Transitional Care Medication Safety: Stakeholders' Perspectives

A Master’s project submitted in partial fulfillment
of the requirements for the degree of

MASTERS OF NURSING

By

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August 2013
To the Faculty of Washington State University:

The members of the Committee appointed to examine the master’s project of SUZANNA L. SMITH find it satisfactory and recommend that it be accepted.

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ACKNOWLEDGMENT

I would like to express my deepest gratitude and appreciation to my graduate committee. Dr. Corbett, thank you for sharing your vast knowledge on the subject of transitional care, as well as all of your guidance and support for my graduate project. The research you have conducted, your revisions and recommendations for the paper were essential to its creation and I am very thankful and fortunate to have worked with you on this project. Dr. Bolkan and Dr. Dupler, thank you for your valuable contribution of knowledge, input and support for this important topic and my graduate paper. I am grateful for your assistance.
Transitional Care Medication Safety: Stakeholders’ Perspectives

Abstract

By Suzanna L. Smith RN, BSN
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August 2013

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Manuscript submitted to: AHRQ Advances Publication

Purpose: To identify barriers to and solutions for improving medication safety and reducing medical liability during patients’ transition from hospital to home.

Methods: A qualitative descriptive study, guided by the Sensemaking Conceptual Framework, was completed with 10 focus groups of stakeholders that were segregated according to whether they represented patients/family members or a professional group. During each focus group, two case studies about patients experiencing medication discrepancies following a hospital to home transition were presented. Participants were asked to identify factors contributing to medication discrepancies, health system solutions to prevent medication discrepancies, and how assignment of responsibility should be accomplished if patients were permanently harmed because of a medication discrepancy.

Results: Stakeholder groups identified common barriers and solutions to hospital-home transitional care medication safety. Barriers to medication safety included themes related to patient/family-level factors (competency, retaining old prescriptions, and access to medication) as well as health system-level factors (communication and care coordination, complex discharge processes, staffing and time constraints). Solution themes were: improving information management, increasing access to medicines, and enhancing human resources. Participants across focus groups also reported that attributing responsibility for medication discrepancies was contextual and would require more detailed knowledge than was provided in the case studies.

Conclusions: A wide range of stakeholders identified similar themes regarding barriers contributing to medication discrepancies during care transitions and solutions for reducing or overcoming barriers. Approaches to address many of the identified barriers are available. Study findings support more widespread adoption of evidence-based strategies and legislative provisions to improve transitional care medication safety and to reduce medical liability.
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Introduction

Health systems expend considerable resources reducing medication errors in hospital settings. Increasingly, *inpatient* medication risk management efforts focus on preventing errors by improving systems and creating safety cultures rather than assigning blame for unsafe practice.\(^1\)\(^-\)\(^3\) Unfortunately, the potential for patient harm and increased medical liability due to medication discrepancies and errors do not end at hospital discharge. The transition from hospital to community settings is an exceptionally risky time for patients.\(^4\)\(^-\)\(^7\) Data suggest that up to 90% of patients experience at least one medication discrepancy in the transition from hospital to home, and discrepancies occur for all classes of medicines.\(^8\)\(^-\)\(^10\) Medication discrepancies that occur during the transition from hospital to home are defined as differences in the medicines that patients are actually taking compared to medicines listed on the hospital discharge list.\(^11\) Patients with hospital to home medication discrepancies are almost twice as likely to be readmitted to the hospital within 30 days as compared to patients with no transitional care medication discrepancies.\(^12\)

The transitional care period begins the day the patient is discharged from the hospital and continues for the next 29 days.\(^13\) During this period, the hospital provider transfers care to the outpatient primary care provider (PCP), but there is usually minimal follow up to this hand over. The transitional care period is a time of concern because it is when patients are particularly vulnerable to experiencing adverse events. An adverse event is defined as an injury resulting from health care management, rather than the underlying disease, within 3 weeks of discharge.\(^14\) Poor care coordination occurring during the transitional period may lead to adverse events that could result in hospital readmissions and/or greatly increase the patient’s chances of morbidity and mortality. They have also been identified to occur in 1 out of every 5 patients discharged from the hospital setting and 66% of those adverse events were medication related.\(^14\)

Patients at high risk to experience medication discrepancies include older adults, those with polypharmacy (both prescribed and non-prescribed medicines), drug interactions, multiple comorbidities, altered drug pharmacokinetic profiles and/or pharmacodynamic responses as a result of aging, and altered medication adherence caused by depression or cognitive impairment.\(^15\) Preventable medication errors are estimated to impact more than 7 million patients, contribute to 7000 deaths and cost $21 billion to direct health care costs annually in the United States.\(^16\) Adverse drug events (ADEs) are multifactorial and are attributed to both human and system errors. Some of these factors include a breakdown in health professionals’ communication, medication discrepancies, poor patient follow up and inadequate patient education. To emphasize the importance of eliminating the occurrences of adverse events and ADEs, several healthcare agencies have acknowledged them as a patient safety priority. For example, the National Priorities Partnership declared patient safety from potentially preventable adverse events, including medication discrepancies, a national priority.\(^17\) The hospital to home transitional care period provides an important opportunity to reduce medication discrepancies and ADEs and improve patient safety. Furthermore, the Joint Commission on Accreditation of Healthcare (TJC) National Patient Safety Goals state, “when a patient leaves an
organization’s care directly to his or her home, the complete and reconciled list of medications is provided to the patient’s known primary care provider, or the original referring provider, or a known next provider of service. TJC’s safety goals confirm the importance of medication reconciliation as a way to prevent ADEs, yet, despite the medication reconciliation mandate, transitional care medication discrepancies remain high and safety concerns persist.

The focus of this paper is on identifying stakeholders’ perceptions of barriers to and solutions for improving medication safety and reducing medical liability during patients’ transition from hospital to home. The medication management components of transitional care that are perceived by stakeholders as most important for improving patient outcomes, reducing health care costs and minimizing medical liability have not been systematically explored. As a part of a larger study to understand how to maximize medication safety while improving patient outcomes and minimizing medical liability during transitional care, our team gathered data from diverse stakeholders during segregated focus groups (N=10). The study aims were to identify barriers to and solutions for accurate and complete medication information transfer during patients’ transition from hospital to home. The study was guided by the Sensemaking Conceptual Framework described by Weick. Sensemaking involves conversations about ambiguous issues with the goal of, literally, trying to make sense of them. Conversations allow for a shared representation of a phenomenon. Thus, the primary purpose of this study was to make sense of the phenomenon of medication discrepancies during the hospital to home transition and, using sensemaking processes, identify stakeholders’ strategies for reducing medication discrepancies to improve patient safety. A secondary aim was to explore medical liability issues associated with medication discrepancies that result in permanent patient harm.

Methods

Following Institutional Review Board (IRB) approval, the study was implemented using a descriptive qualitative design. Divergent groups of stakeholders were recruited to participate in one of ten focus groups. Participants were identified based on their membership in a stakeholder population. In all cases, potential participants were invited to participate via written letter and asked to contact the research assistant (Balogh) for more information about the study. A total of 69 participants made up the 10 individual stakeholder focus groups which included patients and family members from urban (n=11) and rural (n=6) hospitals, primary care ambulatory physicians and hospitalist physicians (n=7), home care nurses (n=4), urban hospital nurses (n=5), and rural hospital nurses (n=7), retail and acute care pharmacists (n=8), acute care, home care, and long-term care social workers (n=12), health plan contract administrators (n=3), and health care lawyers (n=6). Focus groups lasted 1½ - 2 hours and were held at public locations convenient to the participants such as conference rooms at area hospitals and universities. Notes were taken during the focus group conversations by the PI and by a research assistant who also recorded the focus group discussions using a smart pen. At each focus group, researchers presented two case studies about medication discrepancies experienced during a hospital to home transition. The case studies were based on actual medication discrepancies and
their associated outcomes. They were selected to capture critical safety and medical liability risk characteristics. Pseudonyms were used for the patient names and some of the details were changed in each case study to ensure patient anonymity. After presentation of the case studies, we sought the stakeholders’ perspectives and interpretation of barriers to and solutions for transition-related medication discrepancies.

**Case study one: Mrs. Brown**

Mrs. Brown was a 61 year-old woman who had been admitted to the hospital with sepsis. Her past medical history included diabetes mellitus, cellulitis, and pyelonephritis. She reported taking 16 medicines at home. During the hospital to home transition period, several discrepancies were noted when her discharge medication list was compared to the medicines she reported taking at home. Focus group participants were asked to specifically consider two medication discrepancies that involved Lantus\textsuperscript{TM} and Novolog\textsuperscript{TM} insulin. The Lantus\textsuperscript{TM} dose noted on the discharge instructions was half of the dose Mrs. Brown reported as her usual home medication dose. Mrs. Brown had also been using Novolog\textsuperscript{TM} prior to her hospitalization and there was not a discharge prescription for Novolog\textsuperscript{TM}; thus she was unsure if she should continue using Novolog\textsuperscript{TM} and if so, what was the correct dose?

**Case study two: Mr. Adams**

Mr. Adams was a 69 year-old man admitted for difficulty walking. His past medical history included obesity, arthritis, hypertension, and hypercholesterolemia. The patient reported taking 9 home medicines, including warfarin. The warfarin was not written on the discharge medication orders and other discrepancies were also found when comparing his home medicines to his discharge list.

Mrs. Brown’s case study was presented to each focus group followed by Mr. Adams’ case study. Four questions were addressed separately through group discussion. The questions were: 1) Based on your professional expertise and/or personal experience, what factors may have contributed to the medication discrepancies described in the case studies?; 2) Now let’s consider the reason each of those contributing factors have occurred; 3) Considering these potential contributing factors or causes, what systems could be implemented to prevent this from occurring in the future?; and 4) If you or, for example, Mrs. Brown or Mr. Adams, had been permanently harmed because of a medication discrepancy, at what point should someone be responsible for that harm?

**Data analysis**

Notes and recordings from all focus groups were independently analyzed by two members of the research team (Corbett and Smith) with the goal of transforming (making sense of) the data by identifying concepts and themes.\textsuperscript{22} The two investigators then discuss their findings. There was overall accordance between the two investigators’ findings; on the rare occasions when interpretations differed, discussion ensued until consensus was reached. Discussion primarily centered on refining and labeling the concepts and then identifying themes that reflected the best transformation of the data. Other members of the research team independently analyzed a subset of randomly selected focus groups. Their notes and identified concepts were reviewed and found to be
congruent with those identified by Corbett and Smith which provided additional reliability to the study findings. Transforming or making sense of the data allowed the researchers to identify strategies that best addressed the transitional care medication safety themes generated by the diverse groups of stakeholders.

Results
Throughout the ten focus groups, there were some unique perspectives, but overall, participants’ answers from the disparate stakeholders shared many commonalities. Based on participants’ responses to the case study questions, we identified two major themes related to (1) barriers to medication safety and (2) potential solutions to medication discrepancies. In addition, as part of our secondary aim, we explored medical liability issues associated with medication discrepancies that resulted in permanent patient harm.

Theme 1: Barriers to medication safety during transition from hospital to home
We asked participants to identify factors that may have contributed to the medication discrepancies identified in the case studies. Two sub-themes emerged: both patient specific barriers and health system barriers (see Table 1).

Table 1 Theme 1: Barriers to medication safety

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<thead>
<tr>
<th>Sub-theme 1: Patient Level Barriers</th>
<th>Sub-theme 2: Health System Level Barriers</th>
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<tr>
<td>• Competency</td>
<td>• Poor communication and coordination of care between physicians</td>
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<tr>
<td>• Retaining old prescriptions</td>
<td>• Lengthy and confusing discharge process/paperwork</td>
</tr>
<tr>
<td>• Access to medications</td>
<td>• Staffing and time constraints</td>
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Sub-themes related to patient issues. Three patient-level factors were reported as obstacles to medication safety and included: (a) competency; (b) retaining old prescriptions; and (c) access to medications. Competency refers to a patient’s limited understanding of the medications or how to successfully manage medications. This concern was raised in all of the focus groups. A social worker commented, “patients are overwhelmed and may not have prior education on medications” Health literacy, was also identified as a component of patient competency that many patients face. Nearly all groups of stakeholders mentioned the issue of patients’ abilities to provide accurate and complete medication histories at hospital admission. When patients are unable to provide accurate medication histories, it reflects less than optimal competence in managing medication. Inaccurate medication history often initiates a trail of medication discrepancies that sets up an erroneous medication reconciliation process that culminates with an inaccurate discharge medication list. A lawyer stated, “the intake case history (self reported) is incomplete” and a nurse from a rural hospital commented, “It’s not uncommon to have an inaccurate list from the patient or family at intake.” Finally, in
regard to competency, focus groups with patients and family members confirmed that the information communicated to them was often too complex and that they sometimes had an inability to understand the discharge instructions, either due to their educational level or their comprehension of terminology when reading through the medication instructions. The situation may be further compounded by patients’ reluctance to ask questions. One patient commented that he did not ask questions because he “doesn’t want to look uneducated.”

Another common patient-specific barrier was patients’ use of medicines already in the home. A lawyer stated, “Patients stockpile medicines at home—sometimes for cost reasons or because ‘they might need it later.’” A home care nurse reported that “patients want to take the same (medicines) because they are at home and have already purchased the meds.” Pharmacists noted that patients often retain old medicines and do not fill new prescriptions if it happens to be the same medicine, but the new post-discharge prescription order contains changes in the dosage or frequency of administration. A home care nurse confirmed this as an issue stating that when patients continue to use the same medicines after discharge “they take what it says on the bottle label, not what it says on the discharge list.”

Finally, a frequently mentioned patient barrier was that medication discrepancies sometimes stem from patients’ challenges in accessing medicines. Medication access had multiple contributing factors including financial constraints experienced by patients, the inability to pick up prescriptions related to mobility confinement, and limited pharmacy access due to living in a rural location.

Sub-themes related to health system issues. The three specific health system level barriers identified were: (a) poor communication and coordination of care between physicians; (b) lengthy and confusing discharge process/paperwork; and (c) staffing/time constraints. Poor communication and coordination of care between providers stemmed from either specialists not communicating adequately with hospitalists or hospitalists not communicating adequately with PCPs. One social worker commented, “(specialists) all come in at different times and add discharge orders. One might add Coumadin™ when the patient is already on aspirin.” A health plan administrator stated “hospitalists aren’t getting information back to the PCPs” and a physician concurred with that perception indicating that “only 1 in 20 of the discharge summaries are being sent to the PCP in a timely manner.”

Lengthy and confusing discharge forms further complicate communication issues and contribute to the likelihood of discrepancies. One patient stated, “it was a blizzard barrage of paperwork.” A rural-dwelling patient stated “Too much red tape.....most people don’t read all that!” While the discharge paperwork in general is confusing, several stakeholder groups identified that in regard to medication discrepancies, electronic health systems that print prescriptions on regular paper make it difficult for patients and family members to distinguish between prescriptions and other discharge forms. A nurse from an urban setting asked “Why do the home discharge sheets look like the prescription sheets?” and a pharmacist further noted that, “prescription paper is
another layer of confusion for the patient. The patient brings in a reconciliation sheet and it looks just like the discharge (prescription) sheet.”

Finally, time limitations were discussed as another system barrier. Hospital staff often have limited time to thoroughly discuss discharge paperwork with patients and, consequently, important education may not be implemented. This may lead to further patient and family confusion. An urban patient stated, "Moving too fast without enough time spent with explanations.” An urban nurse shared, “the family is there and ready to go, but there are many other patients that need help and then you may also have an admit or two thrown in.” A rural patient commented on staffing patterns saying “There are too many duties, too few nurses, short-staffed--unrealistic staffing patterns because administration is disassociated with what's happening on the floor.”

Theme 2: Potential solutions to hospital to home medication discrepancies
We asked stakeholders to identify systems to prevent future medication discrepancies. Three sub-themes emerged from the data: (a) improving information management; (b) increasing access to medicines; and (c) enhancing human resources.

Sub-theme related to improving information management. Several common solutions for system improvements centered on information management, such as having unified electronic medical records, using e-scripts, and simplifying discharge forms. While focus group participants reported understanding the barriers (e.g., HIPAA) to establishing unified or universal electronic medical records, many mentioned how this strategy could reduce medication discrepancies. A rural nurse commented that a solution would be “one registry that all pharmacies use,” while a lawyer advocated for “a central database,” and a physician suggested a “universal med list that is stored in the clouds.” Additional common solutions proposed in most focus groups included having prescriptions electronically sent to pharmacies and simplifying discharge forms. A pharmacist stated, “The discharge form given to the patient needs to be very simple,” and a physician commented, “The community should have the same forms, but they must be better than what’s out there now!” A rural patient recommended “Organize the paperwork with separate categories to clearly define ‘wound care’, ‘medicines’ etc.”

Sub-theme related to increasing access to medicines. Several stakeholder groups noted that receiving prescriptions at the hospital would be a primary solution to increasing access. However, both physician and pharmacist stakeholder focus groups cautioned that if this were done, the patient’s usual pharmacy must be alerted to the new prescriptions so as to prevent future confusion that could lead to medication discrepancies. Other suggestions were pre-planning and coordinating with community pharmacies to ensure they had the required medicines and to ensure that the pharmacy would be open at the time the patient was discharged, particularly if a weekend discharge was expected. Another issue with regard to medication access was cost. One patient remarked “options for costs need to be given so we can plan ahead.” Others concurred that being apprised of the cost of the prescriptions they would receive at discharge and knowledge as to whether their insurance covered that medicine would be helpful. If they were aware of
potential financial barriers prior to discharge, they felt they could discuss options with the hospital staff.

Sub-theme related to enhancing human resources. More hospital staff to allow for better communication and care coordination during hospitalization was cited by nearly all stakeholder groups as a solution to reduce medication discrepancies during the hospital to home transitional period. The importance of providing special interventions, such as post-discharge follow-up, for patients receiving prescriptions for medicines considered “high risk” was thought to be particularly important. A physician stated, “Anticoagulants, insulins, steroids, oral hypoglycemic and BP meds need extra attention at intake and discharge.” A home care nurse asserted that the “main (high risk) meds such as warfarin and other anticoagulants and insulin need to be in line before the patient goes home.” Care management services were suggested as a potential solution to both preventing and resolving medication discrepancies because the care manager would move through the care settings with the patient and could facilitate communication about a variety of issues, including an accurate medication list.

Medical liability for medication discrepancies
In each focus group, we also explored medical liability issues associated with medication discrepancies that resulted in permanent patient harm. Specific themes related to this topic were difficult to ascertain because each group provided vague responses to queries about responsibility for harm caused to patients. Follow-up prompts by the facilitator did not seem to move participants toward clarity. Participants consistently responded that more information about the context and the details of the case would be required to assign responsibility.

Despite lack of specificity regarding responsibility for harm, all groups were able to discuss what should be done when harm occurs. An important theme identified during these conversations was that when errors occur there are generally multiple layers of responsibility. In addition, stakeholders universally agreed that when errors are discovered they should be reported, an apology given, and, when appropriate due to patient harm or inconvenience, compensation should be offered. Further, stakeholders agreed that health systems had a responsibility to ensure that errors invoke system improvements to prevent similar errors in the future. In all cases, focus group participants were in favor of full error disclosure. Additionally, several groups mentioned that patients also have some degree of accountability, particularly for medication discrepancies during hospital to home transitions, and that solutions for improvement included enhanced patient education which could be done prior to hospital discharge and/or with a follow-up phone call or home visit after discharge. An urban patient stated “Follow-up phone calls after discharge would be helpful because now we are ‘tuned in.’”

Discussion
Relying on the Sensemaking Conceptual Framework to evaluate information from the voices of crucial stakeholders, we identified both patient-level and health system-level barriers that stakeholders noted as important contributors to medication discrepancies.
Acutely ill patients are often discharged with instructions to follow complex inpatient initiated therapeutic regimens at home. Stakeholders identified that patients and family members often lack the knowledge, education or health literacy (competency) to understand these complex regimens. The competency level of patients is compounded by the fact that they are extremely vulnerable during this transition due to illness severity and/or functional impairment.\textsuperscript{24} During this fragile transition, patients and their family members require simplified yet thorough medication instructions. Kripalani provides specific guidance for communicating medication instructions for patients at discharge: 1) patients should receive a complete list of medicines to be taken at home with indications and instructions for administration written in everyday language; 2) overarching orders such as “continue home medications” and “resume all medications” need to be avoided to prevent confusion between the current medication regimen and the pre-hospitalization medication regimen; and 3) specific instructions should be provided regarding changes in medicines that the patient had been taking at home prior to hospital admission.\textsuperscript{25} In addition, stakeholders from our study noted the importance of assuring patient access to new prescriptions both in terms of affordability and ability to obtain them from the pharmacy.

In regard to health system-level barriers, stakeholders reported that poor communication, limited staff, time, and complex discharge processes were also problematic. In line with these findings, Bayley and colleagues described similar failures associated with medication information communication during transfers: wrong or incomplete admitting order input by staff, inadequate/incomplete discharge orders, insufficient explanation of discharge medications and poor communication with the PCP regarding discharge medications.\textsuperscript{26} To improve information transfer from hospitalist to PCP, attention must be paid to the content, format, and timely delivery of discharge information. According to Kripalani, PCPs’ further suggest the following information should be included in discharge summaries: diagnoses, abnormal physical findings, important test results, discharge medications, follow-up arrangements made and appointments that still need to be made, counseling provided to the patient and family, and tests still pending at discharge.\textsuperscript{25}

Gleason and colleagues also noted that medication discrepancies often began with the initial input of the medicines and continued throughout the hospital stay due to communication deficits between staff and patients.\textsuperscript{27} The researchers suggested incorporating improved medication history taking and reconciliation skill attainment in medical school curriculums and pointed out that because physicians, nurses, and pharmacists all play key roles in medication management throughout hospitalization and into the transitional care period, a multidisciplinary team approach is required for optimal outcomes.\textsuperscript{27} The importance of implementing an up-to-date medication reconciliation program is also noted in a study completed by McMillan.\textsuperscript{28} Overall, when taken together, both patient/family-level barriers and health system-level barriers often lead to chaotic, inefficient and ineffective hospital to home transitions and promulgate the potential for medication discrepancies and errors. This underscores the significance of focusing on feasible solutions to these barriers in an effort to improve medication safety.
Importantly, stakeholders also offered insight as to practical system solutions that could be implemented to improve medication safety during the transitional period (see Table 2). Preventing or promptly resolving medication discrepancies during the hospital to home transition are crucial strategies for improving patient safety. Additionally, this is critical for reducing medical liability because it is anticipated that with the advent of health care reform, the creation of coordinated care systems such as Accountable Care Organizations (ACOs) could increase the likelihood of medical liability if medication errors are experienced during the transitional period. The stakeholder focus groups were conducted during 2010, shortly after the Patient Protection and Affordable Care Act (ACA) was passed into law. In the ensuing 2½ years, we are heartened to report that there are available evidence-based strategies that coincide with our stakeholder-suggested solutions to improve medication safety during transitional care and/or legislative provisions that provide resources to improve medication safety during care transitions (Table 2).

Evidence-based strategies that can be used to improve medication safety throughout hospitalization and during the transitional care period include the Medications At Transitions and Clinical Handoffs (MATCH) program and Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS). The Health Information Technology for Economic and Clinical Health Act which created incentives for health systems and ambulatory care providers to initiate EHRs, commonly known as meaningful use, has several benefits that contribute to better utilizing information management. In addition, as delineated in Table 2, the ACA contains many provisions that will help fulfill each of the health system solutions suggested by the focus group stakeholders in our study. Finally, stakeholders in the focus group recognized that medication errors that cause harm are generally multi-focal in origin and resisted assigning responsibility. However, a unanimous theme was that full disclosure should occur when an error is made and identified. A relationship between full disclosure and decreased liability claims and overall costs has been identified. Further, such a policy has been endorsed as a best practice by TJC and the National Quality Forum.

<table>
<thead>
<tr>
<th>Solution Sub-Theme</th>
<th>Sub-Theme Component</th>
<th>Available Strategy or Legislative Mandate</th>
<th>Description of Strategy or Legislative Provision’s Contribution as a Solution</th>
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<tbody>
<tr>
<td>Improving Information Management</td>
<td>Unified electronic health record</td>
<td>Meaningful Use</td>
<td>The HITECH Act incentivized providers to use EHRs for data capture and sharing and to subsequently allow for better health information exchange, including transmission of patient care summaries across multiple settings.</td>
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<tr>
<td>E-prescribing</td>
<td>Meaningful use</td>
<td>Increased use of EHRs stimulated by the HITECH Act created the opportunity to more fully implement e-prescribing.</td>
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<tr>
<td>Simplified discharge forms</td>
<td>ACA&lt;sup&gt;b&lt;/sup&gt;-Community-based Care Transitions Program (CBCTP)</td>
<td>Provides contracts to communities that have demonstrated a plan to work together to improve care transitions. One mechanism that may be incorporated into these programs is simplifying and standardizing discharge forms across multiple organizations.</td>
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<tr>
<td>Increasing Access to Medicines</td>
<td>Obtaining new prescriptions after hospital discharge</td>
<td>ACA&lt;sup&gt;b&lt;/sup&gt;-Community-based Care Transitions Program (CBCTP) Provides contracts to communities that have demonstrated a plan to work together to improve care transitions. Strategies to ensure patients have access to new prescriptions following hospital discharge may be a component of these programs.</td>
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<td>ACA&lt;sup&gt;b&lt;/sup&gt; accountable care organizations (ACOs)</td>
<td>Requires coordination of services for Medicare Parts A and B thus encouraging groups of providers to coordinate care for patients across programs. ACOs will likely have one EHR system shared by acute and ambulatory care providers thereby enhancing information transfer and medication reconciliation.</td>
<td>MATCH&lt;sup&gt;c&lt;/sup&gt; program Evidence-based strategy for medication reconciliation.</td>
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<td>ACA&lt;sup&gt;b&lt;/sup&gt;-readmission penalties</td>
<td>ACA&lt;sup&gt;b&lt;/sup&gt; reduces payment for patients readmitted to the hospital with the same diagnosis within 30 days of a prior hospital discharge. (Kocher and Adashi, 2011). The penalty may incentivize health systems to improve discharge processes to ensure that patients have access to prescription medicines on</td>
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| Enhancing Human Resources | More hospital staff | TeamSTEPPS<sup>d</sup> | TeamSTEPPS<sup>d</sup> was designed to improve the quality, safety, and the efficiency of healthcare by integrating teamwork into practice.<sup>30</sup> Physicians, nurses, pharmacists, technicians, and other health care professionals must coordinate their activities to make patient care safe and efficient, and could be very effective for improving interdisciplinary communication and collaboration during care transitions.

Risk stratifying to provide special interventions | ACA<sup>b</sup>-readmission penalties | ACA<sup>b</sup> reduces payment for patients readmitted to the hospital with the same diagnosis within 30 days of a prior hospital discharge.<sup>34</sup> The penalty may incentivize health systems to improve discharge processes, including better staffing to coordinate care transitions.

ACA<sup>b</sup>-Community-based Care Transitions Program (CBCTP) | As part of the application for the CBCTP program, communities conduct a needs assessment to identify patient populations at highest risk for hospital readmission. Communities then show how their proposed care transitions program addresses the needs of high-risk populations to reduce readmissions. <sup>33</sup>

CMS<sup>2</sup> CPT<sup>4</sup> codes for transitional care | CMS added a new a CPT code (effective January 2013) for |
<table>
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<tr>
<th>Care Management</th>
<th>CMS(^3) CPT(^4) codes for care coordination</th>
<th>Transitional Care Management creating a mechanism for primary care providers to bill for follow-up care such as medication reconciliation within a few days after hospital discharge.(^{13}) CMS added a new a CPT code (effective January 2013) for Care Management creating a mechanism for primary care providers to bill care management services that are required for patients with complex care needs.(^ {13}) Communities that are implementing CBCTPs generally have mechanisms to enroll patients during hospitalization and continue care management services in the community.(^ {33})</th>
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<tr>
<td>(^{a})HITECH: Health Information Technology for Economic and Clinical Health Act (^{b})ACA: Patient Protection and Affordable Care Act (^{c})MATCH: Medications At Transitions and Clinical Handoffs (^{d})TEAMSTEPPS: Team Strategies and Tools to Enhance Performance and Patient Safety (^{e})CMS: Center for Medicare and Medicaid Services (^{f})CPT: Current Procedural Terminology</td>
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Conclusion

Preventing medication discrepancies and ADEs remain national priorities. Our findings indicate that stakeholders are aware of both barriers and solutions to medication safety, and are motivated to implement change to improve outcomes. Through improved hospital systems (staffing and electronic medical records), patient education, and provider communication and preparation, we can minimize the occurrence of medication discrepancies and ADEs, thereby improving patient satisfaction and safety. The HITECH and ACA legislation both have many provisions that, when fully enacted, will address many of the solutions the stakeholders in this study felt were critical for improving medication safety during care transitions. Evidence-based strategies to improve several of the identified themes in our study are already available, including methods to enhance communication and improve care transitions. Wide-spread implementation and adoption of these provision and strategies is now needed to improve transitional care medication safety.

Acknowledgements

This project was funded by the Agency of Healthcare Research and Quality (AHRQR21HS019552). In memoriam the authors and research team would also like to acknowledge the leadership and vast contributions to this work from Dr. Stephen M. Setter.

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References


33. Available at: Community-based Care Transitions Program Available at:


