

Failure Mode and Effects Analysis

Medication Reconciliation



Partnership for Patient Care



A Collaborative of the Delaware Valley Healthcare Council •
Independence Blue Cross • ECRI Institute

Partnership for Patient Care Program Overview

The Partnership for Patient Care (PPC) is a collaborative between the Health Care Improvement Foundation (HCIF), hospitals in southeastern Pennsylvania, Independence Blue Cross (IBC), and other stakeholders designed to make the Greater Philadelphia area the safest place in the nation to receive healthcare. HCIF has partnered with ECRI Institute and the Institute for Safe Medication Practices — two local, internationally recognized leaders in patient safety.

The Partnership for Patient Care promotes best practices and evidence-based medicine to improve the safety and quality of healthcare at the region's hospitals. Using a regional, strategic, and cohesive approach, the Partnership provides education, tools, technical assistance, resources, and an interactive forum to facilitate hospitals' efforts to more rapidly implement best practices.

In 2007, the PPC agenda is focused on several initiatives: prevention of Methicillin-resistant *Staphylococcus aureus* (MRSA); management of anticoagulants; and proactive hazard analysis and strategies designed to prevent patient falls, ensure reconciliation of medications upon discharge, and prevent deep vein thrombosis. All of the issues addressed by the 2007 agenda have been identified as key targets for intervention by national and statewide patient safety organizations.

A core component of this PPC program focuses on a regional approach to conducting proactive risk analyses (PRA) using failure mode and effects analysis (FMEA) methodology to proactively strengthen patient safety. Hospitals in the region can select to actively participate in one or more of the regional FMEA topics each year. The Partnership's regional FMEA approach provides education, tools, technical assistance, resources, and an interactive forum to facilitate the hospital's efforts in conducting their FMEAs.

The Partnership for Patient Care provides a solid foundation for hospitals to continue their meaningful work in incorporating evidence-based best practices in strengthening patient safety.

Proactive Risk Assessment Program Collaborators:

Health Care Improvement Foundation (HCIF) is a nonprofit foundation. Its mission is the support innovative efforts to improve health services to enhance public trust and confidence in the region's healthcare delivery system through the promotion of best practices in community health and patient safety in the Delaware Valley. *Website: www.dvhc.org/hcif*

ECRI Institute is an independent, nonprofit health services research agency that focuses on improving the safety, quality, and cost-effectiveness of health care. It is widely recognized as the world's most trusted organization for unbiased, reliable information on health care technology, health care risk and quality management, and healthcare environmental management. It is designated as an Evidence-based Practice Center by the U.S. Agency for Healthcare Research and Quality and is a Collaborating Center of the World Health Organization (WHO). *Website: www.ecri.org*

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1.0 Executive Summary

A core component of the Partnership for Patient Care (PPC) program focuses on a regional approach to conducting proactive risk analyses (PRA) and specifically uses failure mode and effects analysis (FMEA) methodology to proactively strengthen patient safety. FMEA is a formalized evaluation technique used to proactively evaluate high-risk clinical processes for ways in which failures can occur and to redesign the process or underlying system to mitigate risks. The goal is to eliminate or minimize the potential for failures, to stop failures before harm reaches the patient, or to minimize the consequences of the failure. Hospitals in the region can select to actively participate in one or more of the regional FMEA topics each year. The PPC's regional FMEA approach provides education, tools, technical assistance, resources, and an interactive forum to facilitate the hospitals' efforts in conducting their FMEAs.

This special report synthesizes the results and benefits of PPC's FMEA on medication reconciliation. This topic was chosen based on its broad application across regional hospitals, regional advisory group input, synergy with national patient safety/quality initiatives, and the evidence base related to medication reconciliation. Fourteen hospitals actively participated in this regional FMEA.

Mitigation strategies to reduce risk associated with potential failure modes varied from hospital to hospital, depending on their unique circumstances. However, the following mitigation strategies were most frequently implemented amongst participating hospitals. In addition, hospitals indicated that implementing these mitigation strategies seemed to have the greatest impact on strengthening medication reconciliation and patient safety:

- Delineate responsibility and accountability for acquiring home medication list
- Delineate responsibility for follow up if home medication list is incomplete
- Place flag on the home medication list to indicate that it has not been completed
- Utilize case managers to verify home medication list
- Contact patient's pharmacy to verify home medications
- Contact primary care physician to verify home medications
- Enter home medication list into the computer
- Reconcile medications and retain reconciled medication list in patient's color coded folder
- Keep home medication list with discharge instruction form for physician to review
- Develop a protocol for discharge medication reconciliation
- Develop a medication reconciliation form that contains prompts
- Utilize one medication reconciliation form for all disciplines (e.g., nursing, pharmacy, physicians, radiology) and in all care areas
- Review unit-specific data to develop and refine medication reconciliation form
- Develop combined form that begins with the home medications and becomes the physician order sheet, and patient reference sheet upon discharge (eliminating the use of multiple forms)
- Keep medication reconciliation list with the medication administration record (MAR)
- Delineate responsibility for communicating discharge medications to the next provider

- Create a discharge folder with pertinent patient information (e.g., medication list, wound care) and instructions for patient to share with their physician and home health nurse; provide multiple copies
- Fax medication list to local pharmacy for review (e.g., insurance coverage for prescribed medications)
- Initiate patient medication education upon admission and continue throughout the hospital stay utilizing nursing, pharmacy, and physicians
- Utilize a database with several languages and various reading levels to provide printed medication information to patients
- Redesign discharge form to allow sufficient room for medication list
- Forward copies of discharge medication reconciliation form and discharge instructions to pharmacy for review and require pharmacist to contact physician with discrepancies
- Incorporate a check box on form to instruct patients to refer back to primary care provider for medication list verification
- Have senior leadership make medication reconciliation an organizational wide goal
- Review unit-specific data to provide targeted education for improving medication reconciliation
- Implement an off-unit education program to provide an environment more conducive to learning
- Provide medication safety Webinars for PRN staff

Baseline and Follow-up Self-Assessment Surveys were conducted during the FMEA process to assess the extent to which hospitals had implemented evidence-based practices for effective patient safety particular to the medication reconciliation process. The baseline survey was conducted early in the FMEA process prior to any efforts for development of mitigation strategies; the follow-up survey was conducted upon completion of the FMEA process after hospitals had implemented their mitigation strategies. Our survey analysis is organized by the key areas of culture, infrastructure, and practices. Based on a comparison of follow-up to baseline survey results, PPC and participating hospitals have successfully strengthened patient safety with regards to medication reconciliation in the region. It is anticipated that patient safety will be further strengthened as hospitals continue to work on mitigation strategies and their implementation.

Survey results can be summarized as follows:

- Significant progress was demonstrated in strengthening patient safety as demonstrated by the 17.4% overall improvement in comparing aggregate follow-up to baseline scores (follow-up score of 81, baseline score of 69).
- Greatest improvement was shown in the key area of **Infrastructure** (18.3% improvement). Highlights of significant improvement in this category include:
 - ✓ The patient's home medication list is readily available to the physician writing discharge medication orders (18.5% improvement).
 - ✓ The caregiver accountable for reconciling discharge medications is clearly delineated (23.9% improvement).
 - ✓ The caregiver performing discharge medication reconciliation is guided by a form that contains prompts (28.8% improvement).
 - ✓ The hospital systematically identifies adverse drug events (ADEs) associated with failures in the discharge medication reconciliation process (52.2% improvement).

- ✓ The hospital has implemented process measures to monitor the effectiveness of its discharge medication reconciliation process (20.5% improvement).
- Significant improvement was also demonstrated in the key area of **Practices** (17.9% improvement). Highlights of significant improvement in this category include:
 - ✓ The confirmed home medication list always contains complete information about each drug (28.8% improvement).
 - ✓ If a home medication list cannot be completed, the reason is always documented in the medical record (17.4% improvement).
 - ✓ On average, 90-100% of patients have their discharge medications reconciled before they are discharged (25.4% improvement).
 - ✓ The discharge medication list always includes both new medications and home medications the patient is to resume (25.4% improvement).
 - ✓ When a patient is prescribed a high-risk medication at discharge, the hospital has protocols to ensure that follow-up has been arranged (29.8% improvement).
 - ✓ The caregiver always asks the patient to take his/her discharge medication list to the next providers of care, if unknown (22.9% improvement).
 - ✓ The hospital had a standard process to communicate the discharge medication list to the patient's primary care physician (56.5% improvement).
 - ✓ The hospital has a standard process to identify other providers who are currently participating in the patient's care that should receive the discharge medication list (69.2% improvement).
 - ✓ The discharge summary always includes a list of discharge medications (28.8% improvement).
 - ✓ On average, 90-100% of patients have their discharge medication orders screened for potential medication errors by the pharmacy before discharge (30.8% improvement).
- A 9.1% improvement was also demonstrated in the key area of **Culture**. Highlights of significant improvement in this category include:
 - ✓ Senior leadership has demonstrated a commitment to improving patient safety through support of medication reconciliation (20.6% improvement).

The Partnership for Patient Care has effectively provided a solid foundation for hospitals to continue their meaningful work in incorporating evidence-based best practices in strengthening patient safety. Correspondingly, the hospitals' commitment to patient safety and infection control greatly contributed to the regional FMEA success. PPC's cohesive approach to regional FMEA has benefited participating hospitals by providing

- An interactive forum for hospitals to share ideas and experiences;
- A collaborative approach for hospitals to work together, rather than individually, thereby maximizing the value derived from proactive risk assessment;
- Provision of research summaries with evidence-based best practices, risk data, national quality initiative summaries, standards and guidelines from regulatory and professional organizations, and resource lists;
- Tools to support the FMEA process; and
- Hands-on technical assistance to facilitate clinical process analysis and to assist hospitals in developing risk reduction (mitigation) strategies and implementing them effectively.

2.0 Introduction

This special report summarizes the approach and results of PPC's regional FMEA on medication reconciliation, which was conducted in 2007.

The United States Pharmacopeia (USP) defines medication reconciliations as “a process for obtaining and documenting a complete and accurate list of a patient's current medications upon admission and comparing this list to the physician's admission, transfer, and/or discharge orders to identify and resolve discrepancies.”¹

During transitions in care such as admission and discharge, multiple hand-offs and changes in therapeutic care often results in confusion. Confusion over medication regimens during these transitions in care can contribute to and/or cause preventable and serious medication errors.

A medication error is a result of a medication being prescribed, monitored, dispensed, or administered incorrectly (wrong patient, wrong dose, wrong time, wrong route, wrong medication, or for which information has been gathered incorrectly) that may or may not result in patient harm.

The Joint Commission's sentinel event database includes more than 350 medication errors that resulted in death or major injury. Of those, 63% related, at least in part, to breakdowns in communication, and Joint Commission estimates approximately half of those would have been avoided through effective medication reconciliation, a multistep process of clarifying medications at transition points.

To address patient safety concerns, the Joint Commission mandated the development of a process to accurately and complete reconcile medications across the continuum of care as a 2005 National Patient Safety Goal, with full implementation in 2006.²

In 2005, the USP published an analysis of medication reconciliations errors collected by MEDMARX, a subscription database for hospitals to report adverse drug events. The analysis found that about two-thirds of the errors occurred during a patient's transition to another level of care, over one half of the errors were intercepted before reaching the patient, and errors made upon admission were most likely to result in patient harm, including death. Prescribing errors were most often associated with admission, extra dose errors with transition/transfer, and omission errors with discharge. The most frequent causes of reconciliation failures were as follows (multiple causes can be attributed to an event): performance deficit (88%), transcription inaccurate/omitted (84%), documentation (83%), communication (82%) and workflow disruption (80%).

During 2006, the Pennsylvania Patient Safety Reporting System (PA-PSRS) received 44,539 reports of medication errors, representing 23% of total event reports. Medication errors were the second most frequently reported hospital event; errors related to procedure/treatment test were the most frequently

¹ United States Pharmacopeia. Medication errors involving reconciliation failures. In: Patient Safety CAPSLink [online]. 2005 Oct [cited 2006 Jan 10]. Available from Internet: http://www.magnetmail.net/actions/email_web_version.cfm?recipient_id=6787258&message_id=130435&user_id=USPUSP

² JCAHO. 2006 Critical access hospital and hospital national patient safety goals. Cited 2006 Mar 15. Available from Internet: http://www.jcaho.or/PatientSafety/NationalPatientSafetyGoals/06_npsg_cah.htm.

reported event at 47,459 reports representing 24% of the total. Of the medication error reports, 246 were identified as harmful events and 7 were identified as death events.

Developing and implementing an effective medication reconciliation process continues to be a challenge for hospitals. The regional FMEA focused on discharge medication reconciliation based on the input of participating hospital indicating it as a significant challenge to implement effectively.

PPC's regional approach involved a proactive multidisciplinary analysis of the medication reconciliation process, specifically discharge medication reconciliation, at participating hospitals to enable more effective implementation of the evidence base and mitigation (risk reduction) strategies for medication reconciliation. The specific approach involved designated hospital participants (e.g., quality or patient safety officer and clinical staff) participating in a training seminar on FMEA methodology followed by series of interactive topic-specific workshops. At the onset of the workshops, participants were provided with a research summary on medication reconciliation. In addition, a variety of FMEA tools (e.g., program manual with FMEA guide, FMEA worksheets, mitigation strategies checklist, and protocol development checklist) were provided throughout the FMEA process. Hospital participants worked with their individual hospital FMEA teams in parallel to conduct their own hospital-specific FMEA based on the unique circumstances at their facilities.

All hospital participants had access to a dedicated PPC collaboration website; all Program tools were available on the website. In addition, topic-specific FMEA progress from each workshop was posted to the website, so that individual hospital teams could use the materials and ideas that were generated at the workshop, as applicable. In addition, each hospital FMEA team periodically posted its progress with the FMEA to the collaborative website, as the team completed each FMEA step and the corresponding FMEA worksheet.

Participating hospitals receive all the PPC topic-specific FMEA reports regardless of topic(s) in which they actively participated. Hospitals that did not actively participate in the medication reconciliation FMEA can use this report as a foundation for conducting their own FMEA or can simply adapt pertinent mitigation strategies to their own clinical processes.

3.0 FMEA Workshop Progress

During each workshop, facilitators worked with hospital participants to conduct one or more of 10 FMEA steps. Each workshop focused on how to conduct the FMEA steps and to maximize the value derived from the FMEA process. The workshops provided hospital participants with an interactive forum for sharing ideas and experiences as well as hands-on assistance to identify and overcome challenges. After each workshop, the hospital participants worked with their individual hospital FMEA teams to apply and modify the FMEA steps covered in the workshops to their hospital's unique circumstances.

The workshops used a simplified, standardized approach to conduct the regional FMEA:

1. Selecting a High-Risk Clinical Process (completed prior to the first workshop)
2. Organizing the FMEA Team (covered in the FMEA Quick Start Checklist prior to the first workshop)
3. Mapping the Clinical Process
4. Identifying Potential Failure Modes
5. Identifying the Effects of Failure Modes
6. Prioritizing Process Breakdowns or Failures
7. Determining Why Failures Occur or Determining Root Causes
8. Developing Mitigation Strategies and Redesigning the Process
9. Implementing and Evaluating the Redesign
10. Monitoring the Effectiveness of the Redesign

Workshop progress with the regional FMEA was based on the collective input of the participants, including both the common elements experienced by hospitals and individual hospital variations. Participants were encouraged to share the workshop progress with their hospitals' FMEA teams, thereby providing a foundation of ideas to spur the progress and maximize the value of each hospital's individual FMEA based on its unique process steps and circumstances.

Hospital FMEA participants had the option of replicating the standardized FMEA workshop approach with their individual FMEA teams, if desired. However, hospitals were also encouraged to modify the workshop approach based on their previous FMEA experience, or utilize alternative FMEA methodologies that had proven effective in their previous FMEAs.

The tables in Figure 1, 2, and 3 represent the cumulative regional FMEA progress from the five workshops. Each chart illustrates the collective input of the hospital participants—sometimes reflecting common elements amongst participants; sometimes reflecting the consensus of participants; and sometimes reflecting the variations between hospital participants. This collective input was intended to promote sharing of ideas and experiences and to generate new ideas.

Figure 1. Workshop Process Flowchart: This top-down block diagram was created as a result of the first workshop, which focused on mapping the clinical process. The scope of the regional FMEA focused on the medication reconciliation subprocess of “Medications reconciled upon discharge.” The block diagram lists all process steps under this subprocess.

Figure 2. FMEA Worksheet for High-Priority Failure Modes: The FMEA worksheet was completed incrementally for all clinical process steps and corresponding failure modes as each FMEA step was conducted at the workshops. For each failure mode, the following rating criteria were used:

Severity: How serious are the consequences or effects of this failure on the patient?

Probability of occurrence: How frequently is this failure likely to occur?

Detectability: How easily is the failure recognized or discovered before harm reaches the patients?

The rating scale for each criterion was based on a scale of 1 to 5, as follows:

Severity: 1 (Minor or no effect) to 5 (Severe or terminal outcome)

Probability of Occurrences: 1 (Remote or nonexistent) to 5 (Very high, almost inevitable)

Detectability: 1 (Certain to detect, almost always immediately) to 5 (Almost certain not to detect)

Failure modes were then prioritized for further investigation and action by calculating the Risk Priority Number (RPN)

(Severity x Probability of Occurrence x Detectability)

and then using a collectively determined RPN threshold. For this regional FMEA, the RPN threshold for considering a failure mode as high-priority (requiring further action and investigation) was greater than or equal to 60.

Figure 2 shows only the high priority failure modes as determined in the workshops. The other process steps and corresponding lower priority failure modes are not shown. The mitigation strategies are the intended actions to address the causes of the failure modes, thereby reducing the risks associated with the failure mode by eliminating or minimizing the potential for failures, stopping failures before harm reaches the patient, or to minimizing the consequences of the failure. Mitigation strategies may be directed at redesigning the clinical process or the underlying system.

Figure 3. Evaluation Measures per Mitigation Strategy: This chart includes the comprehensive list of mitigation strategies and corresponding evaluation measures that were generated during the workshops.. Mitigation strategies are categorized as High, Moderate, or Low depending on anticipated risk reduction impact and sustainability of risk reduction and are ranked accordingly. Evaluation measures provide a means to evaluate the success of process redesign by collecting baseline data prior to implementation of the mitigation strategies and follow-up data after implementation.

Figure 1. Process Flowchart

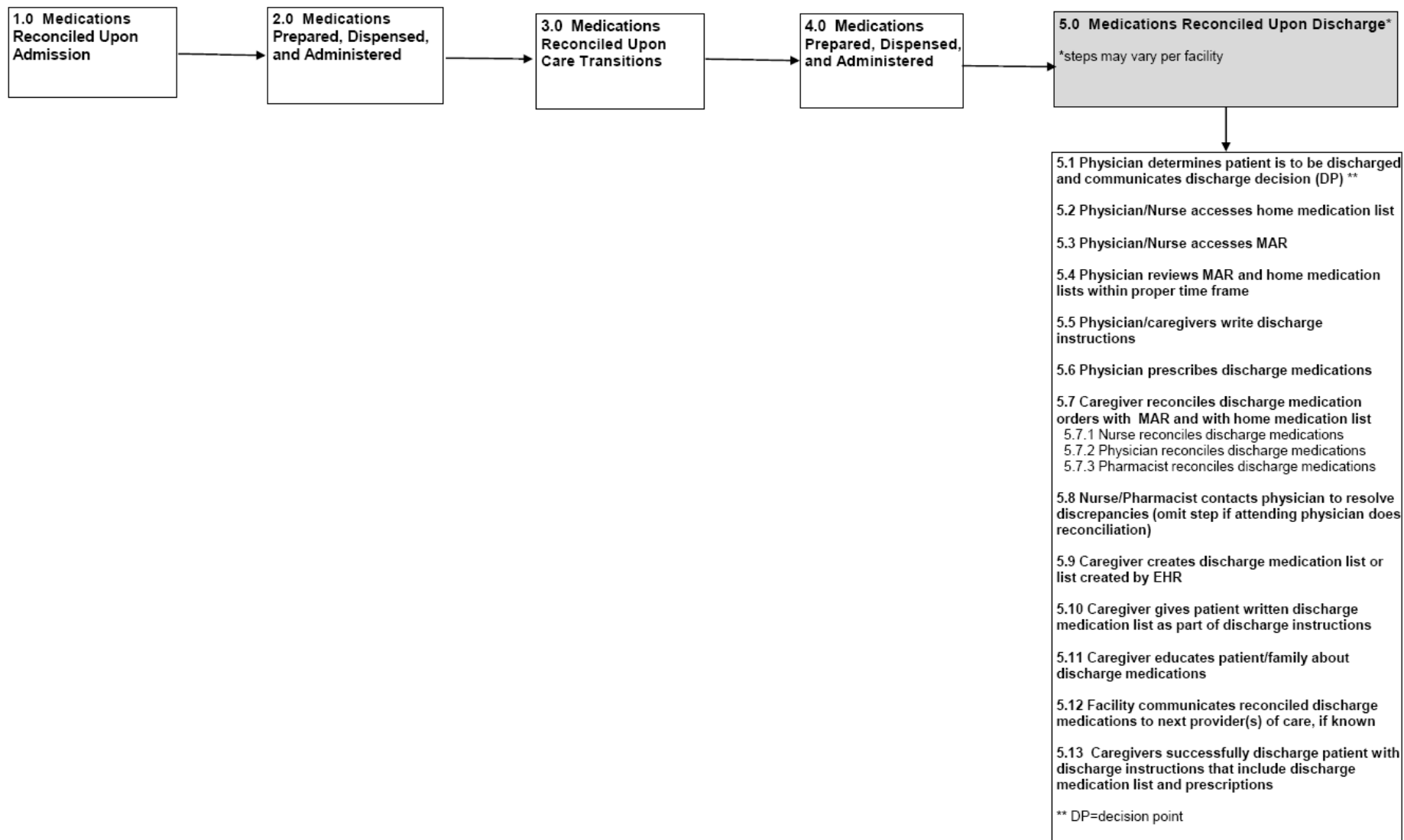


Figure 2. FMEA Worksheet for High-Priority Failure Modes

Medication Reconciliation: FMEA WORKSHEET <i>Threshold for High-Priority Failure Modes: RPN ≥ 60; Criteria Rating Scale: 1-5</i> <small>*Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability</small>								
Process Step	Potential Failure Modes	Potential Effects	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible Causes	Mitigation Strategies (Recommended Redesign)
5.2 Physician/ Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)	5.2.a Home medication list not accessed	Delay in discharge; adverse drug events (ADEs)/ medication errors; other adverse events; unnecessary rework; downstream negative effects*	5	5	5	125	Home medication list not available Home medication list not complete Caregiver not confident in accuracy of home medication list Physician/staff training and education less than adequate Agency and per diem staff training and education less than adequate Responsibility for medication reconciliation not clearly delineated No form for discharge medication reconciliation Discharge medication reconciliation form less than adequate (e.g., no prompts for home medication list)	Delineate roles and responsibility for each discharge medication reconciliation process step Develop/modify standardized protocol for medication reconciliation. Designate a standard location (e.g., in the patient's chart, in the EMR) for the home medication list that is easily accessible Contact patient's pharmacy to verify home medications Develop/modify form to accurately document home medication list (manual or electronic) Develop standardized process/location for providers to have access to home medication list Clearly delineate responsibility for completion/follow up attempts to obtain home medications Place flag on chart to alert caregiver of need for completed home medication list Involve family at admission to acquire/review home medications Document attempts at acquiring home medication list, even if unsuccessful Utilize case managers to verify home medication list. Have senior leadership send a clear message that medication reconciliation is an organizational goal Implement an awareness campaign to reinforce medication reconciliation compliance (e.g., posters, presentations) Provide CME on medication reconciliation Collect and present data related to medication reconciliation to physicians Incorporate medication reconciliation in orientation and reinforce in annual competencies

Medication Reconciliation: FMEA WORKSHEET

Threshold for High-Priority Failure Modes: RPN ≥ 60; Criteria Rating Scale: 1-5

**Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability*

Process Step	Potential Failure Modes	Potential Effects	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible Causes	Mitigation Strategies (Recommended Redesign)
5.2 Physician/Nurse accesses home medication list (EHR/or distinct place in medical record)	5.2.b Home medication list accessed, but it is incomplete/inaccurate	Delay in discharge; adverse drug events (ADEs)/medication errors; other adverse events; unnecessary rework; downstream negative effects*	5	4	4	80	Physician/staff training and education less than adequate Agency and per diem training and education less than adequate No checklist for home medication list Translator not available Hospital has not identified need for translating particular language Patient's communication barriers have not been identified and addressed History from patient less than adequate Family not available to assist with history	Contact patient's pharmacy to verify home medications Develop/modify form to accurately document home medication list (manual or electronic) Clearly delineate responsibility for completion/follow up attempts to obtain home medications Place flag on chart to alert caregiver of need for completed home medication list Involve family at admission to acquire/review home medications Document attempts at acquiring home medication list, even if unsuccessful Utilize case managers to verify home medication list Have senior leadership send a clear message that medication reconciliation is an organizational goal Implement an awareness campaign to reinforce medication reconciliation compliance (e.g., posters, presentations) Provide CME on medication reconciliation Collect and present data related to medication reconciliation to physicians Incorporate medication reconciliation in orientation and reinforce in annual competencies Contact primary care physician for medical history Incorporate communication limitations in patient profile Implement language line Implement interpreter certification program for staff Provide voice-activated translator device Enlist family for assistance in completion of home medications Incorporate a program that collects medication history from third party payers to be used only in combination with other methodologies

Medication Reconciliation: FMEA WORKSHEET

Threshold for High-Priority Failure Modes: RPN ≥ 60; Criteria Rating Scale: 1-5

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Process Step	Potential Failure Modes	Potential Effects	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible Causes	Mitigation Strategies (Recommended Redesign)
5.4 Physician reviews MAR and home medication lists within proper time frame	5.4.a Home medication list not reviewed	Delay in discharge; adverse drug events (ADEs)/medication errors; readmission, other adverse events; unnecessary rework; downstream negative effects*	5	3	4	60	Home medication list not available Home medication list not complete Physician not confident in accuracy of home medication list Physician training and education less than adequate Responsibility for medication reconciliation not clearly delineated Physician does not recognize importance of reviewing home medication list No form for discharge medication reconciliation Discharge medication reconciliation form less than adequate (e.g., no prompts for home medications)	Delineate roles and responsibility for each discharge medication reconciliation process step Develop/modify standardized protocol for medication reconciliation Contact patient's pharmacy to verify home medications Develop/modify form to accurately document home medication list (manual or electronic) Develop standardized process/location for providers to have access to home medication list Clearly delineate responsibility for completion/follow up attempts to obtain home medications Place flag on chart to alert caregiver of need for completed home medication list Involve family at admission to acquire/review home medications Document attempts at acquiring home medication list, even if unsuccessful Utilize case managers to verify home medication list Have senior leadership send a clear message that medication reconciliation is an organizational goal Implement an awareness campaign to reinforce medication reconciliation compliance (e.g., posters, presentations) Provide CME on medication reconciliation Collect and present data related to medication reconciliation to physicians Have medical director present on medication reconciliation issues for physicians (e.g., liability for patients being discharged with incorrect medications)

Medication Reconciliation: FMEA WORKSHEET

Threshold for High-Priority Failure Modes: RPN ≥ 60; Criteria Rating Scale: 1-5

**Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability*

Process Step	Potential Failure Modes	Potential Effects	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible Causes	Mitigation Strategies (Recommended Redesign)
5.7 Caregiver reconciles discharge medication orders with MAR and with home medication list	5.7.b Discharge medication reconciliation only considers MAR, but not home list	Delay in discharge; adverse drug events (ADEs)/medication errors; readmission, other adverse events; unnecessary rework; downstream negative effects*	5	4	4	80	Home medication list not available Home medication list not complete Caregiver not confident in accuracy of home medication list Physician/staff training and education less than adequate Agency and per diem staff training and education less than adequate Staff does not recognize importance of reviewing home medication list No form for discharge medication reconciliation No protocol/protocol less than adequate Discharge medication reconciliation form less than adequate (e.g., no prompts for home medications)	Delineate roles and responsibility for each discharge medication reconciliation process step Develop/modify standardized protocol for medication reconciliation Contact patient's pharmacy to verify home medications Develop/modify form to accurately document home medication list (manual or electronic) Develop standardized process/location for providers to have access to home medication list Clearly delineate responsibility for completion/follow up attempts to obtain home medications Place flag on chart to alert caregiver of need for completed home medication list Involve family at admission to acquire/review home medications Document attempts at acquiring home medication list, even if unsuccessful Utilize case managers to verify home medication list Have senior leadership send a clear message that medication reconciliation is an organizational goal Implement an awareness campaign to reinforce medication reconciliation compliance (e.g., posters, presentations) Provide CME on medication reconciliation Collect and present data related to medication reconciliation to physicians Incorporate medication reconciliation in orientation and reinforce in annual competencies
5.7 Caregiver reconciles discharge medication orders with MAR and with home medication list	5.7 d Discharge medication reconciliation inaccurate	Delay in discharge; adverse drug events (ADEs)/ medication errors; readmission, other adverse events; unnecessary rework; downstream negative effects*	5	4	4	80	Physician/staff training and education less than adequate Agency and per diem training and education less than adequate Home medication list less than adequate (e.g., history from patient/family less than adequate) Illegible handwriting	Require that medication reconciliation is not completed until discharge orders have been written Require date on form when discharge medication list is generated Require nurse to perform an independent double check against the MAR Contact patient's pharmacy to verify home medications Contact primary care physician for medical history Incorporate a program that collects medication history from third

Medication Reconciliation: FMEA WORKSHEET

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Process Step	Potential Failure Modes	Potential Effects	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible Causes	Mitigation Strategies (Recommended Redesign)
							<p>No form for discharge medication reconciliation</p> <p>Discharge medication reconciliation form less than adequate (e.g., no prompts)</p> <p>Caregiver not confident in accuracy of home medication list</p> <p>Printing discharge medication list prematurely (updates to meds not incorporated)</p> <p>Therapeutic interchange</p>	<p>party payers to be used only in combination with other methodologies</p> <p>Develop/modify form to accurately document home medication list (manual or electronic)</p> <p>Develop standardized process/location for providers to have access to home medication list</p> <p>Clearly delineate responsibility for completion/follow up attempts to obtain home medications</p> <p>Place flag on chart to alert caregiver of need for completed home medication list</p> <p>Involve family at admission to acquire/review home medications</p> <p>Document attempts at acquiring home medication list, even if unsuccessful</p> <p>Utilize case managers to verify home medication list</p> <p>Implement computerized provider order entry to eliminate errors associated with illegible handwriting</p> <p>Present examples of illegible handwriting at physician meetings and ask them to interpret them to reinforce the importance of writing legible orders</p> <p>Provide PDAs for physicians to interact with other healthcare providers</p> <p>Have therapeutic interchange noted on same system for pharmacy and nursing</p> <p>Review formulary process for therapeutic interchange to identify whether expansion of offerings is warranted</p> <p>Annotate discharge medication list for therapeutic interchanges</p> <p>Have senior leadership send a clear message that medication reconciliation is an organizational goal</p> <p>Implement an awareness campaign to reinforce medication reconciliation compliance (e.g., posters, presentations)</p> <p>Provide CME on medication reconciliation</p> <p>Collect/present data related to medication reconciliation to physicians</p> <p>Incorporate medication reconciliation in orientation and reinforce in annual competencies</p>

Medication Reconciliation: FMEA WORKSHEET

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**Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability*

Process Step	Potential Failure Modes	Potential Effects	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible Causes	Mitigation Strategies (Recommended Redesign)
5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions	5.10.b Inaccurate discharge medication list given to patient	Delay in discharge; adverse drug events (ADEs)/medication errors; readmission, patient unable to follow instructions, inadequate follow up care, other adverse events; unnecessary rework; downstream negative effects*	5	4	4	80	<p>Physician/staff training and education less than adequate</p> <p>Agency and per diem training and education less than adequate</p> <p>Medication reconciliation less than adequate</p> <p>Home medication list less than adequate (e.g., history from patient/family less than adequate)</p> <p>Illegible handwriting</p> <p>No form for discharge medication reconciliation</p> <p>Discharge medication reconciliation form less than adequate (e.g., no prompts)</p> <p>Caregiver not confident in accuracy of home medication list</p> <p>Printing discharge medication list prematurely (updates to meds not incorporated)</p> <p>Physician communication on medication updates less than adequate (e.g., change in dose, discontinued meds)</p> <p>Communication between physicians less than adequate</p> <p>Medication reconciliation not monitored; no feedback to physicians and staff on compliance/impact to patient safety</p>	<p>Require that medication reconciliation is not completed until discharge orders have been written</p> <p>Require date on form when discharge medication list is generated</p> <p>Require nurse to perform an independent double check against the MAR</p> <p>Incorporate medication reconciliation with discharge instructions</p> <p>Contact patient's pharmacy to verify home medications</p> <p>Contact primary care physician for medical history</p> <p>Incorporate a program that collects medication history from third party payers to be used only in combination with other methodologies</p> <p>Develop/modify form to accurately document home medication list (manual or electronic)</p> <p>Develop standardized process/location for providers to have access to home medication list</p> <p>Clearly delineate responsibility for completion/follow up attempts to obtain home medications</p> <p>Place flag on chart to alert caregiver of need for completed home medication list</p> <p>Involve family at admission to acquire/review home medications</p> <p>Document attempts at acquiring home medication list, even if unsuccessful</p> <p>Utilize case managers to verify home medication list</p> <p>Implement computerized provider order entry to eliminate errors associated with illegible handwriting</p> <p>Present examples of illegible handwriting at physician meetings and ask them to interpret them to reinforce the importance of writing legible orders</p> <p>Provide PDAs for physicians to interact with other healthcare providers</p>

Medication Reconciliation: FMEA WORKSHEET

Threshold for High-Priority Failure Modes: RPN ≥ 60; Criteria Rating Scale: 1-5

**Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability*

Process Step	Potential Failure Modes	Potential Effects	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible Causes	Mitigation Strategies (Recommended Redesign)
								Have therapeutic interchange noted on same system for pharmacy and nursing Review formulary process for therapeutic interchange to identify whether expansion of offerings is warranted Annotate discharge medication list for therapeutic interchanges Have senior leadership send a clear message that medication reconciliation is an organizational goal. Implement an awareness campaign to reinforce medication reconciliation compliance (e.g., posters, presentations) Provide CME on medication reconciliation Collect and present data related to medication reconciliation to physicians Incorporate medication reconciliation in orientation and reinforce in annual competencies
5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known	5.12.a Discharge medications not communicated to next provider(s) of care	Delay in discharge; adverse drug events (ADEs)/medication errors; readmission, inadequate follow up care, other adverse events; unnecessary rework; downstream negative effects*	5	3	4	60	Staff training and education less than adequate Agency and per diem training and education less than adequate Next provider unknown No next provider identified All providers not identified Next provider not available Caregiver (e.g., family or caretaker) not available Technology issues (e.g., fax down/transmission less than adequate) No protocol/protocol less than adequate Responsibility for communicating discharge meds to next provider	Delineate roles and responsibility for each discharge medication reconciliation process step Delineate back up coverage for communicating discharge medications to next provider. Develop/modify standardized protocol for medication reconciliation. Fax or mail discharge medication list to next providers Proactively contact next providers of care to determine adequacy of discharge medications communication Incorporate medication reconciliation with discharge instructions Provide checkbox on discharge instructions to document that discharge medication list has been given to patient Refer to medical history to identify next providers. Educate patients to take discharge medication list to next provider of care Develop standardized discharge medications form for patients that includes instructions for the patient to take it to their next providers (e.g., primary care physician); provide multiple copies

Medication Reconciliation: FMEA WORKSHEET

Threshold for High-Priority Failure Modes: RPN ≥ 60; Criteria Rating Scale: 1-5

**Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability*

Process Step	Potential Failure Modes	Potential Effects	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible Causes	Mitigation Strategies (Recommended Redesign)
							not clearly delineated Responsible staff not available (competing priorities) Communication barriers	Require physician to specify next providers of care and discharge medications in discharge summary; have medical records mail copies of discharge summary to each specified provider Provide physicians with access to medical records Have senior leadership send a clear message that medication reconciliation is an organizational goal Implement an awareness campaign to reinforce medication reconciliation compliance (e.g., posters, presentations) Incorporate medication reconciliation in orientation and reinforce in annual competencies
5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known	5.12.b Delay in communicating discharge medications to next provider(s) of care	Delay in discharge; adverse drug events (ADEs)/medication errors; readmission, inadequate follow up care, other adverse events; unnecessary rework; downstream negative effects*	5	4	4	80	Next provider unknown No next provider identified All providers not identified Next provider not available Caregiver (e.g., family or caretaker) not available Illegible paper records Technology issues (e.g., fax down/transmission less than adequate) No protocol/protocol less than adequate Responsibility for communicating discharge meds to next provider not clearly delineated Responsible staff not available (competing priorities) Communication barriers	Delineate roles and responsibility for each discharge medication reconciliation process step Delineate back up coverage for communicating discharge medications to next provider Develop/modify standardized protocol for medication reconciliation Fax or mail discharge medication list to next providers Proactively contact next providers of care to determine adequacy of discharge medications communication Incorporate medication reconciliation with discharge instructions Provide checkbox on discharge instructions to document that discharge medication list has been given to patient Refer to medical history to identify next providers Educate patients to take discharge medication list to next provider of care Develop standardized discharge medications form for patients that includes instructions for the patient to take it to their next providers (e.g., primary care physician); provide multiple copies Require physician to specify next providers of care and discharge medications in discharge summary; have medical records mail copies of discharge summary to each specified provider Provide physicians with access to medical records

Medication Reconciliation: FMEA WORKSHEET

Threshold for High-Priority Failure Modes: RPN ≥ 60; Criteria Rating Scale: 1-5

**Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability*

Process Step	Potential Failure Modes	Potential Effects	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible Causes	Mitigation Strategies (Recommended Redesign)
5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known	5.12.d Discharge medications communicated to some, but not all, providers	Delay in discharge; adverse drug events (ADEs)/medication errors; readmission, inadequate follow up care, other adverse events; unnecessary rework; downstream negative effects*	5	4	4	80	<p>Staff training and education less than adequate</p> <p>Agency and per diem training and education less than adequate</p> <p>Next provider unknown</p> <p>No next provider identified</p> <p>All providers not identified</p> <p>Next provider not available</p> <p>Caregiver (e.g., family or caretaker) not available</p> <p>Technology issues (e.g., fax down/transmission less than adequate)</p> <p>No protocol/protocol less than adequate</p> <p>Responsibility for communicating discharge meds to next provider not clearly delineated</p> <p>Responsible staff not available (competing priorities)</p> <p>Communication barriers</p>	<p>Delineate roles and responsibility for each discharge medication reconciliation process step</p> <p>Delineate back up coverage for communicating discharge medications to next provider</p> <p>Develop/modify standardized protocol for medication reconciliation</p> <p>Fax or mail discharge medication list to next providers</p> <p>Proactively contact next providers of care to determine adequacy of discharge medications communication</p> <p>Incorporate medication reconciliation with discharge instructions</p> <p>Provide checkbox on discharge instructions to document that discharge medication list has been given to patient</p> <p>Refer to medical history to identify next providers</p> <p>Educate patients to take discharge medication list to next provider of care</p> <p>Develop standardized discharge medications form for patients that includes instructions for the patient to take it to their next providers (e.g., primary care physician); provide multiple copies</p> <p>Require physician to specify next providers of care and discharge medications in discharge summary; have medical records mail copies of discharge summary to each specified provider</p> <p>Provide physicians with access to medical records</p> <p>Have senior leadership send a clear message that medication reconciliation is an organizational goal.</p> <p>Implement an awareness campaign to reinforce medication reconciliation compliance (e.g., posters, presentations)</p> <p>Incorporate medication reconciliation in orientation and reinforce in annual competencies</p>

Figure 3. Evaluation Measures per Mitigation Strategy Worksheet

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
Implement computerized provider order entry to eliminate errors associated with illegible handwriting	High	<p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list <i>5.7.d Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions <i>5.10.b Inaccurate discharge medication list given to patient</i></p>	<p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Provide PDAs for physicians to interact with other healthcare providers	Moderate	<p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list <i>5.7.d Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions <i>5.10.b Inaccurate discharge medication list given to patient</i></p>	<p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Contact patient's pharmacy to verify home medications	Moderate	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record) <i>5.2.a Home medication list not accessed</i> <i>5.2.b Home medication list accessed, but it is incomplete/inaccurate</i></p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame <i>5.4.a Home medication list not reviewed</i></p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list <i>5.7.b Discharge medication reconciliation only considers MAR, but not home list</i> <i>5.7.d Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions <i>5.10.b Inaccurate discharge medication list given to patient</i></p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Utilize case managers to verify home medication list	Moderate	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record) <i>5.2.a Home medication list not accessed</i> <i>5.2.b Home medication list accessed, but it is incomplete/inaccurate</i></p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame <i>5.4.a Home medication list not reviewed</i></p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
		<p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p>	
Contact primary care physician for medical history	Moderate	<p>5.2 Physician/Nurse accesses home medication list (EHR/or distinct place in medical record)</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Incorporate a program that collects medication history from third party payers to be used only in combination with other methodologies	Moderate	<p>5.2 Physician/Nurse accesses home medication list (EHR/or distinct place in medical record)</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Provide physicians with access to medical records	Moderate	<p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.b Delay in communicating discharge medications to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Feedback from next provider</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Require physician to specify next providers of care and discharge medications in discharge summary; have medical records mail copies of discharge summary to each specified provider	Moderate	<p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.b Delay in communicating discharge medications to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Feedback from next provider</p> <p>Next provider satisfaction survey</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
Delineate back up coverage for communicating discharge medications to next provider	Moderate	<p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.b Delay in communicating discharge medications to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Feedback from next provider</p> <p>Next provider satisfaction survey</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Develop standardized discharge medications form for patients that includes instructions for the patient to take it to their next providers (e.g., primary care physician); provide multiple copies	Moderate	<p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.b Delay in communicating discharge medications to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Feedback from next provider</p> <p>Next provider satisfaction survey</p> <p>Percent of patients given discharge medication list and educated to take copy to next providers.</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Fax or mail discharge medication list to next providers	Moderate	<p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.b Delay in communicating discharge medications to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Feedback from next provider</p> <p>Next provider satisfaction survey</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Proactively contact next providers of care to determine adequacy of discharge medications communication	Moderate	<p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.b Delay in communicating discharge medications to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Feedback from next provider</p> <p>Next provider satisfaction survey</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
Develop/modify standardized protocol for medication reconciliation	Moderate	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.b Delay in communicating discharge medications to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Feedback from next provider</p> <p>Next provider satisfaction survey</p> <p>Percent of patients given discharge medication list</p> <p>Percent of patients given discharge medication list and educated to take copy to next providers.</p> <p>Percent of patients with completed/documented home medication lists</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Develop/modify form to accurately document home medication list (manual or electronic)	Moderate	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Clearly delineate responsibility for completion/follow up attempts to obtain home medications	Moderate	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
Delineate roles and responsibility for each discharge medication reconciliation process step	Moderate	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.b Delay in communicating discharge medications to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Feedback from next provider</p> <p>Next provider satisfaction survey</p> <p>Percent of patients given discharge medication list</p> <p>Percent of patients given discharge medication list and educated to take copy to next providers</p> <p>Percent of patients with completed/documented home medication lists</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Develop standardized process/location for providers to have access to home medication list	Moderate	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p>	<p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Place flag on chart to alert caregiver of need for completed home medication list	Moderate	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
Incorporate medication reconciliation with discharge instructions	Moderate	<p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b <i>Inaccurate discharge medication list given to patient</i></p> <p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a <i>Discharge medications not communicated to next provider(s) of care</i></p> <p>5.12.b <i>Delay in communicating discharge medications to next provider(s) of care</i></p> <p>5.12.d <i>Discharge medications communicated to some, but not all, providers</i></p>	<p>Percent of patients given discharge medication list</p> <p>Percent of patients given discharge medication list and educated to take copy to next providers.</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Provide checkbox on discharge instructions to document that discharge medication list has been given to patient	Moderate	<p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a <i>Discharge medications not communicated to next provider(s) of care</i></p> <p>5.12.b <i>Delay in communicating discharge medications to next provider(s) of care</i></p> <p>5.12.d <i>Discharge medications communicated to some, but not all, providers</i></p>	<p>Percent of patients given discharge medication list</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Require date on form when discharge medication list is generated	Moderate	<p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.d <i>Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b <i>Inaccurate discharge medication list given to patient</i></p>	<p>Feedback from next provider</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Require that medication reconciliation is not completed until discharge orders have been written	Moderate	<p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.d <i>Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b <i>Inaccurate discharge medication list given to patient</i></p>	<p>Feedback from next provider</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Require nurse to perform an independent double check against the MAR	Moderate	<p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.d <i>Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b <i>Inaccurate discharge medication list given to patient</i></p>	<p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
Have therapeutic interchange noted on same system for pharmacy and nursing	Moderate	<p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.d <i>Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b <i>Inaccurate discharge medication list given to patient</i></p>	<p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Annotate discharge medication list for therapeutic interchanges	Moderate	<p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.d <i>Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b <i>Inaccurate discharge medication list given to patient</i></p>	<p>Feedback from next provider</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Review formulary process for therapeutic interchange to identify whether expansion of offerings is warranted	Moderate	<p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.d <i>Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b <i>Inaccurate discharge medication list given to patient</i></p>	<p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Implement language line	Moderate	<p>5.2 Physician/Nurse accesses home medication list (EHR/or distinct place in medical record)</p> <p>5.2.b <i>Home medication list accessed, but it is incomplete/inaccurate</i></p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Provide voice activated translator device	Moderate	<p>5.2 Physician/Nurse accesses home medication list (EHR/or distinct place in medical record)</p> <p>5.2.b <i>Home medication list accessed, but it is incomplete/inaccurate</i></p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Involve family at admission to acquire/review home medications	Moderate	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a <i>Home medication list not accessed</i></p> <p>5.2.b <i>Home medication list accessed, but it is incomplete/inaccurate</i></p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a <i>Home medication list not reviewed</i></p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
		<p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b <i>Discharge medication reconciliation only considers MAR, but not home list</i></p> <p>5.7.d <i>Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b <i>Inaccurate discharge medication list given to patient</i></p>	
Enlist family for assistance in completion of home medications	Moderate	<p>5.2 Physician/Nurse accesses home medication list (EHR/or distinct place in medical record)</p> <p>5.2.b <i>Home medication list accessed, but it is incomplete/inaccurate</i></p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Document attempts at acquiring home medication list, even if unsuccessful	Low	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a <i>Home medication list not accessed</i></p> <p>5.2.b <i>Home medication list accessed, but it is incomplete/inaccurate</i></p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a <i>Home medication list not reviewed</i></p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b <i>Discharge medication reconciliation only considers MAR, but not home list</i></p> <p>5.7.d <i>Discharge medication reconciliation inaccurate</i></p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b <i>Inaccurate discharge medication list given to patient</i></p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Refer to medical history to identify next providers	Low	<p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a <i>Discharge medications not communicated to next provider(s) of care</i></p> <p>5.12.b <i>Delay in communicating discharge medications to next provider(s) of care</i></p> <p>5.12.d <i>Discharge medications communicated to some, but not all, providers</i></p>	<p>Feedback from next provider</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
Educate patients to take discharge medication list to next provider of care	Low	<p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.b Delay in communicating discharge medications to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Feedback from next provider</p> <p>Next provider satisfaction survey</p> <p>Percent of patients given discharge medication list and educated to take copy to next providers.</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Incorporate communication limitations in patient profile	Low	<p>5.2 Physician/Nurse accesses home medication list (EHR/or distinct place in medical record)</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Incorporate medication reconciliation in orientation and reinforce in annual competencies	Low	<p>5.2 Physician/Nurse accesses home medication list (EHR/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p> <p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Feedback from next provider</p> <p>Next provider satisfaction survey</p> <p>Percent of patients given discharge medication list and educated to take copy to next providers.</p> <p>Percent of patients with completed/documented home medication lists</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Implement interpreter certification program for staff	Low	<p>5.2 Physician/Nurse accesses home medication list (EHR/or distinct place in medical record)</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p>	<p>Percent of patients with completed/documented home medication lists</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
Implement an awareness campaign to reinforce medication reconciliation compliance (e.g., posters, presentations)	Low	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p> <p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Have senior leadership send a clear message that medication reconciliation is an organizational goal	Low	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p> <p>5.12 Facility communicates reconciled discharge medications to next provider(s) of care, if known</p> <p>5.12.a Discharge medications not communicated to next provider(s) of care</p> <p>5.12.d Discharge medications communicated to some, but not all, providers</p>	<p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

Mitigation Strategy	Risk Reduction Impact	Process Step Failure Mode	Evaluation Measures
Have medical director present on medication reconciliation issues for physicians (e.g., liability for patients being discharged with incorrect medications)	Low	<p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p>	<p>Percent of patients given discharge medication list</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Collect and present data related to medication reconciliation to physicians	Low	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p>	<p>Feedback from next provider</p> <p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Present examples of illegible handwriting at physician meetings and ask them to interpret them to reinforce the importance of writing legible orders	Low	<p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p>	<p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>
Provide CME on medication reconciliation	Low	<p>5.2 Physician/Nurse accesses home medication list (electronic health record (EHR)/or distinct place in medical record)</p> <p>5.2.a Home medication list not accessed</p> <p>5.2.b Home medication list accessed, but it is incomplete/inaccurate</p> <p>5.4 Physician reviews MAR and home medication lists within proper time frame</p> <p>5.4.a Home medication list not reviewed</p> <p>5.7 Caregiver reconciles discharge medication orders with medication administration record (MAR) and with home medication list</p> <p>5.7.b Discharge medication reconciliation only considers MAR, but not home list</p> <p>5.7.d Discharge medication reconciliation inaccurate</p> <p>5.10 Caregiver gives patient written discharge medication list (a comprehensive list of all medications the patient is to take after discharge) as part of discharge instructions</p> <p>5.10.b Inaccurate discharge medication list given to patient</p>	<p>Percent of patients with discharge medications reconciled before discharge</p> <p>Review of emergency room visits attributed to medication errors</p> <p>Review of post-discharge follow-up calls for medication issues</p> <p>Review of readmissions attributed to medication errors</p>

4.0 FMEA Examples from Hospitals

Hospital participants worked with their own hospitals' multidisciplinary FMEA teams to conduct a hospital-specific FMEA in parallel to the progress of PPC's regional workshops. Hospital FMEA teams could utilize the FMEA methodology and tools provided during the workshop, but they were also encouraged to modify the regional methodology or to use alternative FMEA methodologies and tools, based on their hospitals' previous FMEA experience and what had proven to be effective. This section provides a few examples of the individual hospitals' FMEAs.

4.1 Hospital A

Hospital A conducted its FMEA on medication reconciliation, specifically focusing on the sub-process of discharge medication reconciliation.

Figure 4 shows Hospital A's process flowchart for discharge medication reconciliation. Figure 5 shows the progress of Hospital A's FMEA including the following:

- Identification of potential failure modes and effects
- Determining criteria ratings for Severity, Probability of Occurrence, and Detectability
- Prioritizing failure modes with an RPN threshold greater than or equal to 32
- Determining possible causes
- Mitigation strategies (recommended redesign)

Figure 4. Hospital A Process Flowchart

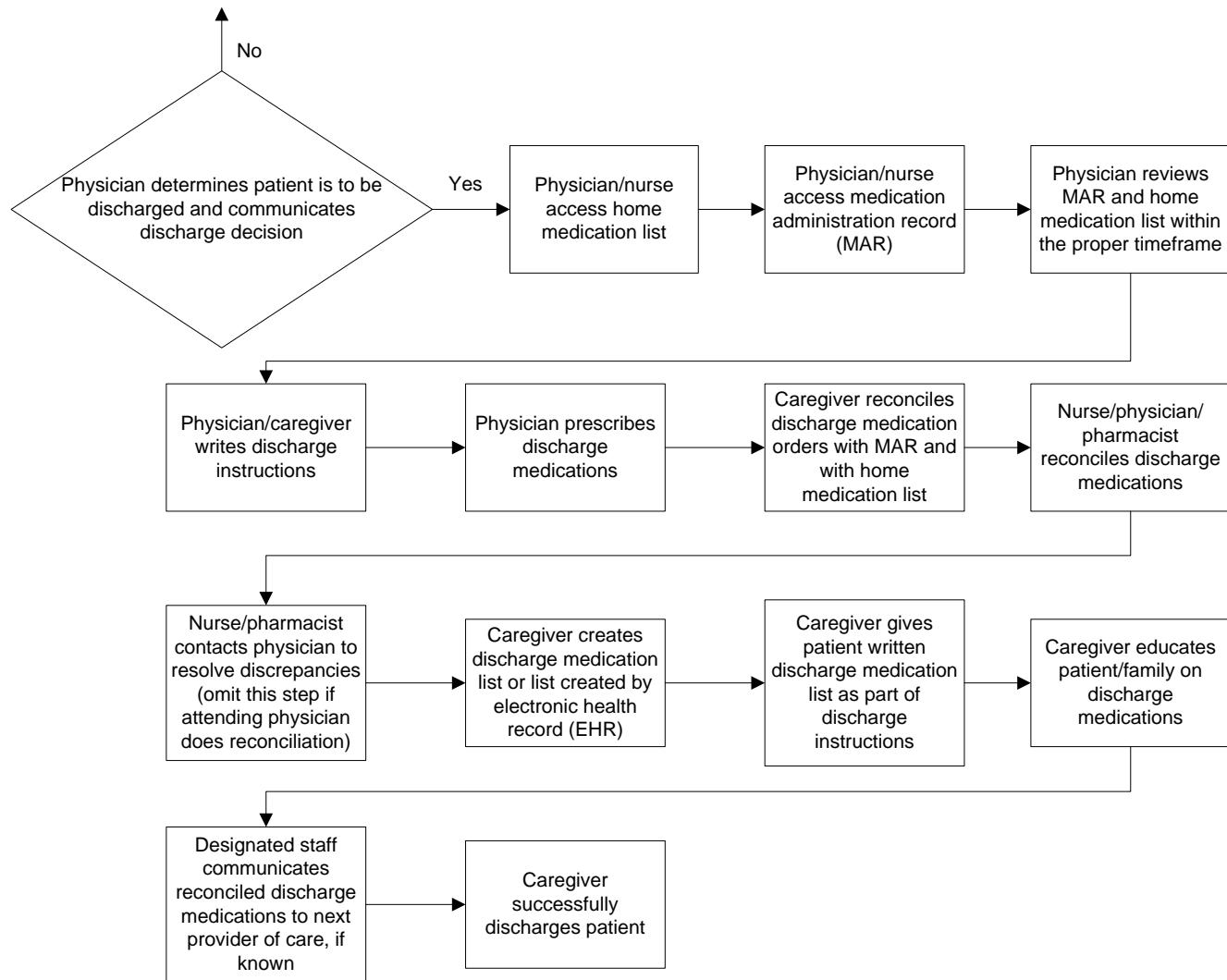


Figure 5. Hospital A FMEA Worksheet for High Priority Failure Modes

Medication Reconciliation Hospital A FMEA Worksheet for High-Priority Failure Modes <i>Threshold for High-Priority Failure Modes: RPN ≥ 32; Criteria Rating Scale: 1-5</i> <small>*Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability</small>								
Process Step	Failure Modes	Potential Effect	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible causes	Mitigation Strategies (Recommended Redesign)
Physician/nurse accesses home medication list	Discrepancy of home medication list, medication reconciliation form and physician history form have different medication lists	Delay in discharge; adverse drug events; medication errors; rework; downstream negative effects*	4	3	3	36	Medication reconciliation form is housed in the order section and gets buried Incomplete home medication list Unable to validate home medication list Different home medication list (medication reconciliation form versus physician history form)	Redesign the form/process (new consolidated medication reconciliation form including home medications and discharge medications) Keep form with the discharge paperwork Revise physician history form to refer to the medication reconciliation form rather than list home medications
Physician/caregiver writes discharge instructions	Instructions incomplete	Delay in discharge; adverse drug events; medication errors; rework; downstream negative effects*	5	5	3	75	Medication reconciliation form not kept with the discharge paperwork Illegible writing Incomplete home medication list	Redesign the form/process (new consolidated medication reconciliation form including home medications and discharge medications) Keep form with the discharge paperwork
Physician prescribes discharge medications	Home medication list not reviewed	Delay in discharge; adverse drug events; medication errors; rework; downstream negative effects*	4	2	4	32	Medication reconciliation form is housed in the order section and gets buried Incomplete home medication list	Redesign the form/process (new consolidated medication reconciliation form including home medications and discharge medications) Keep form with the discharge paperwork

Medication Reconciliation

Hospital A FMEA Worksheet for High-Priority Failure Modes Threshold for High-Priority Failure Modes: RPN ≥ 32; Criteria Rating Scale: 1-5

**Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability*

Process Step	Failure Modes	Potential Effect	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible causes	Mitigation Strategies (Recommended Redesign)
	Current MAR not reviewed.	Delay in discharge; adverse drug events; medication errors; rework; downstream negative effects*	4	2	4	32	Unable to validate home medication list Medication reconciliation form not kept with the discharge paperwork	
	Instructions incomplete.	Delay in discharge; adverse drug events; medication errors; rework; downstream negative effects*	5	5	3	75	Illegible writing	
Caregiver reconciles discharge medication order with MAR and with medication list	Home medication list not completed at time of admission.	Delay in discharge; adverse drug events; medication errors; rework; downstream negative effects*	4	3	3	36	Incomplete home medication list Unable to validate home medication list	Redesign the form/process to include procedures for acquiring an accurate home medication list
Caregiver gives patient written discharge medication list as part of discharge instructions	Discharge medication list does not include home medications	Delay in discharge; adverse drug events; medication errors; rework; downstream negative effects*	4	2	4	32	Medication reconciliation form is housed in the order section and gets buried Incomplete home medication list Unable to validate home medication list Different home medication list (medication reconciliation form versus physician history form)	Redesign the form/process (new consolidated medication reconciliation form including home medications and discharge medications) Keep form with the discharge paperwork Revise physician history form to refer to the medication reconciliation form rather than list home medications
Caregiver educates patient/family on discharge medications	Discharge medication list incomplete.	Delay in discharge, adverse drug events; medication errors, rework; patient unable to follow instructions; inadequate follow up care; downstream negative effects*	5	5	3	75	Medication reconciliation form not kept with the discharge paperwork Illegible writing Incomplete home medication list	Redesign the form/process (new consolidated medication reconciliation form including home medications and discharge medications) Keep form with the discharge paperwork

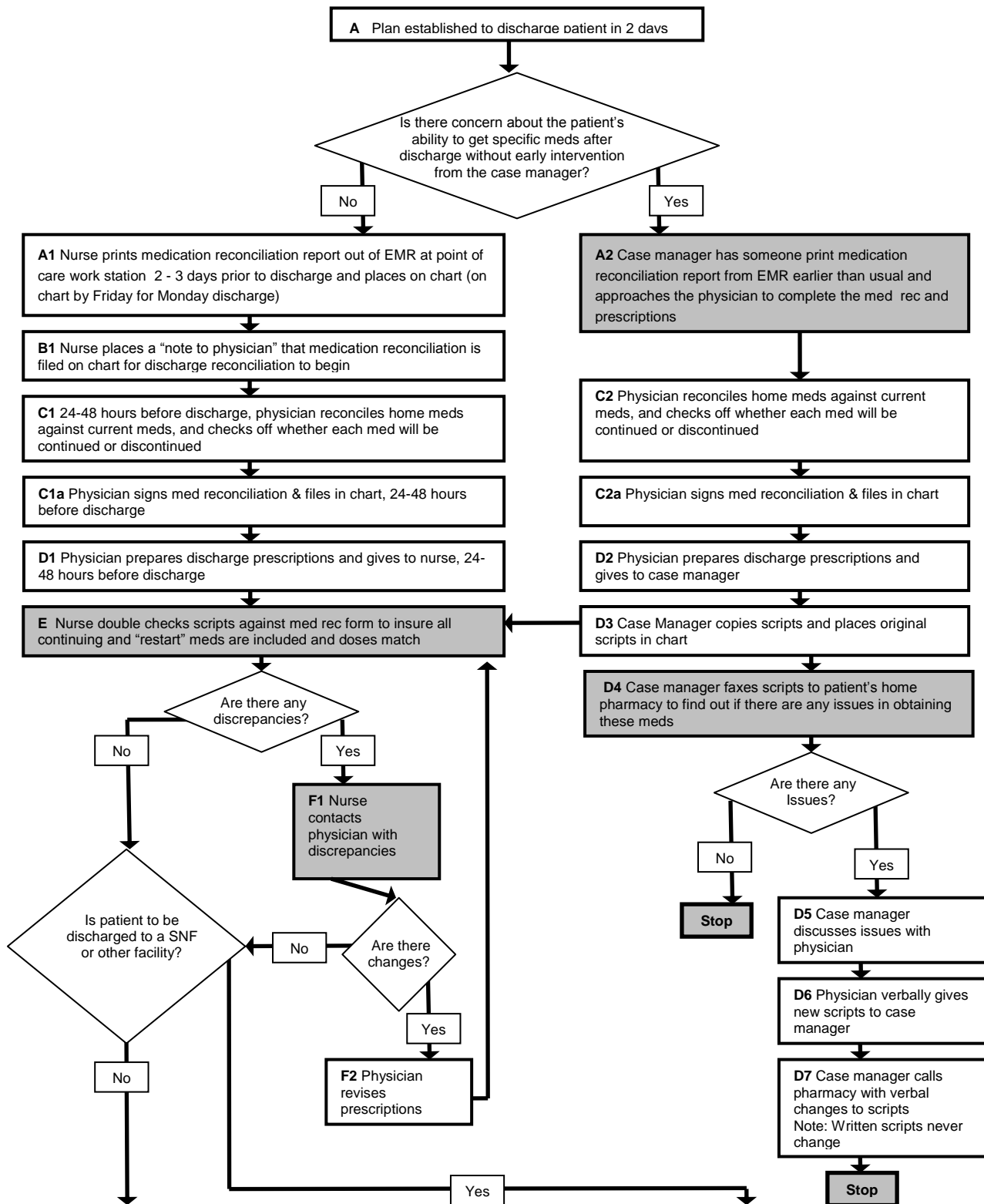
4.2 Hospital B

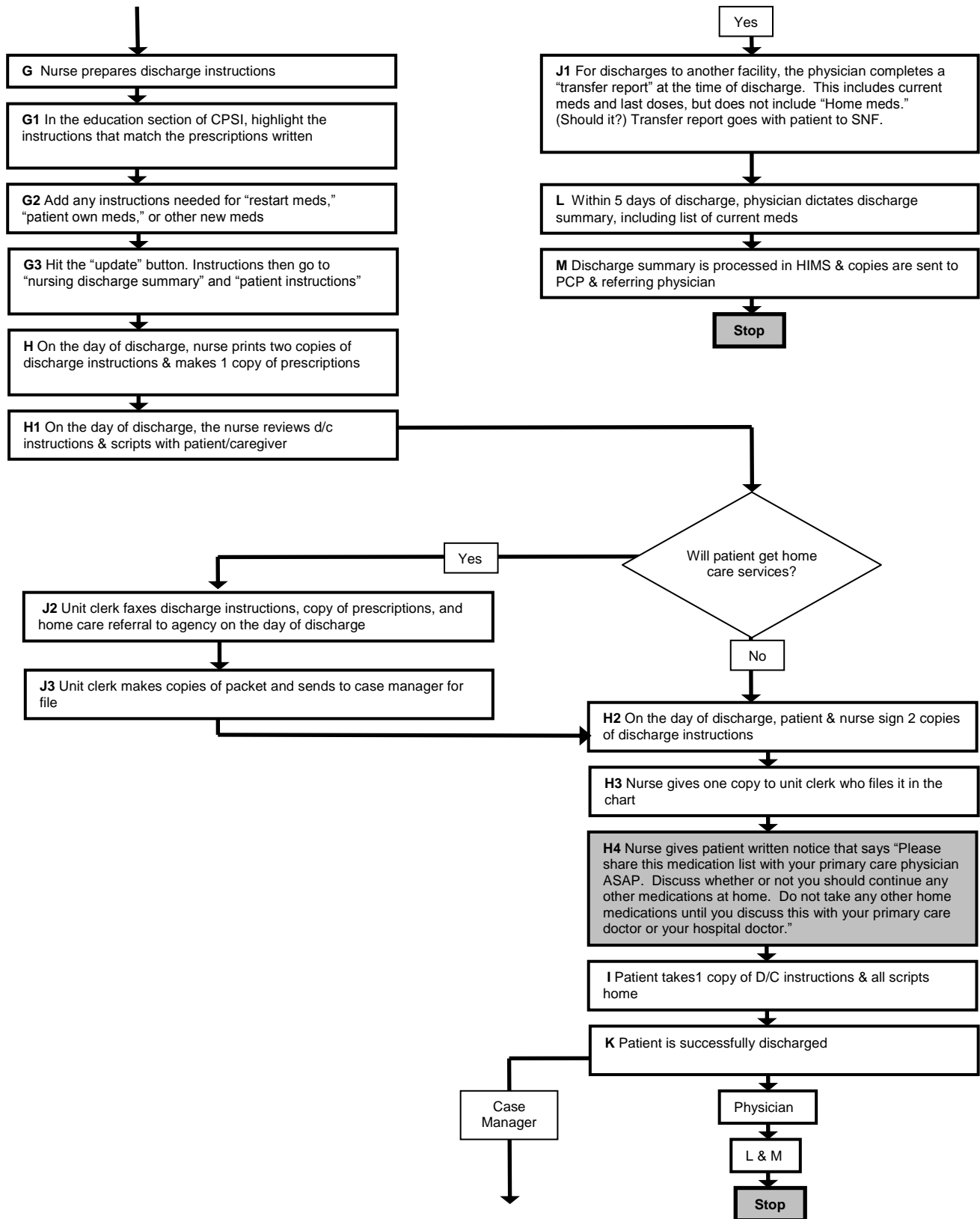
Hospital B, a rehabilitation facility, conducted its FMEA on medication reconciliation, specifically focusing on the sub-process of discharge medication reconciliation.

Figure 6 shows Hospital B's process flowchart for discharge medication reconciliation. The shaded process steps were added to the original discharge medication reconciliation sub-process during the FMEA analysis. Figure 7 shows the progress of Hospital B's FMEA including the following:

- Identification of potential failure modes and effects
- Determining criteria ratings for Severity, Probability of Occurrence, and Detectability
- Prioritizing failure modes with an RPN threshold greater than or equal to 60
- Determining possible causes
- Mitigation strategies (recommended redesign)

Figure 6. Hospital B Process Flowchart





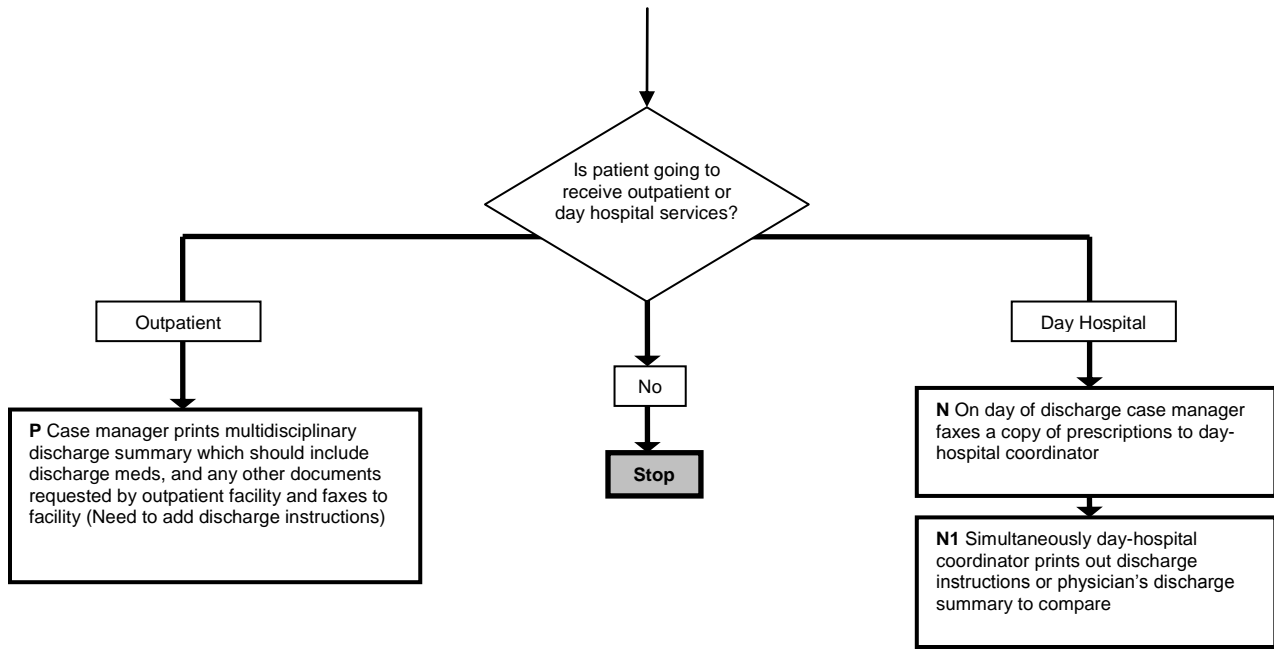


Figure 7. Hospital B FMEA Worksheet for High Priority Failure Modes

<p align="center">Medication Reconciliation Hospital B FMEA Worksheet for High-Priority Failure Modes <i>Threshold for High-Priority Failure Modes: RPN ≥ 60; Criteria Rating: 1-5</i></p> <p align="center"><small>*Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability</small></p>								
Process Step	Failure Modes	Potential Effect	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible causes	Mitigation Strategies (Recommended Redesign)
A1 Nurse prints medication reconciliation report out of the electronic medical record 2-3 days prior to discharge and places on chart (on chart Friday for Monday discharge)	Home medication list incomplete/inaccurate	Adverse drug events; medication errors; rework; delay in discharge; downstream negative effects*	5	5	5	125	No follow-up with family after admissions No clear responsibility defined for this Family may not provide information, despite requests	Assign responsibility for follow-up to nursing or case management Educate staff Create laminated pocket cards Share audit reports on medication reconciliation Follow-up with staff that are non-compliant
B1 Nurse places a “note to physician” that medication reconciliation is filed on chart for discharge reconciliation to begin	Note placed late	Delay in discharge; medication errors; adverse drug events; downstream negative effects*	5	5	3	75	There is no cue for the nurse to remember to do this since her part of the process does not come until later Nurse does not necessarily know that the patient’s discharge is in 2 days	Shift responsibility to unit clerks who have the calendar of pending discharges and who can print the form for any patients that are being discharged in 2 days and notify the physicians
C1 24-48 hours before discharge, physician reconciles home medications against current medications and checks off whether each medication will be continued or discontinued	Fails to reconcile at all	Delay in discharge; adverse drug events; medication errors	5	4	4	80	No cue to do this Failure to buy into this process Misunderstanding about their role since the admission process no longer includes the physician unless someone else finds a discrepancy Confusion about process due to multiple changes in last year	Have unit clerks provide a cue by printing the form, putting it in front of the chart, and notifying the physician Education physicians and residents Audit and provide audit results to physicians Follow-up with physicians that are non-compliant

Medication Reconciliation
Hospital B FMEA Worksheet for High-Priority Failure Modes
Threshold for High-Priority Failure Modes: RPN ≥ 60; Criteria Rating: 1-5

**Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability*

Process Step	Failure Modes	Potential Effect	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible causes	Mitigation Strategies (Recommended Redesign)
C2 Physician reconciles home medications against current medications and checks off whether each medication will be continued or discontinued	Home medication list incomplete/inaccurate	Adverse drug events, medication errors; rework; delay in discharge; downstream negative effects*	5	5	3	75	No follow-up with family after admission No clear responsibility defined for this Family may not provide information, despite requests	Assign responsibility for follow-up to nursing or case management Educate staff Create laminated pocket cards Share audit reports on medication reconciliation Follow-up with staff that are non-compliant
D2 Physician prepares discharge prescriptions and gives to case manager	Too early	Adverse drug events; medication errors; rework; downstream negative effects*	3	3	4	60	Intentions are good to do medication reconciliation in a timely manner, but medications change later and the changes are not reconciled	Change the sequence of the process Fax completed medication reconciliation form as a complete list of intended discharge medications to patient's home pharmacy to clarify any changes that will be needed due to formulary issues, pre-authorizations, etc Prescriptions will not be written until pharmacy response received, so that medications that the patient will actually get at home is accurate Nurse will do a final check against the medication administration record when prescriptions are written to ensure any late changes are caught
D4a Pharmacy calls back with issues (external process)	Fails to call back	Delay in discharge; medication errors, downstream negative effects*	5	3	5	75	Issues unknown and external to facility	Have case manager call back when no response is received within 1 day of fax Instruct physicians that they should not write prescriptions without the final report from the pharmacy in front of them

Medication Reconciliation
Hospital B FMEA Worksheet for High-Priority Failure Modes
Threshold for High-Priority Failure Modes: RPN ≥ 60; Criteria Rating: 1-5

**Downstream negative effects: increased cost, increased length of stay, reputation/staff morale/physician satisfaction/patient satisfaction negatively impacted, and/or potential liability*

Process Step	Failure Modes	Potential Effect	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible causes	Mitigation Strategies (Recommended Redesign)
G If patient is going home, nurse prepares discharge instructions	Nurse does not create discharge medication list and instructions	Rework; downstream negative events*	4	4	4	64	Nurse does not remember Does not feel comfortable using computer process Lack of compliance Unclear accountability	Clarify accountability Re-educate Share results Follow-up with staff that are non-compliant
H1 On the day of discharge, nurse reviews discharge instructions and prescriptions with patient/patient's caregiver	Patient receives inadequate education	Patient is unable to follow instructions; medication errors; adverse drug events; downstream negative effects*	5	3	4	60	Language communication barrier nurse does not devote adequate time Education in electronic medical record system is not utilized	Community pharmacy will provide educational materials

4.3 Hospital C

Hospital C conducted its FMEA on medication reconciliation, specifically focusing on the sub-process of discharge medication reconciliation.

Figure 8 shows Hospital C's process flowchart for discharge medication reconciliation. Figure 9 shows the progress of Hospital C's FMEA including the following:

- Identification of potential failure modes and effects
- Determining criteria ratings for Severity, Probability of Occurrence, and Detectability
- Prioritizing failure modes with an RPN threshold greater than or equal to 16
- Determining possible causes
- Mitigation strategies (recommended redesign)

Figure 8. Hospital C Process Flowchart

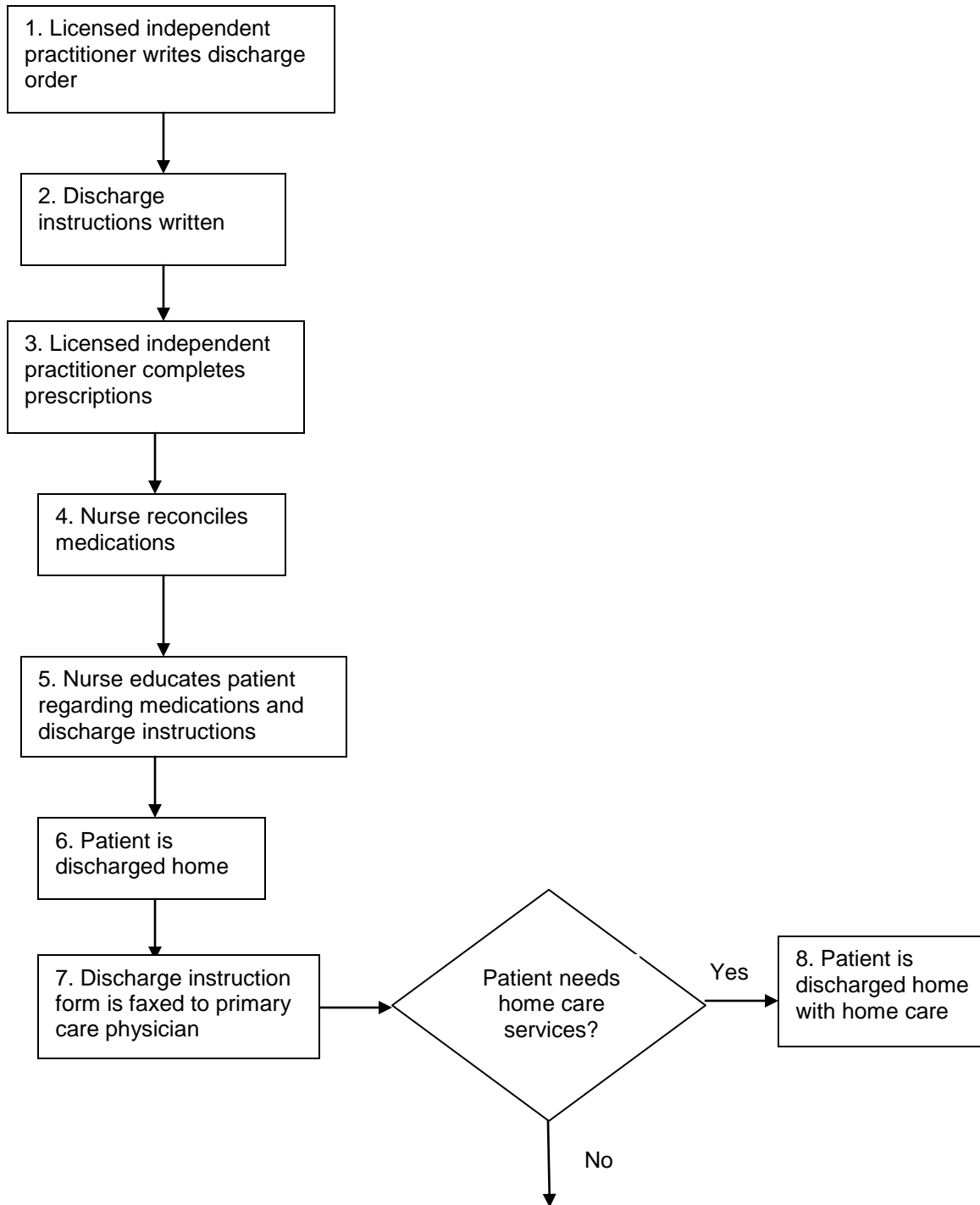


Figure 9. Hospital C FMEA Worksheet for High Priority Failure Mode

Medication Reconciliation Hospital C FMEA Worksheet for High-Priority Failure Modes <i>Threshold for High-Priority Failure Modes: RPN ≥ 16; Criteria Rating Scale: 1-5</i>								
Process Step	Failure Modes	Potential Effect	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible causes	Mitigation Strategies (Recommended Redesign)
2. Discharge instructions are written	2a. Licensed independent practitioner does not write instructions	Lack of education for patient; re-admission	4	4	2	32	Competing priorities Lack of organization Lack of motivation Licensed independent practitioner waiting for consultant's recommendations	Revise form
2. Discharge instructions are written	2b. Licensed independent practitioner writes incomplete instructions	Lack of education for patient; re-admission	4	4	4	64	Original medication reconciliation is incomplete or not done Licensed independent practitioner waiting for consultant's recommendations Competing priorities Lack of organization and/or motivation	Educate staff on the discharge process Revise discharge policy defining staff's responsibilities, including steps for nursing staff to compare the discharge instructions, medication administration record, and medication reconciliation forms Have CME class for licensed independent practitioners on the discharge process including medication reconciliation
3. Licensed independent practitioner completes prescriptions	3a. Prescriptions are not written	Patient does not obtain new medications; re-admission	5	4	2	40	Licensed independent practitioner not available Lack of motivation Competing priorities	Revise policy with defined responsibilities during the discharge process
3. Licensed independent practitioner completes prescriptions	3b. Prescriptions are not given to patient	Patient does not obtain new medications; re-admission	4	4	2	32	Prescriptions stay on chart Licensed independent practitioner forgets to give copy to patient Patient leaves before prescriptions are given	Check off form for nursing staff to use during the discharge process

Medication Reconciliation

Hospital C FMEA Worksheet for High-Priority Failure Modes
Threshold for High-Priority Failure Modes: RPN ≥ 16; Criteria Rating Scale: 1-5

Process Step	Failure Modes	Potential Effect	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible causes	Mitigation Strategies (Recommended Redesign)
4. Nurse reconciles medications	4a. Medication reconciliation is not done	New medications are omitted on discharge instructions: re-admission	3	5	3	45	Original med reconciliation form is not complete Lack of knowledge about the medication reconciliation process Licensed independent practitioner does not call back to finish medication reconciliation process Patient leaves before the process is complete Lack of motivation/organization Competing priorities	Educate staff on medication reconciliation Revise discharge policy to include staff's responsibilities in the discharge process
5. Nurse educates patient regarding medications, and discharge instructions	5a. Education is not done	Lack of knowledge for patient; re-admission	4	3	4	48	Competing priorities Time constraints Lack of knowledge on the discharge process Lack of motivation	Revise discharge instruction forms to include a discharge checklist
5. Nurse educates patient regarding medications, and discharge instructions	5b. Medication informational and discharge instruction sheets are not given to patient	Lack of knowledge for patient; patient may not understand side-effects; potential for wrong dose; re-admission	4	4	4	64	Difficulty in accessing medication information tools from computer New medications not available in computer Patient leaves before information can be given	Provide staff with alternative educational forms to give out to patients Upgrade computer/software Expand computer access to internet educational materials for staff Revised discharge instruction sheet to include checklist of responsibilities during the discharge process
5. Nurse educates patient regarding medications, and discharge instructions	5c. Nurse does not document education process		2	4	3	24	Competing priorities Time constraints	Re-educate Develop discharge checklist

Medication Reconciliation

Hospital C FMEA Worksheet for High-Priority Failure Modes
Threshold for High-Priority Failure Modes: RPN ≥ 16; Criteria Rating Scale: 1-5

Process Step	Failure Modes	Potential Effect	Severity	Probability of Occurrence	Detectability	Risk Priority Number (RPN)	Possible causes	Mitigation Strategies (Recommended Redesign)
6. Patient is discharge home	6a. Patient does not get discharge instructions	Lack of education for patient; re-admission; interactions with incompatible medications; wrong dosing	4	4	2	32	Patient leaves before instructions are given Competing priorities Lack of knowledge on discharge procedure	Automate discharge process/Computer system up-grade Develop discharge checklist
7. Discharge instruction form is faxed to primary care physician	7a. Primary care physician does not receive discharge instructions	Primary care physician unaware of recommended medications	4	4	2	32	Not policy to fax to primary care physician	Create policy to comply with standards Automate discharge process/computer system up-grade Make patient responsible for giving primary care physician information
8. Patient discharged to home with home care	8a. Discharge instructions/medication reconciliation are not faxed to home care	Patient resumes old medications; potential interaction of old and new medications; wrong dosing;; re-admission	4	2	2	16	Timing of discharge Competing priorities	Develop discharge checklist

5.0 Conclusions

Mitigation strategies to reduce risk associated with potential failure modes varied from hospital to hospital, depending on their unique circumstances. Mitigation strategies focused on the following:

- Acquiring an accurate home medication list
- Developing a medication reconciliation form
- Developing a protocol for discharge medication reconciliation that clearly delineates responsibility for each process step
- Ensuring availability of MAR and home medication list to prescribing physician and/or caregiver responsible for medication reconciliation
- Incorporating reconciled medication list in discharge instructions
- Providing effective patient education
- Raising physician and staff awareness and providing adequate physician and staff education.

The following mitigation strategies were most frequently implemented amongst participating hospitals. In addition, hospitals indicated that implementing these mitigation strategies seemed to have the greatest impact on strengthening medication reconciliation and patient safety:

- Delineate responsibility and accountability for acquiring home medication list
- Delineate responsibility for follow up if home medication list is incomplete
- Place flag on the home medication list to indicate that it has not been completed
- Utilize case managers to verify home medication list
- Contact patient's pharmacy to verify home medications
- Contact primary care physician to verify home medications
- Enter home medication list into the computer
- Reconcile medications and retain reconciled medication list in patient's color coded folder
- Keep home medication list with discharge instruction form for physician to review
- Develop a protocol for discharge medication reconciliation
- Develop a medication reconciliation form that contains prompts
- Utilize one medication reconciliation form for all disciplines (e.g., nursing, Pharmacy, physicians, radiology) and in all care areas
- Review unit-specific data to develop and refine medication reconciliation form
- Develop combined form that begins with the home medications and becomes the physician order sheet, and patient reference sheet upon discharge (eliminating the use of multiple forms)
- Keep medication reconciliation list with MAR
- Delineate responsibility for communicating discharge medications to the next provider
- Create a discharge folder with pertinent patient information (e.g., medication list, wound care) and instructions for patient to share with their physician and home health nurse; provide multiple copies
- Fax medication list to local pharmacy for review (e.g., insurance coverage for prescribed medications)

- Initiate patient medication education upon admission and continue throughout the hospital stay utilizing nursing, pharmacy and physicians
- Utilize a database with several languages and various reading levels to provide printed medication information to patients
- Redesign discharge form to allow sufficient room for medication list
- Forward copies of discharge medication reconciliation form and discharge instructions to pharmacy for review and require pharmacist to contact physician with discrepancies
- Incorporate a check box on form to instruct patients to refer back to primary care provider for medication list verification
- Have senior leadership make medication reconciliation an organizationwide goal
- Review unit specific data to provide targeted education for improving medication reconciliation
- Implement an off-unit education program to provide an environment more conducive to learning
- Provide medication safety Webinars for PRN staff

Hospitals used a variety of used a variety of process and outcome measures to determine if implementation of each mitigation strategy met with their expectations. Evaluation measures that were commonly used included the following:

- Chart review for home medication list completion and for discharge medication reconciliation completed before discharge
- Review of follow-up calls to visiting nurse for medication issues
- Review of follow-up calls to patients for medication issues
- Feedback from next provider
- Number of medication errors in which inadequate medication reconciliation was a factor/1,000 patient days

In addition, Baseline and Follow-up Self-Assessment Surveys were conducted during the FMEA process to assess the extent to which hospitals had implemented evidence-based practices for effective patient safety particular to medication reconciliation process.

The baseline survey was conducted in May/June 2007, during the FMEA process, but prior to any efforts related the development of mitigation strategies. The follow-up survey was conducted in September/October upon completion of the FMEA process after hospitals had implemented their mitigation strategies. Most hospitals worked on implementing their mitigation strategies during the summer or fall, 2007.

A total of 14 hospitals completed the baseline survey, and 10 hospitals completed the follow-up survey. It should be noted that one healthcare system completed only one follow-up survey for its three hospitals since they had been able to standardize processes across all three hospitals; each of the three hospitals had completed its own baseline survey. In addition, one hospital closed as an acute care facility during the FMEA and therefore completed the baseline, but not the follow-up survey.

Hospital designees were asked to complete the baseline and follow-up surveys during their individual FMEA team meetings, with the collective input of their teams. FMEA Survey questions focus on those sub-processes covered in the FMEA workshops. Scores for the survey responses were assigned based on a 0 to 100 point scale. A higher score related to a more

positive response to the question. All scores reflect the respondents' (FMEA teams') perception of their facilities at the time of taking the survey. Our survey analysis is organized by the key areas of Culture, Infrastructure, and Practices.

Based on a comparison of follow-up to baseline survey results, the Partnership for Patient Care and participating hospitals have successfully strengthened patient safety with regards to medication reconciliation in the region. It is anticipated that patient safety will be further strengthened as hospitals continue to work on mitigation strategies and their implementation.

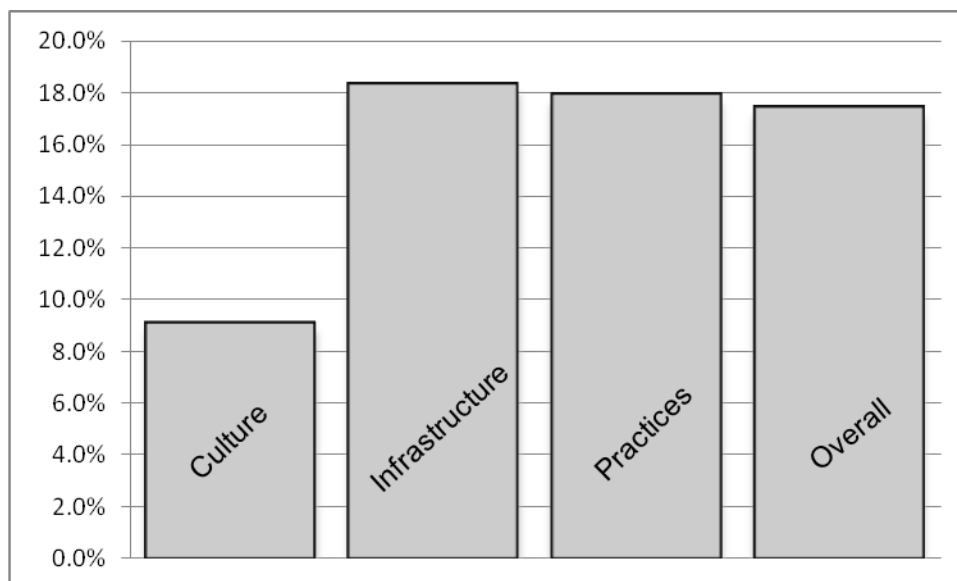
Survey results can be summarized as follows:

- Significant progress was demonstrated in strengthening patient safety as demonstrated by the 17.4% overall improvement in comparing aggregate follow-up to baseline scores (follow-up score of 81, baseline score of 69).
- Greatest improvement was shown in the key area of **Infrastructure** (18.3% improvement). Highlights of significant improvement in this category include:
 - The patient's home medication list is readily available to the physician writing discharge medication orders (18.5% improvement).
 - The caregiver accountable for reconciling discharge medications is clearly delineated (23.9% improvement).
 - The caregiver performing discharge medication reconciliation is guided by a form that contains prompts (28.8% improvement).
 - The hospital systematically identifies adverse drug events (ADEs) associated with failures in the discharge medication reconciliation process (52.2% improvement).
 - The hospital has implemented process measures to monitor the effectiveness of its discharge medication reconciliation process (20.5% improvement).
- Significant improvement was also demonstrated in the key area of **Practices** (17.9% improvement). Highlights of significant improvement in this category include:
 - The confirmed home medication list always contains complete information about each drug (28.8% improvement).
 - If a home medication list cannot be completed, the reason is always documented in the medical record (17.4% improvement).
 - On average, 90-100% of patients have their discharge medications reconciled before they are discharged (25.4% improvement).
 - The discharge medication list always includes both new medications and home medications the patient is to resume (25.4% improvement).
 - When a patient is prescribed a high-risk medication at discharge, the hospital has protocols to ensure that follow-up has been arranged (29.8% improvement).
 - The caregiver always asks the patient to take his/her discharge medication list to the next providers of care, if unknown (22.9% improvement).
 - The hospital had a standard process to communicate the discharge medication list to the patient's primary care physician (56.5% improvement).
 - The hospital has a standard process to identify other providers who are currently participating in the patient's care that should receive the discharge medication list (69.2% improvement).
 - The discharge summary always includes a list of discharge medications (28.8% improvement).

- On average, 90-100% of patients have their discharge medication orders screened for potential medication errors by the pharmacy before discharge (30.8% improvement).
- A 9.1% improvement was also demonstrated in the key area of **Culture**. Highlights of significant improvement in this category include:
 - Senior leadership has demonstrated a commitment to improving patient safety through support of medication reconciliation (20.6% improvement).

The graph in Figure 10 demonstrates the progress of the region’s hospitals in implementation of evidence-based best practices for strengthening patient safety upon completion of the FMEA.

Figure 10. Follow-up to Baseline Survey Results: % Improvement



Figures 11 through 13 summarize the survey results in the key areas of Culture, Infrastructure, and Practices respectively.

Figure 11. Survey Results: Culture

Culture		
Key Element (Survey Question #)	Baseline Score	Follow-up Score
Nurses have received education and training about the hospital’s process for reconciling discharge medications within the last year. (25)	83	90
Physicians have received education and training about the hospital’s process for reconciling discharge medications within the last year. (26)	70	72
Senior leadership has demonstrated a commitment to improving patient safety through support of medication reconciliation. (29)	73	88
Caregivers receive periodic feedback about the effectiveness of the medication reconciliation process. (32)	81	86
Total Aggregate Score for Culture	77	84

Figure 12. Survey Results: Infrastructure

Infrastructure		
Key Element (Survey Question #)	Baseline Score	Follow-up Score
The caregiver responsible for creating a home medication list is clearly delineated. (2)	79	86
The patient's home medication list is readily available to the physician writing discharge medication orders. (5)	81	96
The caregiver responsible for maintenance of a current MAR (medication administration record) is clearly delineated. (7)	83	90
The MAR is readily available to the physician writing discharge medication orders. (9)	89	100
The caregiver accountable for reconciling discharge medications is clearly delineated. (10)	71	88
The caregiver performing discharge medication reconciliation is guided by a form that contains prompts. (11)	59	76
The individual accountable for sending the discharge medication list to the next provider (s) of care is clearly delineated. (23)	57	64
The hospital systematically identifies adverse drug events (ADEs) associated with failures in the discharge medication reconciliation process. (30)	46	70
The hospital has implemented process measures to monitor the effectiveness of its discharge medication reconciliation process. (31)	73	88
Total Aggregate Score for Infrastructure	71	84

Figure 13. Survey Results: Practices

Practices		
Key Element (Survey Question #)	Baseline Score	Follow-up Score
The hospital has a protocol for reconciling discharge medications. (1)	94	100
The confirmed home medication list always contains complete information about each drug. (3)	59	76
If a home medication list cannot be completed, the reason is always documented in the medical record. (4)	46	54
Physicians writing discharge medication orders can rely on the accuracy of the home medication list. (6)	66	72
On average, the MAR is accurate 90-100% of the time, at the time the physician writes the discharge medication orders. (8)	86	98
When discrepancies are found during the discharge medication reconciliation, the responsible physician is always contacted. (12)	83	84
On average, 90-100% of patients have their discharge medications reconciled before they are discharged. (13)	67	84
On average, 90-100% of patients have a written medication list given to them at discharge. (14)	83	88
The discharge medication list always includes both new	67	84

Practices		
Key Element (Survey Question #)	Baseline Score	Follow-up Score
medications and home medications the patient is to resume. (15)		
Caregivers always explain the possible side effects of discharge medications to the patient. (16)	66	74
Caregivers always explain what each discharge medication is taken for (indications) to the patient. (17)	79	78
When a patient is prescribed a high-risk medication at discharge, the hospital has protocols to ensure that follow-up has been arranged. (18)	57	74
The caregiver always instructs patients to seek care or advice from a health care provider if experiencing symptoms of a medication reaction after discharge. (19)	79	88
The caregiver always asks the patient to take his/her discharge medication list to the next providers of care, if unknown. (20)	70	86
The hospital had a standard process to communicate the discharge medication list to the patient's primary care physician. (21)	46	72
The hospital has a standard process to identify other providers who are currently participating in the patient's care that should receive the discharge medication list. (22)	39	66
The discharge summary always includes a list of discharge medications. (24)	73	94
The hospital has taken measures to improve the efficiency of the discharge medication reconciliation process (27).	83	92
On average, 90-100% of patients have their discharge medication orders screened for potential medication errors by the pharmacy before discharge. (28)	26	34
Total Aggregate Score for Infrastructure	67	79

The Partnership for Patient Care (PPC) has effectively provided a solid foundation for hospitals to continue their meaningful work in incorporating evidence-based best practices in strengthening patient safety. Correspondingly, the hospitals' commitment to patient safety greatly contributed to the regional FMEA success. PPC's cohesive approach to regional FMEA has benefited participating hospitals by providing

- An interactive forum for hospitals to share ideas and experiences;
- A collaborative approach for hospitals to work together, rather than individually, thereby maximizing the value derived from proactive risk assessment;
- Provision of research summaries with evidence-based best practices, risk data, national quality initiative summaries, standards and guidelines from regulatory and professional organizations, and resource lists;
- Tools to support the FMEA process; and
- Hands-on technical assistance to facilitate clinical process analysis and to assist hospitals in developing risk reduction (mitigation) strategies and implementing them effectively.

For more information on the Partnership for Patient Care and its regional proactive risk assessment component core component, please contact:

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