations to this core process (e.g., admission from a skilled nursing facility, admission directly from home) and then integrate these scenarios into the core reconciliation process.

While many health care facilities are not "fully" electronic, it is important to have a good understanding of the needs of the clinician workflow and the process, as well as have a sound understanding of each department's individual needs, as this will assist in the choice of an electronic system or to build a process once there is a choice of EHR.

Medication Reconciliation upon Admission, Intra-Hospital Transfer, and Discharge in a Hospital with an Electronic Health Record. The following examples provide guidance on incorporating an electronic medication reconciliation process that includes "One Source of Truth" into the admission, transfer, and discharge workflow in order to make the right thing to do the easy thing to do.

Admission. A medication profile within a patient's EHR can serve as a "One Source of Truth" for viewing inpatient medication orders and a patient's prescription/home medication list all in one location. A medication profile could be pulled into forms or presented when patients' current medication lists are obtained and documented (i.e., making the right thing to do easier). (See Figure 5, pg. 31.)

Within an EHR, incorporating medication reconciliation steps into a physician's workflow may include:

- Building "One Source of Truth" that includes documentation and confirmation of a patient's current medication list with buttons to indicate the accuracy, completeness, and information sources utilized (evidence of a good faith effort for obtaining the patient's current medication information).
- Ability to indicate the plan for each home medication (such as discontinuing, continuing, or modifying current medications) in relation to the intended treatment goals for the episode of care when placing medication orders.
- Prompts to complete medication reconciliation when placing an admission or post-op order set.

Depending on the care unit, incorporating medication reconciliation steps into the nurse and/or pharmacist workflow may include:

- Receiving a task after the physician completes medication reconciliation to verify home medications documented by the physician with the patient, family, or other sources.
  - Verification is an important step, as patients often forget to mention medications or OTC medications/herbal supplements during the initial medication collection. Any new information regarding the patient's home medication list should be discussed with the physician and resulting changes documented.
  - This verification step also provides an educational opportunity to teach patients about the medications ordered for them in the hospital in relation to their home medications, and comment on any differences.
- Reconciling home medications with current inpatient orders.
- Clarifying unintended discrepancies (i.e., discrepancies that are not explained by the current care plan, by the patient's clinical status, or formulary substitution) with the physician for resolution.

- Completing a discipline-specific form with buttons and comment sections to document interactions and clarifications with patients, other sources, and the prescriber to trace follow-through on discrepancies and resulting clarifications and modifications, if needed. (See Figure 6, pg. 32, and Figure 7, pg. 33.)

Intra-hospital Transfer. When a transfer order is placed indicating the patient is ready for transfer to another unit within the hospital, the physician may receive a prompt or reminder to perform medication reconciliation. Instructions may be included for the physician to:

- Assess current medication orders and make any changes or modifications in preparation for the new level of care.
- Review the patient's pre-admission medication list. Home medications initially held may now be appropriate to restart upon transfer.

Nurses and/or pharmacists may be involved during intra-hospital transfers to ensure medication orders for the new level of care are consistent with desired treatment plans and to provide an independent double check that pre-admission medications initially held are appropriately restarted.

Physician Prompting at Discharge. Physicians may be prompted or reminded to perform medication reconciliation when placing a discharge order, indicating the patient is ready for discharge. A discharge checklist could also be created listing elements that need to be completed prior to discharge (e.g., remove heplock, perform medication reconciliation, prepare discharge medication list, educate patient, etc.). The goal for discharge medication reconciliation includes:

- Comparing the patient's pre-admission medication list with the patient's current inpatient medications.
- Updating the patient's pre-admission medication list to reflect the patient's medication regimen upon discharge. This list may be integrated into Discharge Instructions (for the patient) and Discharge Summary (for the next provider of service).
- Providing the patient/family with written information on the medications the patient should be taking when discharged from the hospital, or at the end of an outpatient encounter.
- Explaining the importance of managing medication information to the patient when discharged or at the end of an outpatient encounter. Instruct patient to:
  - Give a list to their primary care provider.
  - Update the list when medications are discontinued, doses are changed, or new medications (including OTC medications) are added.
  - Carry medication information at all times in case of an emergency.

Nurse and/or Pharmacist Prompting. Discharge medication reconciliation may be integrated within the nurse's and/or pharmacist's discharge workflow with a prompt or instructions to:

- Contact the physician if the patient's discharge medication list is not updated and/or complete (note: when establishing roles and responsibilities for preparing patients' discharge medication lists, a blanket statement such as "resume home medications" is not acceptable).
- Contact the physician to clarify patient questions encountered during the patient counseling session prior to discharge.

External Transfers. An external transfer patient is a patient who is transferred from a hospital outside of your own system. Such transfers may occur based on patient or provider request, specialty services required, or additional acute care needs.

External transfer patients have additional complexity in regards to medication reconciliation because three sources of information require review and reconciliation:

- Patient's list of medications prior to his or her hospitalization.
- Medications that are being administered to the patient at the outside hospital prior to transfer.
- Medications ordered at your hospital.

If the organization receives transfers from other hospitals, you should ensure a process is in place to address these reconciliation needs. Adequate communication and handoffs from the sending facility are critical to ensure all medication therapies are addressed and reconciled during the assessment and development of the patient's care plan at the organization.

Figure 5: Screenshot 1: Medication Management Essentials

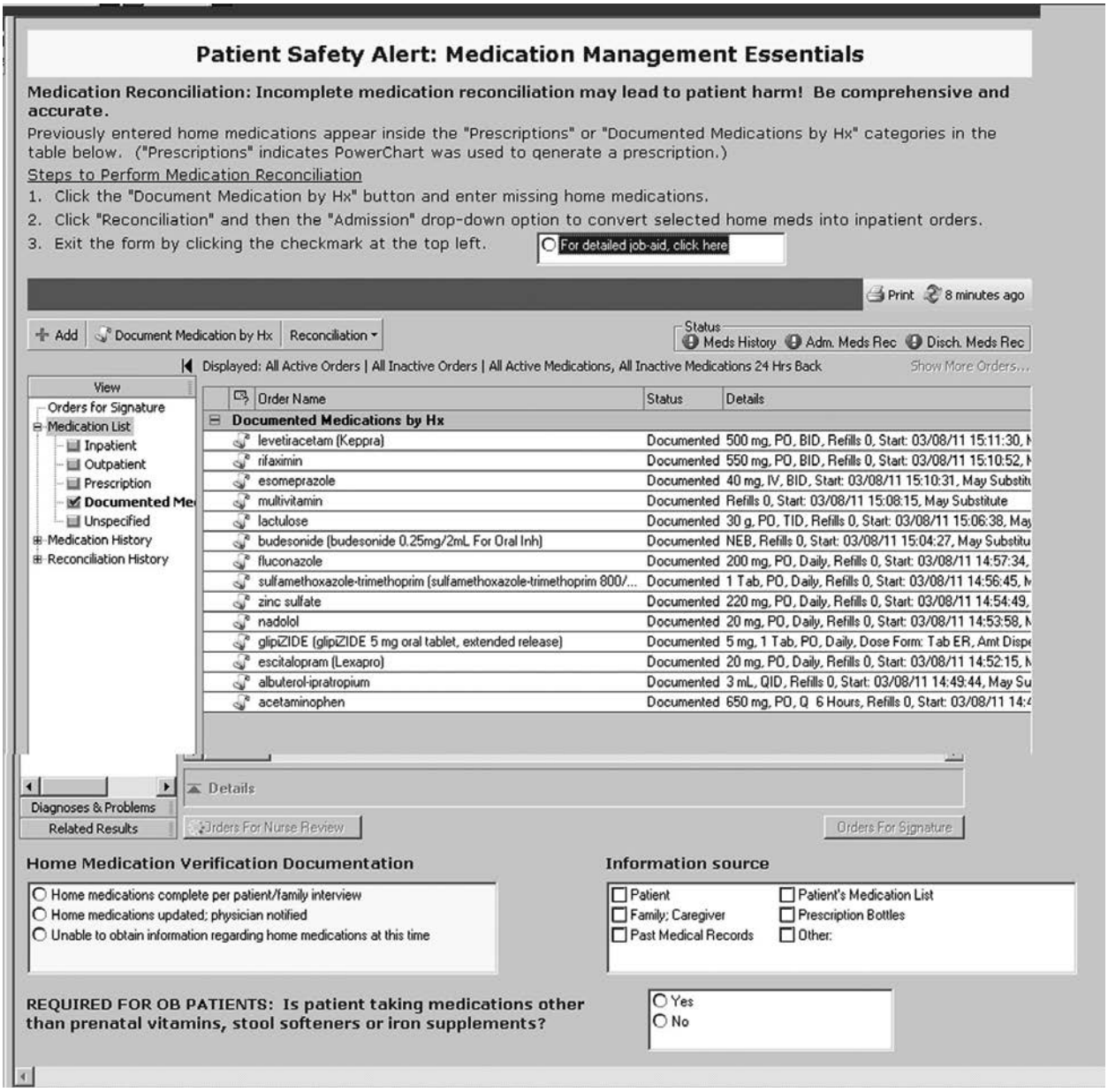


Figure 6: Screenshot 2: Nursing - Medication Reconciiation

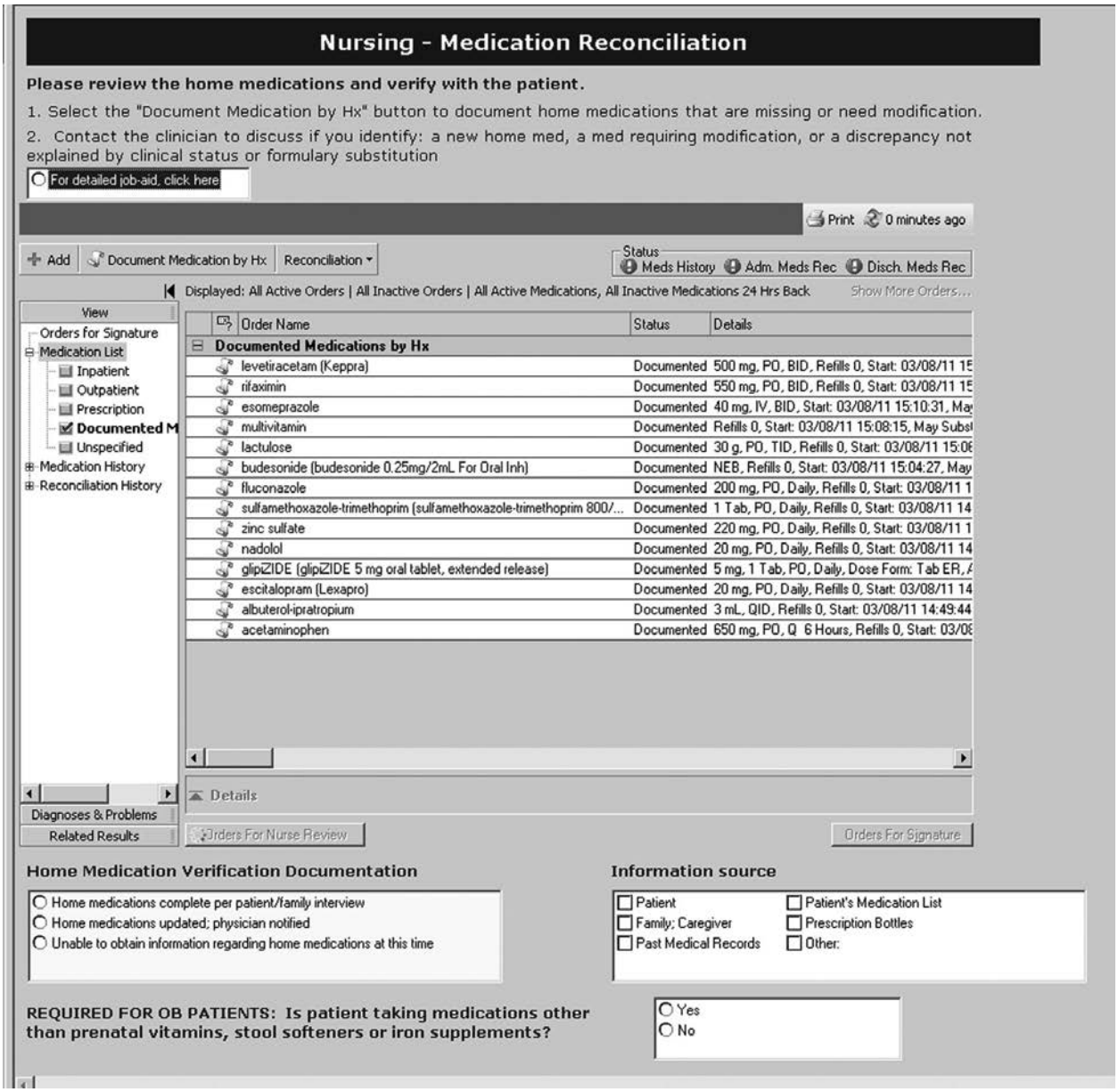
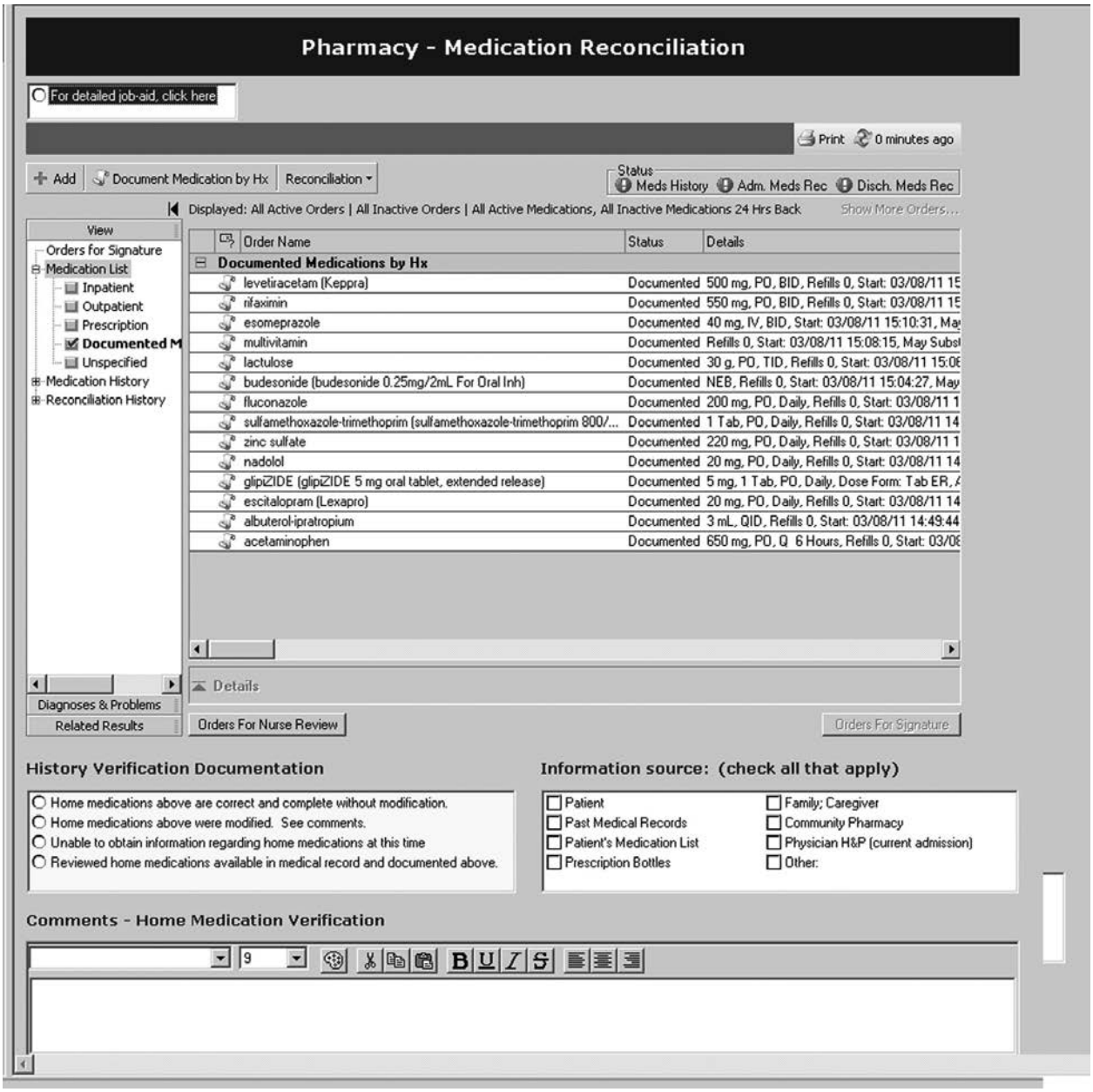


Figure 7: Screenshot 3: Pharmacy - Medication Reconciliation



Chapter 3 Lessons Learned

Lessons learned from staff of facilities that have implemented MATCH and facilities that received technical assistance on MATCH through the AHRQ QIO Learning Network include:

- It is important to realize several key elements regarding medication reconciliation before getting started, especially as they apply to any practice setting (i.e., inpatient, outpatient) and any type of medical record system (i.e., electronic, paper based, or both).
- There is no electronic substitution for a thorough medication interview with patients and/or their caregivers to obtain and verify current medication regimens. If patients and/or caregivers are able to participate in an interview, clinicians should ask what medications patients are taking and how they are taking them to identify discrepancies or uncover potential medication problems.
- Medication reconciliation should be an integral part of handoffs and communication during transitions in care.
- The patient plays a key role in medication reconciliation and should be educated on the importance of managing medication information at the time of discharge or at the end of an outpatient encounter. This education should include the importance of:
  - Giving a list to their primary care provider.
  - Updating their own list when medications are discontinued, doses are changed, or new medications (including OTC medications) are added.
  - Carrying their medication information at all times in case of an emergency. This can help ensure patients are prepared to share an accurate medication list with their health care providers at each health care encounter.
- Enlist the support of primary care physicians and community pharmacists to encourage patients to carry and update their medication list at every encounter.
- Look for ways to make medication reconciliation a value-added process. Consider integrating medication review and reconciliation in daily rounds so medications can be reviewed at the point when clinical decisions are made and modified accordingly.

Chapter 4: Developing and Pilot Testing Change: Implementing the Medication Reconciliation Process

Pilot Testing the Solution

If you have applied all of the steps and guiding principles outlined in Chapters 1-3 to your own work, you should have designed or redesigned medication reconciliation process that addresses gaps identified in the flowchart and assessment of your existing process, while helping to maintain current work flow. At this point, resist the urge to implement the redesigned process facility-wide and instead, pilot test the solution.

A pilot test provides an opportunity to implement a new process on a small scale and receive input. Any weaknesses in the process can be addressed before implementation facility-wide. While this process may seem like it will delay improvement overall, it can actually ensure success when you do implement it facility-wide. Before instituting the pilot, you should consider the following questions:

- Where would you like to pilot test the process?
- Are the areas chosen for the pilot already engaged and bought into the process?
- What mechanism will be in place to give and receive feedback from frontline staff during the pilot?
- What structure will be put in place to support staff during the pilot period?
- What roles can the leadership team play in the pilot?
- Are the stakeholders engaged, and have roadblocks been identified and removed prior to piloting in those practice settings?
- What are the process measures (i.e., quantity, adherence to process) to determine compliance during the pilot?
- What are the quality measures to determine impact on patient safety?

There are many potential settings for pilot testing. Some ideas include:

- A unit that directly admits patients.
- One medicine unit and one surgical unit.
- One team of physicians or one service, such as hospitalists.
- Engaging a few clinicians to use the form for a few days on their patients.

Regardless of the approach, the goal is to test the process for a short period of time—in most cases, less than a week or within a certain timeframe contingent on resources and scope of the project—to identify and correct major gaps within the process, and confirm its utility within current workflow. The process should continue to be enhanced and the pilot testing expanded as appropriate.

Although design team members are often eager to pilot their work, you should also include frontline staff who were not involved in the design. They will be able to:

- Provide additional insight into how intuitive the new design is.
- Identify training requirements.
- Identify additional areas for improvement.

To allow for feedback during a pilot, small focus groups can be held on nursing units for approximately 15-30 minutes. This may be an effective means to facilitate a dialogue about the revised process. This could also be used as an opportunity to thank those who agreed to participate in the pilot.

Sample questions that may be used during focus groups with physicians are provided in Figure 8 (pg. 37). These can be adapted for use with various disciplines and practice settings to elicit feedback on the process during the pilot phase.

Incorporating a structured, robust auditing and feedback method to identify design flaws and to understand underlying root causes for medication reconciliation failures (i.e., knowledge deficits, lack of buy-in, system design issues, etc.) is important during the pilot. It is equally important to highlight successes and compliment individual contributions. For more information on measurement, see Chapter 6: Assessment and Process Evaluation (pg. 49).

Figure 8: Medication Reconciliation Process Physician Focus Group—Interview Questions

Medication Reconciliation Process
Physician Focus Group—Interview Questions

The medication reconciliation process requires several steps upon admission, transfer, and discharge to ensure patient safety. Physicians, nurses, and pharmacists each have individual responsibilities for certain steps within the process.

1. In your own words, please describe what the medication reconciliation process means.
2. As a physician, please describe your specific role and responsibility in the medication reconciliation process:
    a. When the patient is admitted.
    b. If a patient is transferred within the hospital.
    c. When the patient is discharged.
3. How did you learn about your role in the medication reconciliation process? Did you feel this was an effective method of communication/education?
4. Were you ever trained on how to document and update home medications in [insert the name of your form/"One Source of Truth"]? If so, please describe the type of training you received. Do you feel this method of communication and education was effective? Why or why not?
5. (If the answer to the first part of question 4 was no, skip question 5.) Since your training, have you been consistently documenting and updating home medications in the [insert the name of your form/"One Source of Truth"]? Why or why not?

Preparing for Implementation

You have designed the process, piloted-tested the solution, and made any necessary enhancements. Now you are ready for a full-scale rollout. Some may choose to develop a committee to handle facility-wide implementation; others may use the original team to carry out implementation. There are advantages and disadvantages to both approaches:

- Design team members may find it difficult to accept when "their design" isn't working as planned, despite pilot testing.
- New members may be more open to change and may contribute new suggestions for improvement.
- Depending on the scope of the project, additional members, identified through a stakeholder analysis, may be needed to help facilitate implementation.

As you move into the implementation phase, you may want to consider developing an implementation charter to supplement the design charter. This will provide a framework for:

- Defining implementation goals and objectives.
- Identifying key metrics for implementation.
- Determining implementation resources and support system requirements.
- Developing a training curriculum.
- Establishing continuous feedback mechanisms for receiving suggestions from and providing followup to staff throughout implementation.

Developing the Implementation Strategy

Planning and Communication of Implementation Strategy. To successfully coordinate an implementation strategy, mandatory meetings, led by the leadership team, should be held with stakeholders representing physicians (i.e., clinical program leaders, departmental chiefs, and chairs) and patient care (i.e., nursing directors and managers, pharmacy director and managers).

During this meeting, implementation plans and training curricula can be presented. A multidisciplinary training approach (i.e., physicians, nurses, and pharmacists attending training classes together) is encouraged. A number of dates and time periods should be determined based on the needs and availability of various disciplines. Classes should be offered early in the morning, during the day, in the evening, and on weekends to accommodate a variety of schedules.

Email reminders and memos sent from discipline-specific leadership to staff may be an effective method to increase attendance and participation while highlighting leadership support for the process. The Appendix offers customizable memos to announce and promote training sessions and educational efforts to the staff: "Sample Letter to Discipline-Specific Leaders on Meeting Regarding Training and Implementation Strategy for Medication Reconciliation" (pg. A-26) and "Sample Communication from Discipline-Specific Leadership to Staff on Medication Reconciliation Educational Training Sessions" (pg. A-27).

Rollout Strategies. Just like pilot testing, there are several different strategies to roll out the process. Depending on the scope of the project, some implementation strategies may include:

- By unit (e.g., all ICUs).
- By service (e.g., surgical services).
- By discipline (e.g., rollout process to all physicians, then to all nurses, and then to all pharmacists).
- Hospital-wide, all disciplines.

You should establish an implementation timeline. This helps ensure a timely rollout while maintaining flexibility if unanticipated issues arise. See the Appendix for "Example Timeline Hospital-Wide Rollout by Discipline" (pg. A-24).

Staff should be well informed and given adequate notice regarding training dates and implementation strategies prior to rollout. Staff communication may need to occur through a variety of channels such as emails, brief announcements at staff meetings, and memos posted in nursing units, report rooms, conference areas, etc. A flier can be one way of communicating the rollout plans. See the Appendix for "Sample Staff Flier to Announce Rollout/Implementation of Medication Reconciliation Process" (pg. A-28). For email announcements, consider having departmental or discipline leaders send prepared messages directly to their colleagues to convey the importance of implementation and adoption of the process.

Chapter 4 Lessons Learned

Lessons learned from staff of facilities that have implemented MATCH and facilities that received technical assistance on MATCH through the AHRQ QIO Learning Network include:

- It is critical to put in as much time planning the implementation as you spent on the design (maybe even more) to ensure successful adoption.
- Stakeholders need to be "on board" to support the effort throughout the rollout. The leadership team will play a key role in addressing roadblocks and approving needed changes resulting from broader implementation. Other considerations for a successful implementation include:
  - Adequate resources for rollout.
  - Timely staff communication regarding training and go-live.
  - Multidisciplinary training sessions (i.e., team training) followed by coach support.
- It is easy to fall into the mindset of "we designed a great process, the pilot was successful; therefore, everything else will follow suit." Through our experience, we found that it's not always that simple, especially when many staff perceived medication reconciliation would add extra work without added benefit.

Chapter 5: Education and Training

Now that you have formed the implementation team and finalized the rollout plan, it is time to educate and train all disciplines that will be involved in the medication reconciliation process. This section contains information on effective strategies, materials, and tools for educating physicians, nurses, and pharmacists on medication reconciliation.

Education and Training Strategy

Multidisciplinary training (i.e., physicians, nurses, and pharmacists attending training classes together), supported by introductions from hospital leaders, can be an excellent strategic decision because:

- Key leaders in the organization set the tone for training and implementation.
- Training together promotes a team approach.
- Group sessions create an appreciation of the interdependency of each discipline in the medication reconciliation process.
- Roles and responsibilities are clearly defined and understood.
- All disciplines are consistently trained on each step within the process.

Education and Training Curriculum on Medication Reconciliation

An overarching message throughout training needs to be that medication reconciliation provides a standardized, consistent approach for:

- Obtaining, documenting, and verifying a patient's current medication list.
- Comparing this list with medications ordered within the facility.
- Ensuring that any discrepancies identified (i.e., omissions, modifications, deletions, etc.) are appropriate and intentional based on the patient's care plan.
- Resolving unintended discrepancies with supporting documentation.
- Communicating medication information during transitions in care.

It is also important that physicians, nurses, and pharmacists understand how the medication reconciliation process is designed to integrate into their current workflow and support medication management efforts to prevent medication errors and the potential for patient harm.

As an example, an education and training curriculum might focus on:

- A multidisciplinary approach to medication reconciliation.
- Using a Medication Profile tab, identified as a "One Source of Truth" (e.g., a single list and common location shared by all disciplines) for documenting and updating the patient's current medication list upon admission and referencing this list throughout the patient's stay and at discharge.
- Reconciling medications ordered for the patient upon admission (entry), during intra-hospital transfers (if applicable) and upon discharge (exit) with the patient's list of current medications.

Training should focus on two concepts:

- How to conduct a patient interview to inquire about patients' current medications.
- The thought process or "critical thinking" involved with performing medication reconciliation.

This section contains materials developed for training on medication history taking and performing medication reconciliation, which can be customized to meet the organization's training needs.

How to Conduct a Patient Interview to Obtain, Verify, and Document Patient's Current Medications. This section describes the medication history interview process to help ensure a good faith effort has been made to obtain the most complete, up-to-date list of the patient's current medications.

The process of who conducts the initial patient medication history interview and/or history verification may vary across the organization depending on the patient population, workflow, and patient status (inpatient, outpatient, emergency department visit, pre-registered patient, etc). Figure 9 (pg. 43) highlights elements that should be captured when inquiring about a patient's current medication regimen and tips for conducting the patient medication interview.

Figure 9: Tips for Conducting a Patient Medication Interview

Tips for Conducting a Patient Medication Interview[1]

I. Medication Information

To obtain or verify a list of the patient's current medications,[2] you should inquire about:

- Prescription medications
- Over-the-counter (OTC) drugs
- Vitamins
- Herbals
- Nutraceuticals/Health supplements
- Respiratory therapy-related medications (e.g., inhalers)

Full dosing information should be captured, if possible, for each medication. This includes:

- Name of the medication
- Strength
- Formulations (e.g., extended release, controlled delivery, etc.)
- Dose
- Route
- Frequency
- Last dose taken

II. Medication History Prompts

Incorporating various types of "probing questions" into the patient interview may help trigger the patient's memory on what medications they are currently taking. Here are some suggestions:

- Use both open-ended questions (e.g., "What do you take for your high cholesterol?") and closed-ended questions (e.g, "Do you take medication for your high cholesterol?") during the interview.
- Ask patients about routes of administration other than oral medicines (e.g., "Do you put any medications on your skin?"). Patients often forget to mention creams, ointments, lotions, patches, eye drops, ear drops, nebulizers, and inhalers.
- Ask patients about what medications they take for their medical conditions (e.g., "What do you take for your diabetes?").
- Ask patients about the types of physicians that prescribe medications for them (e.g., "Does your 'arthritis doctor' prescribe any medications for you?").
- Ask patients about when they take their medications (e.g., time of day, week, month, as needed, etc.). Patients often forget to mention infrequent dosing regimens, such as monthly.
- Ask patients if their doctor recently started them on any new medicines, stopped medications they were taking, or made any changes to their medications.
- Asking patients to describe their medication by color, size, shape, etc., may help to determine the dosage strength and formulation. Calling the patient's caregiver or their community pharmacist may be helpful to determine an exact medication, dosage strength, and/or directions for use.
- For inquiring about OTC drugs, additional prompts may include:
  - What do you take when you get a headache?
  - What do you take for allergies?
  - Do you take anything to help you fall asleep?
  - What do you take when you get a cold?
  - Do you take anything for heartburn?

[1] Adapted from the Joint Commission Resources and the American Society of Health-System Pharmacists Medication Reconciliation Handbook. Chapter 5: Educating your staff. Oakbrook Torrance, IL: Joint Commission Resources, 2006.

[2] For a full range of medications as defined by The Joint Commission, refer to its accreditation material.

Because the patient's ability to recall medications, doses, and/or frequency of use may be compromised when he or she is not feeling well and is being admitted to the hospital, verifying the patient's medication list upon admission and at a later point in the hospital stay is an essential step to ensuring accuracy and completeness. In addition, it provides an opportunity to educate the patient about the medications ordered during the hospitalization and identify any discrepancies from the patient's perspective. This medication history verification interview can be approached in this manner:

> "Hi, Mrs. Jones. I'm your nurse, Katherine Johnson. Dr. Smith included in your chart the list of medications you were taking at home, based on the information you provided when you arrived at our hospital. I want to verify that we have documented your list of current medications correctly and that we did not omit anything. Also, I want to go over what medications have been ordered for you to take while in the hospital."

If a patient is unable to participate in a medication interview, other sources may be used for obtaining medication histories or clarifying conflicting information. Other sources should never be a substitute for a thorough patient medication interview for patients who are able to participate. Sources of information include:

- Patient
- Family/caregiver
- Patient's medication bottles*
- Patient's community pharmacy
- Patient's primary care or specialty physicians and their offices or clinics
- Past medical records
- Patient's own medication list*

When nurses and/or pharmacists learn new information during medication history verification, the physician should be contacted. The physician should determine if this information will alter the care plan for that particular patient and, if so, subsequent orders can be written with supporting documentation.

*For patients who present prescription bottles and/or a medications list, each individual medication and corresponding dosing instructions should be verified, if possible; a patient may be taking a medication differently than what is reflected on their prescription label. Also, a patient may have forgotten to update their personal list with newly prescribed medications.

Patients who are scheduled in advance for surgeries, procedures, tests, etc., should be reminded to bring their complete medication list and/or the medication bottles with them on the day of their visit. A script to remind patients to bring their medications or medication list to their appointment is at Figure 10 (pg. 45). A medication list template can be included in patient materials regarding their procedure/surgery. See sample patient medication list template in the Appendix (pg. A-19).

Figure 10: Script for Patient Reminders

Script for Patient Reminders to Bring Their Medications or a Complete Medication List to Their Procedure/Test

"Before your procedure (test), we need a complete list of the medications you take at home, including any medications you held for your procedure (test). Your complete list of medications includes all prescription medications, samples from your doctor, and any medications you buy without a prescription, including over-the-counter medications, vitamins, and herbal supplements. You may bring the medication bottles with you or a list of each medication.

If you bring a list, make sure your list has:

- The full name of each medicine (including any letters that may appear after the name such as XL, CR, CD, etc.).
- The strength of each medicine (mg, mcg, units, etc.).
- How much you take for each dose (1 tablet, 2 capsules, etc.).
- How you take it (by mouth, inhaler, injection, patch, etc.).
- When you take it (in the morning and evening, once a month, etc.), and the date and time of your last dose.

This information is important so we can check for any potential drug interactions during your procedure.

Please let your doctor or nurse know if you are allergic to any medications before the start of your procedure (test)."

How to Perform Medication Reconciliation. Once medication lists have been obtained, verified with patients and other sources if needed, and documented within the medical record, this information can then be compared with medications ordered during the episode of care to identify unintended discrepancies, potential drug interactions, and contraindications. Upon discharge, medications administered during the episode of care are then compared to the patient's pre-admission list, and the patient's list is then updated to reflect any changes.

The overall goal of the reconciliation process is to ensure that any changes made to the patient's current medications, such as omissions, dose changes, and deletions, are intentional based on the patient's current clinical status and desired care plan. Discrepancies identified that are inconsistent with documented care plans or are not explained by the patient's current clinical status should be discussed with the physician for resolution, and resulting changes or clarifications should be documented accordingly. Patients should be educated on any changes to their medication regimen to ensure complete understanding.

Table 3 (pg. 46) helps everyone performing medication reconciliation walk through the "critical thinking process" to identify discrepancies and determine whether clarification is required. It is important for physicians to provide clear documentation and communication regarding medication ordering decisions and care plans to minimize unnecessary pages or telephone calls. Developing scripts for nurses and pharmacists for clarifying medication discrepancies with physicians may also be useful for all disciplines and helps standardize the clarification and communication process for medication discrepancies.

Table 3: Critical Thinking Process to Identify and Clarify Discrepancies

Category	Definition	Example	Requires Physician Followup? (Yes/No)
"One-to-One" Match	Medications ordered for the patient during the episode of care or upon discharge match what the patient was taking prior to admission.	• Patient takes furosemide 40 mg by mouth twice daily at home, which is ordered upon admission. • Patient's pre-admission dose of simvastatin by mouth every evening is continued during the hospital stay and at discharge.	No
Intended Discrepancy (i.e., purposeful)	Discrepancies exist but are appropriate based on the patient's plan of care (e.g., based on information gathered on rounds, based on a review of the physician's history and physical and progress notes, based on communication/handoffs in preparation for discharge, etc.).	• Antibiotics started for infection. • "As needed" medications ordered for pain/fever. • Pre-admission doses of patient's blood pressure medications were changed due to hypotensive episodes. • Warfarin and aspirin held for a procedure. • Formulary substitution.	No
Unintended Discrepancy	Discrepancies exist and require clarification of intent because there is no supporting documentation of explanation based on the patient's current clinical condition or care plan.	• The patient takes her blood pressure medication twice daily at home but it's ordered only once daily in the hospital. No indication for frequency change and patient's current blood pressure slightly elevated. • Patient's simvastatin was omitted from their discharge instructions without any clear indication for why.	Yes—physician should be consulted for resolution and resulting changes and/or clarifications documented.

Unintended discrepancies identified during reconciliation can be categorized using the criteria below:[10]

Omission: Patient reports taking a medication before hospitalization. It was not ordered on admission or it was not listed on the patient's discharge instructions. No clinical explanation supports omission.

Commission: Medication is ordered at admission that the patient did not take before hospitalization. Medication is listed on the patient's discharge instructions, but it was not ordered during the hospital stay and the patient did not take before hospitalization. No clinical explanation supports commission.

Different dose, route, or frequency: Different doses, routes, or frequency of medication listed on the patient's discharge instructions than what was ordered during the hospital stay or that the patient reports taking before hospitalization. No clinical explanation supports differences.

Different Medication Ordered: Medication in the same therapeutic class is ordered on admission or is listed on the patient's discharge instructions and differs from what the patient reports. No clinical explanation or formulary substitution supports difference.

In each case, the physician should be consulted for resolution, and the resulting changes should be documented.

Chapter 5 Lessons Learned

Lessons learned from staff of facilities that have implemented MATCH and facilities that received technical assistance on MATCH through the AHRQ QIO Learning Network include:

- Organizational leaders should promote medication reconciliation training to help reinforce the organization's commitment to this patient safety initiative.
- Physicians, nurses, and pharmacists attending training sessions together promotes a team approach, provides a clear understanding of each discipline's role in the process, and ensures all disciplines are consistently trained on medication reconciliation.
- Multidisciplinary training sessions should include education on how to conduct a patient interview to obtain, verify, and document a patient's current medications (e.g., a good-faith effort) and how to reconcile this information with medications provided by the organization.
- The critical thinking required for identifying intended (i.e., purposeful) vs. unintended medication discrepancies based on the patient's plan of care and the process for resolving unintended discrepancies should be incorporated in medication reconciliation training.
- Education should also focus on the importance of developing good communication patterns regarding patients' medication information during handoffs and transitions of care.

Users of this toolkit from the QIO Learning Network offered many ways to use the educational tools in the medication reconciliation project:

- Using tools from this section, providers developed PowerPoint presentations for staff education on how to conduct a medication history.
- The "Questions to Ask During a Medication History" template was used by one provider as nurse prompts and questions were put on a card, laminated, and added to the nurse ID lanyard.
- Using pharmacists in the emergency room or on floors to perform medication histories or having pharmacy students on rotations do medication histories or validate initial lists was successful for many providers.
- Handing out the medication history form to patients in the emergency department waiting room proved successful in beginning the medication history process.
- Involving community partners, including community physicians, pharmacies, and emergency medical services to assist in providing medication history information enhance process changes.
- Included training on medication reconciliation into the core competency staff training requirements.

Chapter 6: Assessment and Process Evaluation

Now that you have implemented a newly designed or redesigned process to improve medication reconciliation in the facility, it is time to assess the process.

Immediately after implementation, auditing is critical to assess adoption. Auditing should be done at all the transitions of care and should include each discipline involved in the process. For example, if physicians and nurses are responsible for medication reconciliation at your organization, it is necessary to look at overall compliance as well as the individual disciplines' compliance. Knowing how each discipline is performing will help tailor feedback to leadership and identify discipline-specific issues that need to be addressed.

Depending on resources available at your organization, auditing can be accomplished electronically or manually, prospectively or retrospectively. Some audits address quantity while others address quality; it is important to look at both. The quantity audit gives insight to adoption and adherence to your defined process. The quality audit shows the impact on patient safety, such as potential harm avoided through reconciliation. A comparison of audit techniques is provided in Figure 11 (pg. 50).

Figure 11: Comparison of Audit Techniques: Ensuring Quality and Quantity

Comparison of Audit Techniques

Electronic Reports

An easy, efficient method to assess adherence to process ("quantity" assessment).

- Tracks percent adherence for documenting medications patient takes prior to admission (e.g., quantity of medication history documentation).
- Tracks percent of nursing and/or pharmacist adherence, by unit, for completing medication reconciliation documentation form (e.g., quantity of reconciliation).
- May be able to sample up to 100% of patients.

Manual Retrospective Evaluation

Although time consuming, a manual chart review can be used to obtain percent adherence to process ("quantity" assessment) in addition to assessing the "quality" or effectiveness and patient safety benefits.

- Tracks quality of the collection of medications the patient was taking prior to admission (e.g., quality of medication history verification and documentation).
- Tracks the type of discrepancies, number of interventions, drug/drug class involved, harm averted, etc. ("quality" of history verification and reconciliation).
- Sample size is determined by the time and resources available for manual auditing.

Manual Prospective Evaluation

In addition to the quantity and quality data collected in the audits above, this audit also captures the following:

- Independent reviewer obtains medication history (approximately 24 hours after admission), which is reconciled with physician's medication history and current orders.
- Independent reviewer evaluation is in addition to current medication reconciliation process.
- Evaluation of data tracks who made intervention (doctor, nurse, pharmacist, reviewer) and also shows missed opportunities (medication reconciliation failures) with the current medication reconciliation process.
- Ability for reviewer to intervene on any missed opportunities and provide real-time feedback to staff for continued process improvement.
- High-risk areas can be targeted for this evaluation to avoid potential harm (e.g., intensive care units, oncology).

Note: Independent reviewer could be any discipline involved in medication reconciliation (e.g., physician, nurse, or pharmacist), a quality improvement leader, patient safety representative, or researcher. The reviewer must feel empowered to intervene if errors are identified.

Examples of Metrics and Auditing Tools

There are several effective methods to audit data in hospitals. This toolkit promotes a method that has proven to be valuable to measure the effectiveness of a medication reconciliation process by examining data before redesign, after redesign, and during implementation, as well as associated outcome measures. The model uses two process measure and one outcome measure. The use of a generic data run-chart to track the data measures is suggested. This will trend your project before, during redesign and implementation, and in the future to measure sustainability.

Examples of Metrics on Admission: Illinois Hospital Association (IHA) Medication Reconciliation Collaborative. Through its medication reconciliation statewide collaborative, the IHA developed the following three measurements for medication reconciliation compliance:

1. The first measure identifies the percentage of patients who have a home medication list documented in the medical record using the correct tool for documentation.
2. The second measure identifies the percentage of individual home medications that have been reconciled with admission orders.
3. The third measure identifies ADEs from unreconciled medication on admission.

These measures can be applied to transfer within the facility and discharge.

Examples of Manual Audit Tools. Manual retrospective audits conducted on patient charts by unit, specialty, etc., will be the standard method for most facilities without EHR systems to measure their process and outcome data. A sample of a paper-based audit tool that can be used when performing a manual audit for medication reconciliation can be found in the "Medication Reconciliation Audit Form" in the Appendix (pg. A-21).

Reporting Audit Results

In addition to performing the audits, auditors will need to communicate the results. Table 4 is an example of how to display medication reconciliation audit results for a given day. Depending on the size of the organization, the number of charts reviewed may vary.

Table 4: Reporting Audit Results

Issue	Compliance Defined as	Compliance Current as of [insert date]	Action Plan
Medication Reconciliation on Admission	Numerator: # of patients with a home medication list documented and reconciled at admission Denominator: # of patients admitted	GOAL: >90% ACTUAL: [insert current compliance]	Insert plans to close the gap between the actual compliance percentage and the goal.
Medication Reconciliation on Transfer	Numerator: # of patients with medications reconciled upon transfer Denominator: # of patients transferred	GOAL: >90% ACTUAL: [insert current compliance]	Insert plans to close the gap between the actual compliance percentage and the goal.
Medication List at Discharge	Numerator: # of patients provided an updated home medication list at discharge Denominator: # of patients discharged	GOAL: >90% ACTUAL: [insert current compliance]	Insert plans to close the gap between the actual compliance percentage and the goal

Post-Implementation Strategies to Increase and Sustain Compliance

Post-implementation audits can help identify areas with low compliance to the new medication reconciliation process. With any new process or procedure, it is important to understand the root cause (i.e., knowledge deficit, lack of training, or buy-in) of compliance issues and tailor improvement strategies to address them. This section outlines three examples of improvement strategies that can increase or sustain compliance for the new medication reconciliation process:

- Identifying and addressing barriers for low compliance.
- Conducting focus groups.
- Taking medication reconciliation "on the road."

Identifying Challenges and Addressing Barriers. It is helpful to outline challenges faced during implementation and actions that have been or will be taken to address each challenge. Table 5 is a template that can be used to clearly list each challenge, observations associated with the challenge, a proposed action, and the next steps or responsible party for followup. This will keep you and the medication reconciliation leadership team updated on the progress of each identified roadblock to effective medication reconciliation. The Appendix (pg. A-29) also has a template for identifying challenges and addressing barriers.

Table 5: Identifying Challenges and Addressing Barriers

Implementation Challenges	Observations	Proposed Action	Next Steps/Primary Responsibility
Example: Reliance on memory; lack of forcing function	Physicians are not remembering to place medication reconciliation orders	Design a prompt during the admission ordering phase that creates a forcing function for physicians to complete admission medication reconciliation	Monitor physician compliance for completing admission medication reconciliation

Conducting Focus Groups. During monitoring efforts, if you identify certain areas or disciplines with low adherence to the process, it may be necessary to circle back to frontline staff to find out what is working and what is not working. Proactively seeking this information will decrease the amount of frustration the frontline staff feel about the newly implemented medication reconciliation process. For more information about focus groups and how to facilitate one, refer to Chapter 4: Developing and Pilot Testing Change: Implementing the Medication Reconciliation Process (pg. 35).

Taking Medication Reconciliation "on the Road." If physician compliance is a troubling issue, consider a medication reconciliation road show. Similar to the concept of executive walk rounds, having organizational leadership on the floors talking to frontline staff about the importance of medication reconciliation is a way to help increase compliance. To get a road show started, it is a good idea to provide leadership with examples of close calls the organization has had with medication reconciliation. By leadership telling the story to frontline staff of potentially harmful situations related to medication reconciliation, it might help reinforce the need. The objectives of the road show are:

- Create a clear level of accountability for performing medication reconciliation.
- Emphasize that the new medication reconciliation process is NOT optional.
- Reinforce the importance of obtaining a complete and accurate medication history, documenting the medication history in the appropriate place in the medical record, and facilitating a thorough transfer and discharge process across the continuum of care.
- Obtain feedback from frontline staff to learn what is perceived as obstacles to performing medication reconciliation.
- Assess the impact that medication reconciliation is having on patient safety of each identified roadblock to effective medication reconciliation.

Special Considerations: The National Coordinating Council for Medication Error Reporting and Prevention

The National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) developed categories for classifying medication errors. This index considers factors such as whether the error reached the patient and, if the patient was harmed, to what degree.

Table 6 explains the different categories of medication error classification. Different categories of medication error classification were adapted into the table below. Examples of medication reconciliation errors are included to illustrate how this index can be used to classify each example based on the NCC MERP index. For more information about the classification of medication errors visit http://www.nccmerp.org.

Table 6: Categories of Medication Error Classification

Category	Description	Example
A	No error, capacity to cause error	NA
B	Error that did not reach the patient	NA
C	Error that reached patient but unlikely to cause harm (omissions considered to reach patient)	Multivitamin was not ordered on admission
D	Error that reached the patient and could have necessitated monitoring and/or intervention to preclude harm	Regular release metoprolol was ordered for patient instead of extended-release
E	Error that could have caused temporary harm	Blood pressure medication was inadvertently omitted from the orders
F	Error that could have caused temporary harm requiring initial or prolonged hospitalization	Anticoagulant, such as warfarin, was ordered daily when the patient takes it every other day
G	Error that could have resulted in permanent harm	Immunosuppressant medication was unintentionally ordered at one-fourth the dose
H	Error that could have necessitated intervention to sustain life	Anticonvulsant therapy was inadvertently omitted
I	Error that could have resulted in death	Beta-blocker was not reordered post-operatively

Chapter 6 Lessons Learned

Lessons learned from staff of facilities that have implemented MATCH and facilities that received technical assistance on MATCH through the AHRQ QIO Learning Network include:

- Electronic audits are an easy and efficient way to show adherence to the medication reconciliation process.
- Manual audits are time-consuming but help identify the quality of the medication reconciliation process and the potential impact on patient safety.
- Prospective audits are ideal for medication reconciliation since interventions can be made if medication reconciliation was not done appropriately.
- Post-implementation, medication reconciliation audits should be performed and communicated frequently.
- Feedback should be communicated to senior leadership, to all management levels, and to frontline staff.
- Audit data can be used to obtain discipline-specific support for the project.
- Concurrent review of interventions and continual feedback can be an effective way to improve compliance.

Users of this toolkit from the QIO Learning Network Collaborative offered many ways to use the data they collected in the medication reconciliation project as a method of feedback to staff:

- Using tri-board posters to display audit data to staff during training and education sessions to further stress the importance of an accurate medication history and reconciliation.
- Posting data run charts in the break rooms, unit staff rooms, and physician lounges to communicate the progress the process changes are delivering to quality measures.
- Use data to create a "competitive" atmosphere to drive acceptance of process change.

Chapter 7: High-Risk Situations for Medication Reconciliation

This chapter addresses the various challenges and barriers to addressing medication reconciliation as well as recommendations to handle these. Patients with limited health literacy and/or cognitive impairment are high risk for medication reconciliation errors that can result in an ADE if this risk is not identified by the clinician.

Health Literacy

The definition of health literacy is neither simple nor universally well understood. No matter how health literacy is defined, patients with limited health literacy have an increased likelihood of experiencing difficulty processing information about health and health care encounters. Within the realm of medication reconciliation, patients with limited health literacy may have problems adhering to a medication regimen and may be unable to provide an accurate medication history. These individuals often do not understand prescription instructions and warning labels, and they may be at increased risk for medication errors and non-compliance. When these patients are discharged from the inpatient setting, instruction on changes to their prior medications or a new medication may require more targeted efforts from clinicians.

According to a national survey, over one-third of the adult population has limited health literacy, meaning that they have basic or below basic health literacy levels.[11] Limited health literacy is associated with medication errors, increased health care costs, and inadequate knowledge of and care for chronic health conditions.[12,13,14]

Determining which patients have limited health literacy can be very difficult for health care providers. Some patients with limited health literacy may still have these characteristics:

- Have completed high school or college.
- Are well spoken.
- Look over written health related materials and say they understand.
- Hold white collar or health care jobs.
- Function well when not under stress.

Experts recommend assuming that everyone may have some difficulty understanding health care information and suggest creating an environment where patients of all literacy levels can thrive. In the case of health literacy universal precautions, facilities should ensure that systems are in place to promote better understanding for all patients, not just those you think need extra assistance. Improving patient understanding is beneficial for the patient and health care provider. Research suggests that clear communication practices and removing literacy-related barriers will improve care for all patients regardless of their level of health literacy.[15]

Studies have shown that 40 percent to 80 percent of the medical information patients receive is forgotten immediately,[16] and nearly half of the information retained is incorrect.[17] One of the easiest ways to close the gap of communication between clinician and patient is to employ the "teach-back" method, also known as the "show-me" method or "closing the loop."[18]

"Teach-back" is a way to confirm that you have explained to the patient what they need to know in a manner that the patient understands. Patient understanding is confirmed when they explain it back to you. It can also help clinical staff members identify explanations and communication strategies that are most commonly understood by patients. Each facility should consider integrating this basic concept into their patient education requirements for medication teaching as well as other instructions to patient.[15]

The Cognitively Impaired Patient

Cognitive impairment may also pose challenges for medication reconciliation when obtaining medication histories from patients upon admission or providing medication education and counseling to patients at discharge. Screening for cognitive impairment can be time-consuming. If cognitive impairment is a concern, a simple screening test is the Mini-Cog (http://www.hospitalmedicine.org/geriresource/toolbox/pdfs/clock_drawing_test.pdf). As opposed to the Mini-Mental State Examination (MMSE, http://www.minimental.com/), which takes roughly 10 minutes to administer, the Mini-Cog can be administered in well under 5 minutes. The Mini-Cog uses a three-item recall test for memory and a simply scored clock-drawing test. The test has been shown to have good predictive value in diverse populations, both in relation to the MMSE and more thorough cognitive exams.[19,20]

A patient is often asked to read something in their doctor's office. They may be asked to fill out a form or may be given written material on how to manage their disease. A patient's reading abilities are often below the readability of this material. In addition, patients who are ill can sometimes find it hard to answer complex questions accurately. Medical practices that are conscientious about developing and using written materials that are easier to read may increase the chance that their patients will use health information correctly, thereby saving staff time and improving patient outcomes.[15]

Patients who say they "often" or "always" have someone help them to read hospital materials or who are "a little bit" or "not at all" confident filling out forms are more likely to have reading problems. These patients should be given special attention during the medication reconciliation process, such as during patient interviews to obtain medication histories upon admission and at discharge for medication education and counseling.[21,22,23,24]

Ideally, staff should ask patients these two screening questions when they establish care, and all providers should be mindful of patient responses during encounters. However, screening tools will never be able to perfectly predict or measure patient characteristics and behavior. Thus, it may be better to assume that all patients experience some degree of difficulty in understanding health information, and we should adopt the perspective of "universal precautions" when interacting with patients. These methods include the use of plain language, communication tools (e.g., multimedia), and "teach-back" (having an individual repeat back instructions to assess comprehension) with all patients.

External Transfer Cases

An external transfer patient is a patient who is transferred from a hospital outside of the hospital's own system. Such transfers may occur based on patient or provider request, specialty services required, or additional acute care needs.

External transfer patients have additional complexity in regards to medication reconciliation because three sources of information require review and reconciliation:

- Patient's list of home medications prior to the hospitalization.
- Medications that are being administered to the patient at the outside hospital prior to transfer.
- Medications ordered at the receiving hospital.

If the organization receives transfers from other hospitals, you should ensure a process is in place to address these reconciliation needs. Adequate communication and handoffs from the sending facility are critical to ensure all medication therapies are addressed and reconciled during the assessment and development of the patient's care plan at the receiving organization.

Conclusion

Maintaining an effective and efficient medication reconciliation process for patient safety in every facility is at the forefront of national patient safety goals and initiatives.

The process must encompass all areas where patient transitions occur in your facility: admission, transfer, and discharge. The effectiveness of the medication reconciliation process in your facility will also follow your patients in the post-acute setting or at home. A sound medication reconciliation process must involve all caregiver disciplines, must be integrated into their daily workflow, and must have the support of facility leadership to be successful. Interventions and improvements must be appropriately implemented as process gaps are identified, and these corrections should be measured for the effectiveness of your patient safety improvement efforts.

This toolkit will guide you through the steps of flowchart and review of your current process, identifying gaps in the process, methods to revise the process, leadership support mechanisms, staff education guidance, and implementing and measuring process changes. Following the steps and guidelines outlined in each chapter of the MATCH toolkit has proven to be the most successful method for hospitals and post-acute setting providers that participated in the AHRQ QIO Learning Network project. The initial and subsequent improvement work to your medication reconciliation process will ultimately result in improved patient care and patient safety outcomes.

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Appendix: The MATCH Work Plan

This work plan is designed to help facilities implement the Medications at Transitions and Clinical Handoffs (MATCH) toolkit developed by Gary Noskin, MD, Kristine Gleason, RPh, and others at Northwestern Memorial Hospital with funding provided from the Agency for Healthcare Research and Quality (AHRQ). MATCH can be implemented through different improvement processes; the templates and samples here were used by the researchers and can be adapted or used as models if needed.

The work plan supports implementation of MATCH by providing a central place to document key team decisions and outcomes related to the project. While the toolkit explains how the MATCH process works and includes examples to illustrate it, the work plan is a support document to operationalize that process for your facility. It also serves as a reference to keep the team on track throughout the process of planning, implementation, and analysis. The work plan will help you do the following steps:

****Engage the patient and caregiver in the medication reconciliation process.****

1. Build the project foundation by assembling a leadership and process design team.
2. Establish a charter to guide your team.
3. Determine a scope for your project that meets facility needs.
4. Define roles and responsibilities of each staff member involved in the medication reconciliation process in your facility.
5. Develop a flowchart of your current process to determine where the process can be improved.
6. Develop/redesign a medication reconciliation process, including identification of a single list of medications for each patient, known as the "One Source of Truth" document.
7. Determine a data collection strategy and assess and evaluate the process to track your progress and identify opportunities for improvement.
8. Implement/integrate the process within the workflow of your facility.
9. Use post-implementation audit findings to educate staff and increase and sustain compliance.

Questions to Ask When Developing Your Design Team and Rationale

Questions and Rationale	Yes/No	Followup
Do you have a multidisciplinary group of individuals representing physicians, nurses, pharmacists, discharge planners, patients, etc. to obtain perspectives and identify workflow issues based on the scope of your medication reconciliation process?		*[Example: Contact manager of discharge planning to identify representative].*
Depending on the scope of your project, is there at least one individual from each discipline who is truly a member of front-line staff? Managers may play an active role on the team or may be a stakeholder. Managers should not represent front-line staff. Front-line staff need to be involved in the design to ensure their day-to-day practice is accurately reflected in the new design process.		
Depending on the scope and focus of your project, have you identified physician representation from Medicine, Surgery, the Emergency Department, specialty areas (i.e., Obstetrics, Psychiatry, Inpatient/Outpatient settings, etc.)? The workflow on the medicine service may be quite different than it is in surgery. It will be important to understand and address these variances during your process design.		
Do you have a patient safety representative on your team to approach the process design from this perspective? Based on their expertise, they may help identify new sources of error that potentially could be introduced with design considerations as well as help incorporate patient safety principles and human factors considerations into the new process design.		
If you will be developing a process that utilizes an electronic medical record and/or computerized prescriber order entry, do you have representation from your information technology department to address functionality capabilities and limitations from a process design perspective?		
If you utilize a paper process, do you have representation to help with the design and verbiage on your forms and to help obtain final approval for use (e.g.) medical records representative, forms committee representative, etc.)?		

Assembling a Medication Reconciliation Team

Identify key stakeholders that need to be aware of your efforts to improve the medication reconciliation process. Examples might include your chief executive officer, department chairs, trustees, etc. From these stakeholders, identify a leadership team and design team. Define a reporting structure.

Medication Reconciliation Leadership Team

Executive Sponsor(s):

Project Sponsor(s):

Improvement Leader(s):

Medication Reconciliation Design Team (from this group, select a process owner)

Physician(s):

Pharmacist(s):

Nurse(s):

Discharge Planner(s):

Information Systems:

Emergency Department Representative(s):

Patient Safety and Quality Staff:

Patient Representative (if possible):

Managers/Directors of Frontline Staff:

Department Chiefs/Chairs:

Medical Record Leader(s):

Quality, Licensure, and Accreditation Representative:

Frontline Staff:

Quality Committee Representative(s):

Other:

Reporting Mechanism (especially to whom/where the team will report)

Reporting structure:

Frequency:

Medication Reconciliation Team Roster

Executive Sponsor(s): (Member of leadership)	Name Phone	Email Pager
Project Sponsor(s):	Name Phone	Email Pager
Improvement Leader(s):	Name Phone	Email Pager
Physician(s):	Name Phone	Email Pager
Pharmacist(s):	Name Phone	Email Pager
Nurse(s):	Name Phone	Email Pager
Discharge Planner(s):	Name Phone	Email Pager
Information Systems:	Name Phone	Email Pager
Emergency Department Representative(s):	Name Phone	Email Pager

Patient Safety and Quality Staff:	Name	Email
	Phone	Pager
Managers/Directors of Frontline Staff:	Name	Email
	Phone	Pager
Department Chiefs/ Chairs:	Name	Email
	Phone	Pager
Medical Record Leader(s):	Name	Email
	Phone	Pager
Quality, Licensure, and Accreditation:	Name	Email
	Phone	Pager
Frontline Staff:	Name	Email
	Phone	Pager
Quality Committee Representative(s):	Name	Email
	Phone	Pager

Developing Your Charter

The medication reconciliation team should develop a medication reconciliation charter, which provides a work plan for your design team. The elements of your charter should consist of:

- Problem statement
- Goals and objectives
- Regulatory requirements
- Scope of the project
- System capabilities/deliverables
- Resources needed for a successful project
- Project milestones and timeline

Sample Template for Medication Reconciliation Initial Design Charter

Problem Statement
Goals and Objectives
Regulatory and Accreditation Requirements
Project Scope
System Capabilities/Deliverables
Resources Needed for a Successful Project
Key Metric(s)
Milestones and Timeline

Determining the Scope of the Project

Before determining the scope of your project, you may find it helpful to first identify all areas within your facility where patients receive medication. Create a list of practice settings that administer medications and organize it by the type of patients they serve (inpatient, outpatient, or both) and whether each setting admits or discharges patients to assist in prioritizing the scope of your project. The chart below is designed to assist you with this process.

Identify Areas within Your Organization That Administer Medications

Practice Settings/Areas That Administer Medications	**Types of Patients These Areas Serve: Inpatient, Outpatient, Both**	**Do These Practice Settings Also Discharge Patients? Yes/No**
Example: Emergency Department (ED)	*Example: Patients seen in the ED may be admitted (converted to inpatients) or discharged after their visit (outpatients)*	*Example: Yes*
Example: Inpatient nursing units serving general medicine patients	*Example: Inpatient*	*Example: Yes*
Example: Transplant Clinic	*Example: Outpatient*	*Example: Yes*

The chart below is just one step in determining the scope of your project. The additional questions below can help guide you on building the scope and charter of your project based on the nuances of your facility.

- Will the project encompass the entire facility, one department, or several departments?
- Will the project focus on one specific area of identified risk or more?
- Should you focus on one service or unit at a time? If so, which should you start with?
- Should you focus on admissions and then move to discharge or should you concentrate efforts on both at the same time?
- Should your initial scope include patients admitted through the emergency department or from procedural areas, such as ambulatory surgery?

Goals and Objectives

General Goals and Objectives:

Measurable Goals Specific to the Design Process:

Achievements Throughout the Project (i.e., milestones):

Transform general goals into a metric-specific aim statement

Intermediate Outcome:

Aim Statement (an aim statement represents the small, measurable steps you will take to achieve the project outcome):

Other Outcome:

Aim Statement:

Metrics:

Timeline:

SAMPLE WORKSHEET: Admission (Entry), Intra-facility Transfer and Discharge (Exit) Process Steps to Determine Disciplines Roles and Responsibilities for Medication Reconciliation

Admission/ Entry Steps	Discipline (Admission/ Entry)	Discharge/Exit Steps	Discipline (Discharge/ Exit)	Intra-Facility Transfer Steps (if applicable)	Discipline (Transfer)
(1) Obtain and document the patient's pre-admission (current) medications upon admission	(1)	(1) Place "discharge order" signifying patient is ready for discharge	(1)	(1) Place a "transfer order" signifying patient is ready for transfer	(1)
(2) Verify/ confirm the patient's pre-admission medication list	(2)	(2) Review current medications and reconcile with patient's home medication list	(2)	(2) Review current medications and reconcile with patient's home medication list. Update medication orders as appropriate for new level of care.	(2)
(3) Reconcile patient's current medication list with medications ordered during episode of care	(3)	(3) Update pre-admission medication list with any new medications, changes or deletions based on the patient's care plan for discharge	(3)		
		(4) Create the patient's discharge instructions which includes a complete, updated medication list for the patient, highlighting any changes to the pre-admission list	(4)		
		(5) Create the patient's discharge summary which includes a complete, updated medication list for the next provider of service	(5)		
		(6) Educate patient on changes made to pre-admission medication list	(6)		
		(7) Patient's discharge summary communicated to next provider of service	(7)		

EXAMPLE: Admission (Entry), Intra-facility Transfer and Discharge (Exit) Process Steps to Determine Disciplines Roles and Responsibilities for Medication Reconciliation During Hospitalization

Admission/ Entry Steps	Discipline (Admission/ Entry)	Discharge/Exit Steps	Discipline (Discharge/ Exit)	Intra-Facility Transfer Steps (If applicable)	Discipline (Transfer)
(1) Obtain and document the patient's pre-admission (current) medications upon admission	(1) Physician starts list (Nurse may start list if patient admitted via Ambulatory Surgery or a Procedural Area). Nurses and pharmacists empowered to start list or document medications or changes as new information becomes available.	(1) Place "discharge order" signifying patient is ready for discharge	(1) Physician	(1) Place a "transfer order" signifying patient is ready for transfer	(1) Physician
(2) Verify/confirm the patient's pre-admission medication list	(2) Nurse (non-ICUs) or pharmacist (ICUs).	(2) Review current medications and reconcile with patient's home medication list in Med Profile Tab	(2) Physician	(2) Review current medications and reconcile with patient's home medication list in Med Profile Tab. Update medication orders as appropriate for new care setting.	(2) Physician
(3) Reconcile patient's current medication list with medications ordered upon admission	(3) Nurse and/or pharmacist depending on nursing unit	(3) Update pre-admission medication list with any new medications, changes or deletions based on the patient's care plan for discharge	(3) Physician or nurse	(3) Reconcile home medications with current medications upon transfer in to and out of the ICU to ensure pre-admission medications are held and/ or restarted appropriately during these transitions	(3) Pharmacist
		(4) Create the patient's discharge instructions which includes a complete, updated medication list for the patient, highlighting any changes to the pre-admission list	(4) Physician		
		(5) Create the patient's discharge summary which includes a complete, updated medication list for the next provider of service	(5) Physician		
		(6) Educate patient on changes made to pre-admission medication list	(6) Physician or nurse depending on practice setting		
		(7) Patient's discharge summary communicated to next provider of service	(7) Physician and/or Medical Records		

Develop a Flowchart of Your Current Medication Reconciliation Process

Building a Flowchart Diagram

Below are questions to help you flowchart your current process, new process, or process redesign at admission, transfer, and discharge.

ADMISSION

Medication History

1. Who obtains a medication history?
2. What is captured during a medication history interview?
3. When is a medication history obtained?
4. Where is the medication history documented within the patient's medical record?
5. How is a medication history documented (i.e., structured paper form; electronic entry; etc.)?
6. How do you monitor and measure that medication histories are obtained and documented appropriately?

Comparison (Reconciliation)

1. Who compares (reconciles) medication orders to medication histories?
2. What is the process for reconciliation?
3. When does reconciliation occur?
4. Where is documentation found in the medical record that reconciliation took place?
5. How do you identify which discrepancies require clarification?
6. How do you monitor and measure that reconciliation is occurring?

Orders

1. Who places medication orders?
2. What is the process for ordering medications?
3. When are medications usually ordered in relation to obtaining a medication history?
4. Where are the ordering decisions for each of the patient's current medications documented (i.e., documenting plan to continue blood pressure medication the patient takes at home)?
5. How are discrepancies resolved?

Resolution

1. Who follows up on unintended medication discrepancies?
2. What is the mechanism to resolve unintended discrepancies?
3. When does the followup occur?
4. Where is the documentation located within the patient's medical record indicating that discrepancies were resolved?
5. How do you document resolution or outcome of the intervention?
6. How do you monitor and measure that unintended discrepancies were actually resolved?

INTRA-FACILITY TRANSFER

Comparison (Reconciliation)

1. Who compares (reconciles) medications upon transfer?
2. What is the process for reconciling orders a patient is currently receiving in the sending unit compared to orders the patient will be receiving at the new level of care?
3. What is the process of comparing these orders to the patient's pre-admission medication list?
4. When does reconciliation occur in preparation for transfer?
5. Where is the documentation that reconciliation took place?
6. How do you identify discrepancies requiring clarification during reconciliation?
7. How do you monitor and measure that reconciliation is occurring?

Orders

1. Who reviews current medication orders and updates orders in preparation for new level of care?
2. What is your process for review and updating medication orders in preparation for transfer?
3. When does the review and update occur?
4. Where is the intent/plan for each medication documented in relation to the medication orders in preparation for transfer?
5. How are medication orders handled in preparation for transfer (i.e., rewritten)?

Resolution

1. Who follows up on unintended medication discrepancies?
2. What is the mechanism to resolve unintended discrepancies?
3. When does the followup occur?
4. Where is the documentation located within the patient's medical record indicating that discrepancies were resolved?
5. How do you document resolution or outcome of the intervention?
6. How do you monitor and measure that unintended discrepancies were actually resolved?

DISCHARGE

Medication Discharge List and Reconciliation

1. Who reviews, reconciles, and updates the patient's medication list in relation to current orders in preparation for discharge?
2. What is the discharge reconciliation process?
3. When does this occur?
4. Where is the updated, complete medication history documented within the patient's medical record?
5. How is the patient's medication list documented in preparation for discharge?
6. How do you monitor and measure that the patient's medication list was updated and a complete list was given to the patient highlighting any changes?
7. How do you communicate the patient's updated, complete medication list to the next provider of service and who provides this communication?

Resolution

1. Who follows up on unintended medication discrepancies at discharge?
2. What is the mechanism to resolve unintended discrepancies at discharge?
3. When does the followup occur?
4. Where is documentation located within the patient's medical record indicating that discrepancies were resolved?
5. How do you identify discrepancies requiring clarification during reconciliation?
6. How do you document resolution or outcome of the intervention?
7. How do you monitor and measure that unintended discrepancies were actually resolved?

Developing/Redesigning the Process

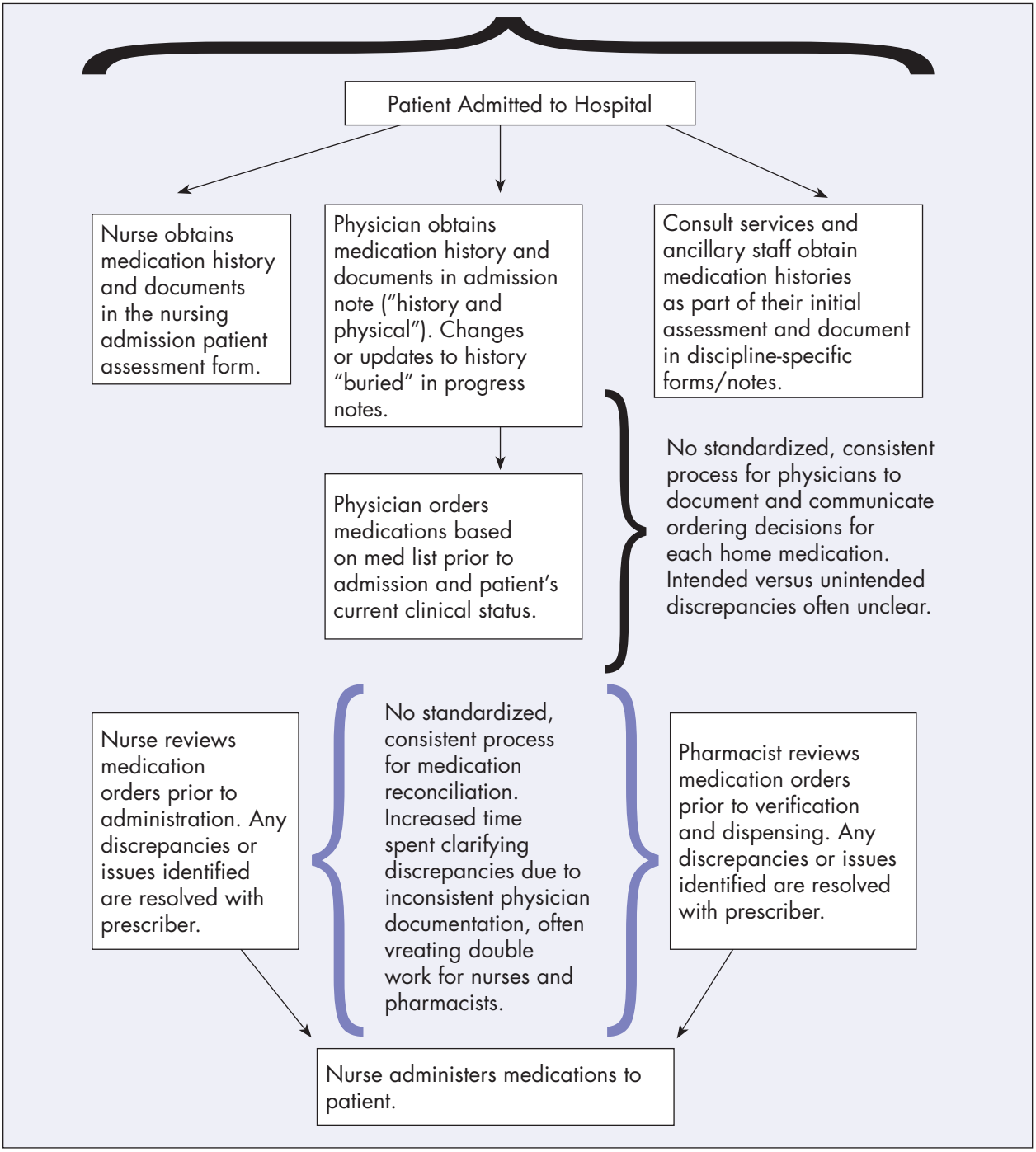
Many organizations are uncertain about how to proceed with designing a workable solution for medication reconciliation. This section provides helpful information and tools for designing or redesigning a medication reconciliation process.

Building the Foundation for Your Medication Reconciliation Process Design

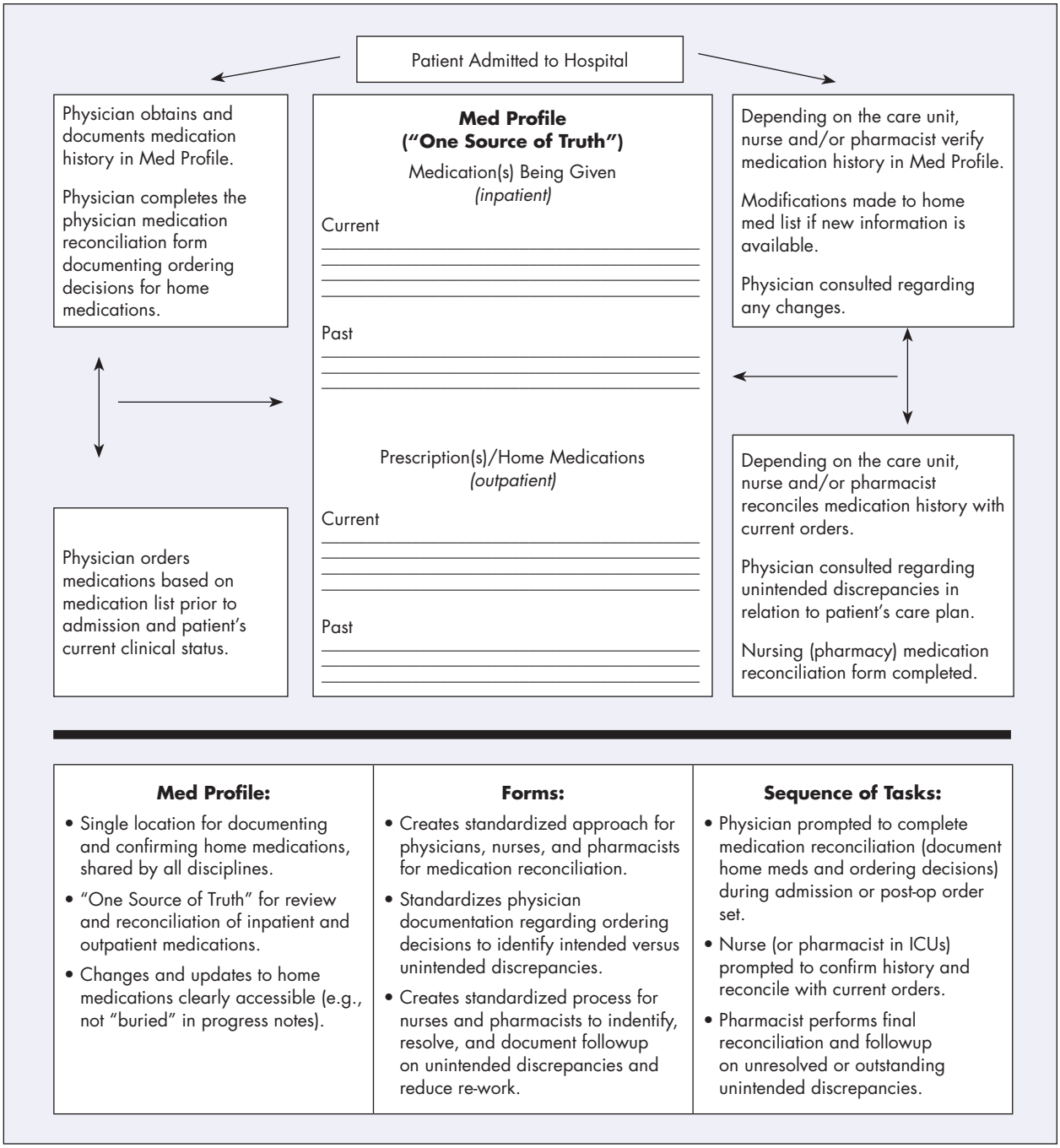
- **Process design**—should center on the concept of a single list to document patient's current medications ("one source of truth")
- **Defining roles and responsibilities for medication reconciliation**—determine which discipline(s) should be involved in each step of your medication reconciliation process, including their respective roles and responsibilities
- **Integrating medication reconciliation into your existing workflow**—prompts to complete required steps for medication reconciliation are essential

Medication Reconciliation Upon Admission: High-Level Process Map BEFORE Redesign

- Multiple, independent medication histories obtained from patient and documented throughout the medical record.
- No prompts to cross-reference documentation, which may be conflicting.



Medication Reconciliation Upon Admission: High-Level Process Map AFTER Redesign



Med Profile:

- Single location for documenting and confirming home medications, shared by all disciplines.
- "One Source of Truth" for review and reconciliation of inpatient and outpatient medications.
- Changes and updates to home medications clearly accessible (e.g., not "buried" in progress notes).

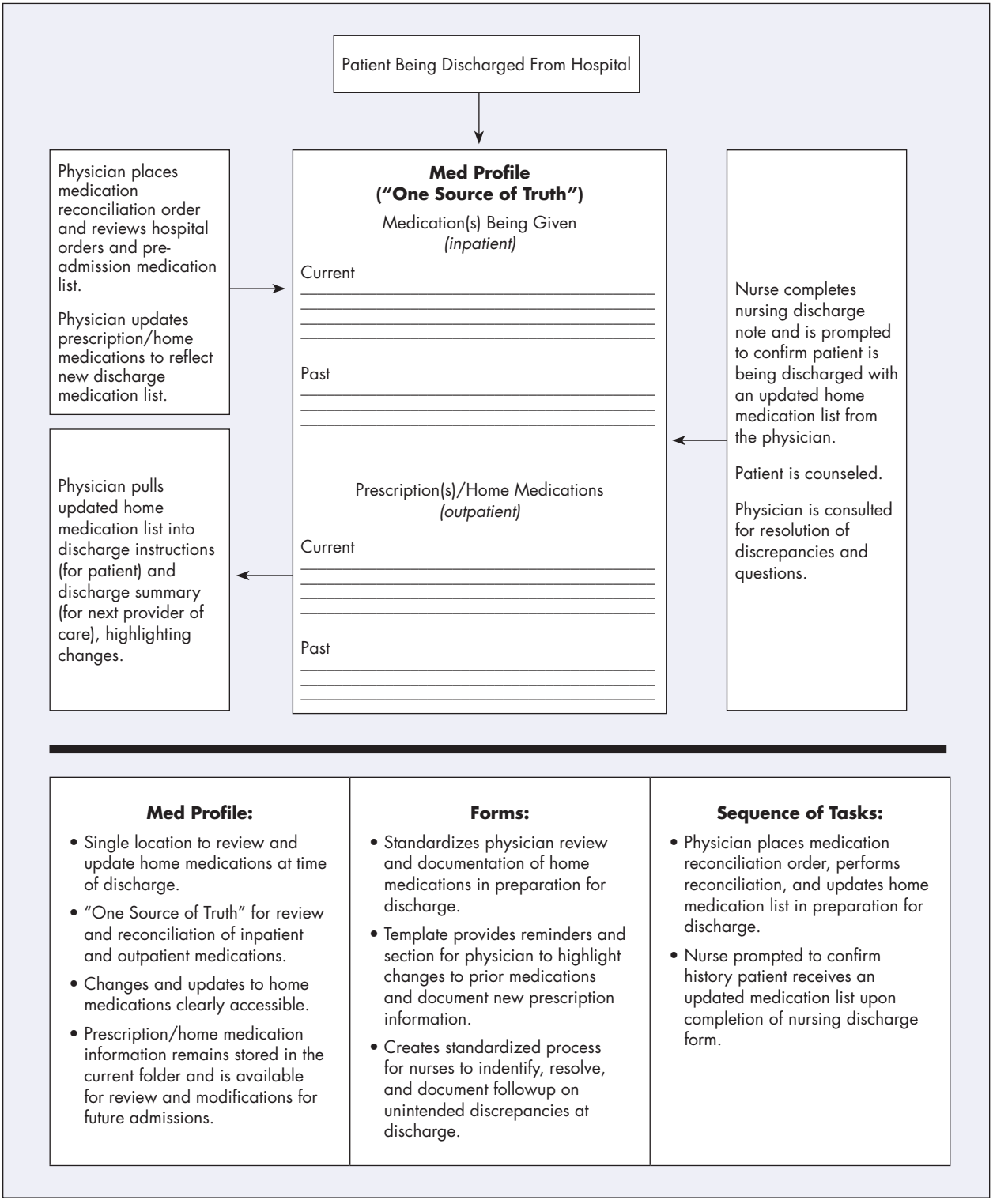
Forms:

- Creates standardized approach for physicians, nurses, and pharmacists for medication reconciliation.
- Standardizes physician documentation regarding ordering decisions to identify intended versus unintended discrepancies.
- Creates standardized process for nurses and pharmacists to indentify, resolve, and document followup on unintended discrepancies and reduce re-work.

Sequence of Tasks:

- Physician prompted to complete medication reconciliation (document home meds and ordering decisions) during admission or post-op order set.
- Nurse (or pharmacist in ICUs) prompted to confirm history and reconcile with current orders.
- Pharmacist performs final reconciliation and followup on unresolved or outstanding unintended discrepancies.

Medication Reconciliation Upon Discharge: High Level Process Map AFTER Redesign



Med Profile:	Forms:	Sequence of Tasks:
• Single location to review and update home medications at time of discharge. • "One Source of Truth" for review and reconciliation of inpatient and outpatient medications. • Changes and updates to home medications clearly accessible. • Prescription/home medication information remains stored in the current folder and is available for review and modifications for future admissions.	• Standardizes physician review and documentation of home medications in preparation for discharge. • Template provides reminders and section for physician to highlight changes to prior medications and document new prescription information. • Creates standardized process for nurses to indentify, resolve, and document followup on unintended discrepancies at discharge.	• Physician places medication reconciliation order, performs reconciliation, and updates home medication list in preparation for discharge. • Nurse prompted to confirm history patient receives an updated medication list upon completion of nursing discharge form.

[Insert your Organization's Logo Here]

Patient Name:
MR#:
Date:
Fin #:

Your Current Medication List (Name _____

_____)

Please complete the following information. A registered nurse will review this list and update it, if needed, when you arrive for your surgery, procedure, or test.

ALLERGIES: None _____ (please check none) or list:

Source of Allergy	**Reaction**	**Source of Allergy**	**Reaction**
Example: Penicillin	Hives	3.	
1.		4.	
2.		5.	

Medication List the names of any medications you are taking. Please include any over the counter medicines (including vitamins, minerals, and herbal supplements). Also include any medications you held for your procedure.	**Strength** List the strength of each tablet, capsule, etc.	**Dose** How much are you taking? (number of tablets, capsules, units, etc.)	**Frequency** How often do you take the medication? (daily, twice a day, monthly, etc.)	**Route** How are you taking this medication? (by mouth, injection, patch, etc.)	**Last Dose Taken** Indicate the date and time of the last dose taken
Example: Toprol XL	*100mg*	*1 Tablet*	*every day*	*by mouth*	*this morning*

Data Collection Strategy, Assessment, and Process Evaluation

Following implementation of the medication reconciliation process it is essential to start auditing the process. Auditing will allow you to assess and evaluate the success and identify opportunities for improvement.

Auditing should be done at all the transitions of care and should include each discipline involved in the process. For example, if physicians and nurses are responsible for medication reconciliation at your organization, it is necessary to look at overall compliance, as well, as the individual disciplines' compliance. Knowing how each discipline is performing will help tailor feedback to leadership and identify discipline specific issues that need to be addressed.

Selecting and Reporting Results Metrics From Your Audit

The section below will help you develop your data collection strategy for audits.

Data Collection Strategy
Method: (Paper audit form vs. electronic vs. other)
Frequency:
Patients:
Sample Size:
Person Accountable for
Data Collection:
Data Entry:
Plotting on Run Chart:
Other Details:

Medication Reconciliation Audit Form

Unit:_____ Manager:_____ Date: _____

Data Collector's Name: _____

Introduction:

- The data is to be collected and reported on a _____ basis
- During each _____, a total of _____ charts should be selected for record review
- Findings are to be tracked through your own quality process.
- Provide copies of the **completed audit form to** _____

Instructions:

Medication reconciliation is the process of comparing medications the patient has been taking prior to admission/entry to the hospital to the medications the organization is about to provide to identify any unintended discrepancies. If a patient will be provided/given any medications while under our care or prescribed any new drugs to take after their stay, medication reconciliation is required.

1. Confirm a medication list was collected from the patient upon arrival to (list must include medication name, dose, route, and frequency).
2. The list must then be available in the patient's chart for the caregiver to review prior to initiating care.
3. Identify that the complete and updated list of medications was then provided to the patient at discharge and discussed within the context of discharge instructions ("resume home meds" is not acceptable).

Medication Reconciliation	**Pt. 1 Y/N**	**Pt. 2 Y/N**	**Pt. 3 Y/N**	**Pt. 4 Y/N**	**Pt. 5 Y/N**
• List of home medications was collected from the patient at the time of arrival, and medication name, dose, route, frequency were documented in the appropriate location of the medical record					
• List of home medications collected was available for the caregivers to review prior initiating care					
• Updated medication list was provided to the patient at discharge and discussed in the context of discharge instructions					

If you observe someone NOT doing the right thing, ask the following questions:

1. Is this a supply/logistic issue (can't find forms, pens, etc.)? _____

_____

_____

2. Is this a performance/knowledge/skill issue? _____

_____

_____

3. Is this a human factors (distraction, noise, fatigue) issue? _____

_____

_____

4. Other barriers to compliance? _____

_____

_____

Goal: 100% Compliance

Numerator:

- Number of medication lists collected and completed on outpatients requiring medication reconciliation.
- Number of medication lists that were provided back to outpatients in the context of discharge instructions.

Denominator: Number of outpatients requiring medication reconciliation.

The chart below represents an example of an audit reporting chart that could be used to communicate audit reporting results on any given day. The number of charts reviewed will vary depending on the size of your organization.

Audit Reporting Chart

Issue	Compliance Defined as:	Current Compliance as of [insert date]	Action Plan
Medication Reconciliation on Admission	Numerator: # of patients with a home medication list documented and reconciled at admission Denominator: # of patients admitted	GOAL: >90% ACTUAL: [insert current compliance]	Insert plans to close the gap between the actual compliance percentage and the goal
Medication Reconciliation on Transfer	Numerator: # of patients with medications reconciled upon transfer Denominator: # of patients transferred	GOAL: >90% ACTUAL: [insert current compliance]	Insert plans to close the gap between the actual compliance percentage and the goal
Medication List at Discharge	Numerator: # of patients provided an updated home medication list at discharge Denominator: # of patients discharged	GOAL: >90% ACTUAL: [insert current compliance]	Insert plans to close the gap between the actual compliance percentage and the goal

Example of Metrics on Admission: Illinois Hospital Association Medication Reconciliation Collaborative

1. Percent of Patient Record With Documented Home Medication List

$$\frac{\text{Numerator}}{\text{Denominator}} \qquad \frac{\text{\# Patient Records With List of Home Medications}}{\text{\# Records Reviewed}}$$

- Numerator: The list of home medications is documented on the identified tool; each entry includes drug name, dose, route, and frequency. This is the minimum standard; your organization may establish a higher standard.
- Denominator: Count number of records reviewed.

Example: Records reviewed (n) = 10

- 5 records have a list of home medications documented on the identified tool.
- 2 are missing the identified tool.
- 3 have the tool, but one or more entries are incomplete, such as lack of name, dose, route, and frequency.

Report: 50% (5/10) compliance with patient records with a list of home medications on the identified tool.

2. Percent of Medications Reconciled

$$\frac{\text{Numerator}}{\text{Denominator}} \qquad \frac{\text{\# Patient Records With List of Home Medications}}{\text{\# Records Reviewed}}$$

Note: Of the 10 records identified in the first report, review only the 5 records with the home medication list documented in the identified tool.

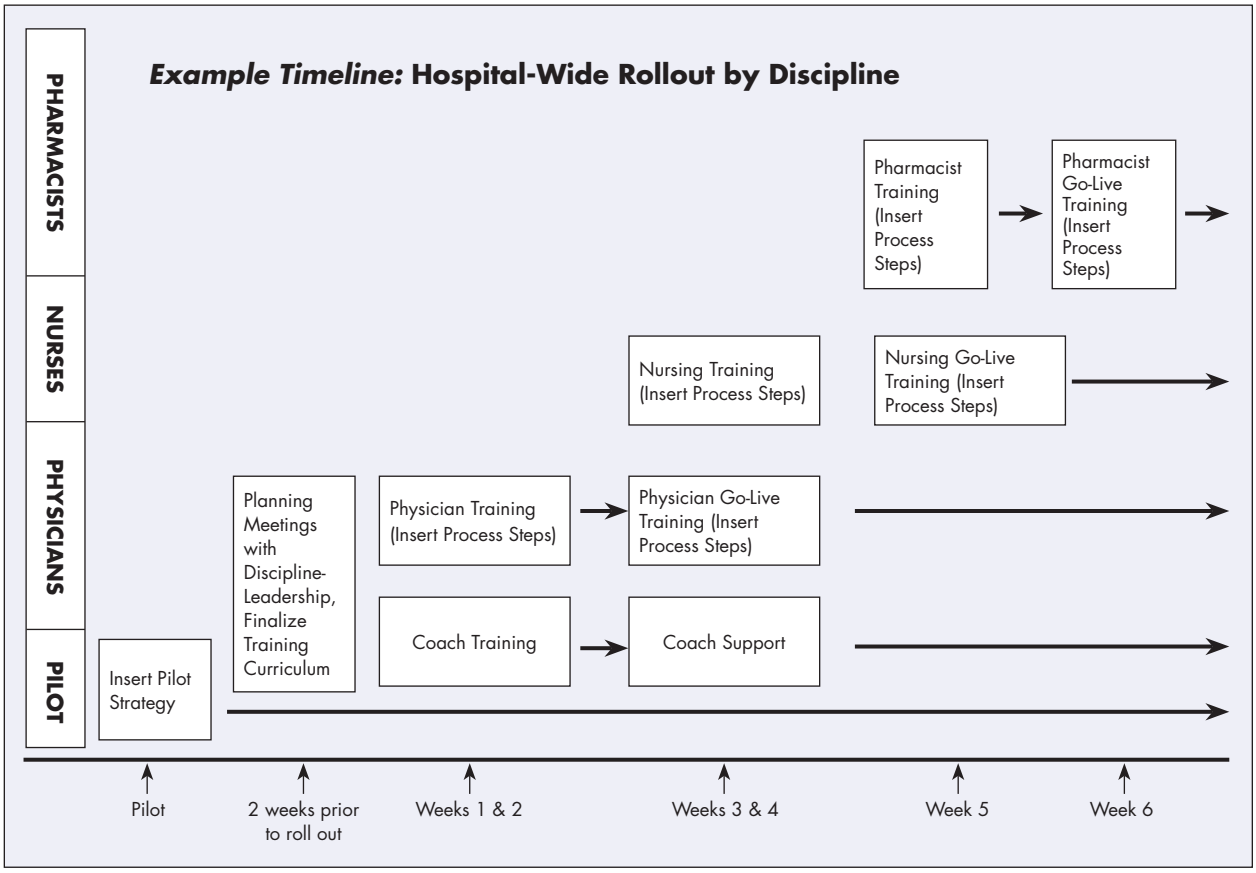
- Numerator: Count of the number of medications on the home medications list reconciled with admission orders.
- Denominator: Count of the number of medications eligible for reconciliation. Medications that by policy are not administered within the organization are not eligible for reconciliation but should be reconciled on discharge (e.g., non-formulary products or herbal supplements).

Example: Records reviewed (n) = 5; 80 medications were ordered on admission

- 10 home medications were appropriately substituted due to formulary constraints
- 70 home medications required reconciliation
- 50 medications were reconciled

Implementation

Once you have designed and pilot tested your process and made any necessary enhancements, you are ready for facility-wide implementation of your medication reconciliation project. To carry this out, form an implementation team (which may be the same or different from your design team) and develop a plan for implementation. Below is an example implementation timeline for a hospital-wide roll out of a medication reconciliation project.



Medication Reconciliation

Definition: Medication reconciliation is a process that involves several clinical steps:

1. Upon admission, obtain the complete list of medications the patient is taking (or should be taking) prior to admission (e.g. the patient's "medication history"). This list should be obtained from the patient, whenever possible, although other resources (e.g. family, caregivers, community pharmacies, past medical records, primary care physician) may need to be contacted as needed. This list should be documented in a single location within the medical record that is utilized and is accessible to all healthcare providers.

2. After documentation, this list is confirmed with the patient, or additional resources if needed, to help ensure accuracy and completeness.

3. Once admission orders are written, they are compared (reconciled) against this medication history list to ensure there are no unintended differences (i.e., confirming that any changes, omissions or additions are purposeful based on the patient's current clinical status and/or our formulary.) Any unintended discrepancies should be discussed with the physician and any resulting changes should be documented.

4. If the patient is transferred from one unit to another during hospitalization, medications patients are receiving in the sending unit are reviewed and updated accordingly to reflect the patient's treatment plan for the new care setting. A review of the medications the patient was taking prior to admission should also be done to assess if they are still applicable or not for the receiving unit or new care setting (i.e., to assess if a home medication held upon admission is now appropriate and could be restarted in the new care setting.) As stated above, any unintended discrepancies should be discussed with the physician and any resulting changes should be documented.

5. To prepare for discharge, the current medication orders are reviewed and compared to the list of medications the patient was on prior to admission. This comparison (reconciliation) and assessment helps form the patient's discharge medication list. The patient should be counseled on any changes, additions or deletions that were made to the medications they were taking prior to admission. The patient's discharge medication list should also be communicated to the next provider of service (oftentimes, this will be the primary care physician).

6. Although health care professionals are already doing many of these clinical steps, we have internal and external data to support that medication errors, and in many cases patient harm, are occurring. We have developed a standardized process for doctors, nurses and pharmacists to obtain, document and confirm a patient's home medication list. The process ensures that the most accurate, complete medication history is documented for each patient and that all inpatient and home medications reconcile.

Sample Letter to Discipline-Specific Leaders on Meeting Regarding Training and Implementation Strategy for Medication Reconciliation

[Insert Organization Logo Here]

[Insert date]

To *[Insert Stakeholder]*,

Medication errors are one of the highest single-volume sources of medical errors. Unfortunately, many of these medication errors are associated with direct harm to patients. [Insert organization] is committed to improving medication management, and a critical step is medication reconciliation. [Insert discipline] have been playing an active role in these activities, but there is necessary work yet to be done.

On *[insert date]*, *[insert organization/area]* will implement *[insert process]*. *[Insert brief description of process]*. In order for *[insert organization]* to be successful, ALL *[insert discipline]* must participate. Accordingly, we are requiring all *[insert discipline]* to *[describe steps]*

To ensure compliance of your *[insert discipline/staff]* in this process, your attendance is required at a meeting to provide additional information regarding medication reconciliation and to review these specific requirements. If you are unavailable to attend this meeting, please provide the name of an educational leader in your program who will represent you.

There are XXX options to attend this discussion:

- *[Insert dates/times/meeting locations]*

Please reply to [insert contact] with your preferred meeting date.

Thank you, and we look forward to seeing you there.

Senior Leader(s) – Name(s)/Title(s)

Sample Communication from Discipline-Specific Leadership to Staff on Medication Reconciliation Educational Training Sessions

[Insert Organization Logo Here]

[Insert date]

To *[Insert Staff Information]*,

[insert organization] has recognized the patient safety benefits of medication reconciliation and has made this an organizational priority. On *[insert date]*, the *[insert organization/dept.]* will "Go Live" with… *[describe process]*. The goal is to… *[insert goal]*. For *[insert organization/dept.]* to be successful, ALL *[insert discipline(s)]* must participate.

To help educate *[insert discipline]* on *[insert new process]* developed for medication reconciliation, mandatory 30-minute multidisciplinary training sessions will be available between *[insert dates]*. In addition, medication reconciliation coaches will be available for one-on-one training and assistance from *[insert date]*.

[Insert discipline] can enroll for training by [insert how to "sign up"].

Thank you for your support of this patient safety effort.

Discipline-specific Leader(s) – Name(s)/Title(s)

Sample Staff Flier to Announce Rollout/Implementation of Medication Reconciliation Process

Medication Reconciliation

The Joint Commission National Patient Safety Goal 03.06.01:
To accurately and completely reconcile medications across the continuum of care.

Medication Reconciliation *[insert process]*

"GO LIVE" on *[insert date]*

[Insert discipline / training strategy]

Education and Training on [insert date]

- *Describe how discipline(s) "sign-up" for training*

What is [insert process rolling-out]:

- Insert description

Who needs to do [insert process / effort]:

- Insert description

What is required for [insert process / effort]:

- Insert description

For questions and assistance during "go-live,"
please contact *[insert name/contact info]*

Post-Implementation Strategies to Increase and Sustain Compliance

Audit findings can be used to identify opportunities for future action. Collecting data by discipline or unit is particularly helpful in this step. It allows leadership to focus on key areas where improvement is most needed. In addition, providing data is often a useful way to demonstrate the need for change to those who may not yet be convinced. This can improve compliance and sustainability.

Identifying Challenges and Addressing Barriers

Implementation Challenges	Observations	Proposed Action	Next Steps/Primary Responsibility
Example: Reliance on memory; lack forced function	Physicians are not remembering to place a medication reconciliation order	Design a prompt during the admission ordering phase that creates a forcing function for physicians to complete the medication reconciliation form	Monitor physician compliance for completing the medication reconciliation form

MATCH Resources for Patients

Agency for Healthcare Research and Quality

The Agency for Healthcare Research and Quality (AHRQ, http://www.ahrq.gov/) is the lead Federal agency charged with improving the quality, safety, efficiency, and effectiveness of health care for all Americans. As part of its effort to help consumers become better informed and participate as partners in their own health care, AHRQ has developed materials that will help patients get safer, higher quality care.

- Check Your Medicines—Tips for Taking Medicines Safely (http://www.ahrq.gov/consumer/checkmeds.htm)—Use this checklist to help avoid medication errors. Simple checks could save your life.
- Quick Tips—When Getting a Prescription (http://www.ahrq.gov/consumer/quicktips/tipprescrip.htm)—The single most important way you can stay healthy is to be an active member of your own health care team. One way to get high-quality health care is to find and use information and take an active role in all of the decisions made about your care. This information will help you when getting a prescription filled.
- Your Medicine: Be Smart. Be Safe. (http://www.ahrq.gov/consumer/safemeds/safemeds.htm)—You can learn more about how to take medicines safely by reading this guide. It answers common questions about getting and taking medicines and has handy forms that will help you keep track of information.

The Joint Commission

The Joint Commission (http://www.jointcommission.org/general_public.aspx) evaluates health care organizations' performance in areas that affect patient health and safety. The Joint Commission offers among other things, a Speak Up™ program which features brochures, posters, and buttons on a variety of patient safety topics. Speak Up™ encourages you to:

- Speak up if you have questions or concerns, and if you don't understand, ask again. It's your body and you have a right to know.
- Pay attention to the care you are receiving. Make sure you're getting the right treatments and medications by the right health care professionals. Don't assume anything.
- Educate yourself about your diagnosis, the medical tests you are undergoing, and your treatment plan.
- Ask a trusted family member or friend to be your advocate.
- Know what medications you take and why you take them. Medication errors are the most common health care errors.

- Use a hospital, clinic, surgery center, or other type of health care organization that has undergone a rigorous on-site evaluation against established state-of-the-art quality and safety standards, such as that provided by The Joint Commission.

- Participate in all decisions about your treatment. You are the center of the health care team.

Speak Up™ Initiatives (http://www.jointcommission.org/topics/patient_safety.aspx) include:

- Things You Can Do To Prevent Medication Mistakes—Questions to ask at the clinic, hospital, doctor's office, or pharmacy to help prevent medication mistakes; this resource includes a wallet card to list medications.

- Planning Your Recovery—Includes tips you can use to find out about your condition, new medicines, and follow-up care.

U.S. Food and Drug Administration

The U.S. Food and Drug Administration (FDA, http://www.fda.gov/consumer/default.htm) is responsible for protecting the public's health by assuring the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, our Nation's food supply, cosmetics, and products that emit radiation. The FDA is also responsible for advancing the public's health by helping to speed innovations that make medicines and foods more effective, safer, and more affordable; and helping the public get the accurate, science-based information they need to use medicines and foods to improve their health.

- Consumer Education: What You Need to Know to Use Medicine Safely (http://www.fda.gov/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/UnderstandingOver-the-CounterMedicines/ucm101467.htm)—These consumer education materials can help you work with your health professionals to make the best medicine choices and use medicine so it is as safe and effective as possible.

The American Society of Health-System Pharmacists

The American Society of Health-System Pharmacists (ASHP, http://www.ashp.org/) is a national professional society comprised of pharmacists who work with doctors and other health care professionals in hospitals, ambulatory care clinics, and long-term care and home care facilities. The mission of ASHP is to support pharmacists to help people use medications safely and effectively. ASHP's consumer Web site (http://www.safemedication.com/) provides safety tips on medications, forms to help you keep track of your medicines, and helpful information on administering medications. This Web site also offers a drug information resource, MedMaster, which is a searchable database to learn more about your medications. Information on emergency preparedness as well as poison prevention tips for children are also provided by ASHP.

The Institute for Safe Medication Practices

Institute for Safe Medication Practices (ISMP, http://www.ismp.org/Newsletters/consumer/alerts/Brochure.asp) is the Nation's only nonprofit organization devoted entirely to medication error prevention and safe medication use. The organization is known as a premier resource for impartial, timely, and accurate medication safety information. ISMP has information specific to consumers and offers a free monthly newsletter.

The Massachusetts Coalition for the Prevention of Medical Errors

Massachusetts Coalition for the Prevention of Medical Errors (http://www.macoalition.org/consumerDirectory.shtml) provides a formatted medication list that is a useful way to organize information about your medication history and other important health care related information. The coalition offers multiple resources including tips for using medications wisely and suggestions on what to do if you think an error has occurred.

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