



## Improving the Transition of Care from the Hospital to Primary Care Providers for Patients with Heart Failure

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Improving the Transition of Care from the Hospital to Primary Care Providers  
for Patients with Heart Failure

Capstone Scholarly Project Presented By:

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**Abstract**

The goal of this quality improvement project was to enhance the transition of care from the hospital to primary care providers for patients with heart failure at one acute care hospital in Tampa, Florida. A literature review revealed that discharge summaries have a pivotal communication role in the transition of care. Consequently, the electronically recorded discharge summaries relating to a random sample of 60 patients discharged from this hospital were audited for a trial period of six months (three months before and three months after an intervention by the DNP candidate to encourage the attending physicians to improve the transition of care.) The following data were collected: (a) the extent to which the discharge summaries complied with the components mandated by the Joint Commission on the Accreditation of Healthcare Organizations (Standard IM.6.10, EP 7); (b) the extent to which six specified outcome indicators reflecting a high level of transition of care were implemented; and (c) the relative rates of hospital readmission within 30 days after discharge. The readmission rates were reduced by 10% after the intervention. The discharge summaries complied with all the standard components, but were deficient with respect to one indicator. A shortage of clinical pharmacists was associated with more than 10% of the patients not receiving medication reconciliation within 24-48 hours after discharge. Consequently, recommendations are made to expedite the process of medication reconciliation.

**Keywords:** *transition of care, primary care provider, patients' readmission, heart failure, post hospital follow up appointment, medication reconciliation*

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**1: Problem Identification and Evidence/Justification/Rationale****a. Statement of the Problem**

As of October 1, 2012, a provision in President Obama's health care law permits Medicare to fine hospitals with high records of readmitted patients within 30 days of discharge due to complications. In 2013, it is estimated that about 2,200 hospitals serving Medicare patients may be faced with penalties averaging around \$125,000 per facility (USA Today, September 30, 2012). Consequently, effective interventions to reduce avoidable readmissions must be implemented as soon as possible, not only to improve the quality of patient care, but also to save financial resources. Objective quantitative evidence is urgently required to evaluate the impact of these interventions. Many methodological challenges face researchers attempting to evaluate outcome indicators associated with the process of tracking the progress of patient care along a complex chain of management. A concern within this problem is that the transition of care between hospitals and primary care providers is often poorly documented (Jha, 2006; Pronovost, Miller, & Wachter, 2006).

When a patient is discharged from secondary healthcare, it is important that a discharge summary, containing complete, relevant, reliable, and valid information regarding the patient is transferred to a primary care office in a timely manner. The discharge summary is an essential document to ensure transition of care, allowing primary healthcare professionals to continue effective management of the patient (Kripalani, et al. 2010). For this reason, the Joint Commission on Accreditation of Healthcare Organizations (2008) standard IM .6.10, EP7 mandates the fundamental components of hospital discharge summaries in the United States. The reason why some patients are re-hospitalized soon after discharge may be associated with absent or incomplete discharge summaries (Sommers & Cunningham, 2011). Accordingly, this project focuses on the problem of the quality of the discharge summaries prepared for patients admitted with heart failure. Underpinned by the

principles of translational research, the ultimate goal of this quality improvement (QI) project was to facilitate the direct and seamless transmission of research based evidence into practical applications (Woolf, 2008).

### **b. Evidence of the Problem**

There are over 32 million discharges of hospitalized patients per year in the United States, but about 20 percent of all hospitalized patients are readmitted within 30 days (Alliance for Health Reform, 2007; Fazzi, Agoglia, Mazza & Glading-DiLorenzo, 2006). An analysis of Medicare fee-for-service claims revealed that 19.6% of patients discharged from acute care hospitals were readmitted within 30 days (Jencks, Williams, & Coleman, 2009). A recent systematic review indicated that one in five hospitalizations is complicated by adverse post discharge events (Van Walraven, Bennett, Jennings, Austin, & Forster, 2011).

The proposed study focused specifically on patients with acute heart failure, symptomized by advanced clinical congestion or hypervolemia (fluid retention) for which hospitalization is required. Approximately 50 percent of heart failure patients are readmitted to hospital within six months of discharge, and 70 percent of re-hospitalizations are caused by the worsening of previously diagnosed heart failure (Butler & Kalageropoulos, 2008). The Centers for Medicare and Medicaid Services (2011) and Casey (2012) report that about one-third of heart failure patients are readmitted within 30 days of discharge. After patient hospital admission, care providers must assess the patient's fluid status, correct the hypervolemia, and ensure that fluid management strategies are in place, before the patient can be discharged (Albert, 2012). The readmission rate of heart failure patients is exacerbated because after the signs and symptoms of clinical congestion are relieved, many discharged patients have hemodynamic congestion, a chronic condition that could lead to a worsening prognosis, if not treated in a timely fashion by a primary care physician. Consequently,

transition of care between the hospital and the primary care office is essential to reduce the readmission of patients with acute heart failure.

Avoidable readmissions of heart failure patients are frequent, potentially harmful, and expensive. These re-admissions represent significant waste and inefficiency in the current healthcare delivery system. The high frequency of unplanned re-admissions is a reflection of deficiencies in current hospital discharge processes. The re-admission rates reflect deficits in the ability of discharged patients to manage their own self-care and are a manifestation of inadequate transmission of care between hospitals and primary care practices (Schall, Coleman, Rutherford, & Taylor, 2012). According to the Medicare Payment Advisory Committee (MedPAC), up to 76 percent of re-admissions occurring within 30 days in the Medicare population are potentially avoidable (MedPAC, 2007; Hackbarth, Reischauer, & Miller, 2007). Despite these findings, hospital discharge procedures have not yet been standardized or optimized to help reduce avoidable readmissions. Several researchers provided evidence suggesting that ensuring timely primary care follow up may significantly reduce avoidable re-admissions for post hospital heart failure patients without necessarily increasing costs or resources (Veerappa et al., 2007; Hernandez et al., 2010; Sommers & Cunningham, 2011). Accordingly, several prescriptive guidelines to prevent avoidable readmissions have been proposed (Schall et al., 2012). These guidelines emphasize that discharge summaries have a pivotal communication role in the transition of care.

## **2: Review of Literature**

### **a. Critical Appraisal of Research on Interventions/Innovations to Address the Problem**

A search of the literature regarding improving the transition of care from the hospital to the primary care office, with emphasis on reducing hospital readmissions for heart failure patients was conducted. The following databases were utilized for the search of evidence: PubMed of the National Library of Medicine, JAMA, Journal of Hospital Medicine, New

England Journal of Medicine, Achieve of Internal Medicine, Journal of General Medicine, and Journal of Internal Medicine. The following Medical Subject Heading (MeSH) terms were used in the search: *transition, primary health care, physician, medication reconciliation, patients' readmissions, heart failure, discharge summaries, patients' discharge and follow up appointments to primary care office*. Over 200 articles, limited to English only, were initially gathered from the various databases but were narrowed to seven studies published between 2006 and 2013. These studies were selected because they highlighted the importance of (a) early follow up appointments; (b) transition of care; (c) patient education; (d) outstanding laboratory tests; and (e) reengineered discharge programs,

### **Early Follow up Appointments**

Hernandez et al. (2010) surveyed a population of 30,136 patients from 225 hospitals and found that substantial variation existed in rates of early outpatient follow up among patients who were hospitalized for heart failure. Discharged hospital patients had higher early follow up rates and a lower risk of 30-day re-admission. Early outpatient follow up after hospitalization, recorded in the discharge summary, was proposed as a means of reducing high risk re-admissions.

### **Coordination of Care**

Sommers and Cunningham (2011) reviewed the literature, to explore the outcomes of adult patients with a variety of chronic conditions discharged from hospitals with respect to follow up care from primary care physicians and community based outpatient settings. They found that up to one-third of the patients did not visit a physician within 30 days of hospital discharge, suggesting substantial gaps in the transition of care after discharge. Even when patients arrived in the doctor's office for their first visit after discharge, less than one-third of the physicians reported having access to a hospital discharge summary, including changes in medication and other important clinical information. When summaries did arrive at the

physician's office in time, they were often incomplete. Furthermore, hospital test results were often not forwarded to community-based physicians, potentially leaving physicians and patients unaware of unresolved medical issues. This review was limited, however, because it was based on relatively few references (20 primary sources published between 2004 and 2010). In addition, it was not a systematic review; so it did not necessarily present a balanced and unbiased perspective, with due consideration given to the possibility of biased evidence.

Kripalani et al. (2007) conducted a meta-analysis of published data based on controlled studies evaluating the efficacy of interventions to improve communication and information transfer between hospitals and primary care offices. The authors presented a balanced perspective with consideration given to the flaws in the available evidence. The interventions were summarized with respect to their effect on timeliness, accuracy, completeness, and overall quality of the information transfer. Although inconsistencies and flaws in some of the reviewed studies were identified, which limited their validity and reliability, the overall conclusion was that deficits in communication and information transfer were very common and may adversely affect patient care. To improve patient outcomes, Kripalani et al. recommended that (a) computer generated summaries and standardized formats be used to facilitate more timely transfer of pertinent patient information between hospital physicians and primary care physicians; and (b) computer generated discharge summaries be more consistently available during follow up care.

### **Patient Education**

Coleman, Parry, Chalmers, and Sung-Joon (2006) conducted a randomized control trial to evaluate the efficacy of patient education tools. The sample size was large, providing sufficient power for statistical analysis. The trial was conducted at a large integrated health care system located in Colorado, including 750 subjects, who were community-dwelling adults 65 years or older admitted to the study hospital with 1 of 11 selected conditions. The

intervention patients received tools to promote cross-setting communication and transfer of information. They were encouraged to take a more active role in their self-care, and this information was included in the discharge summary. Rates of re-hospitalization were measured at 30 days. The intervention patients had significantly lower re-hospitalization rates at 30 days than did the control subjects. This study achieved its objective to demonstrate that coaching chronically ill older patients and their caregivers to ensure that the patients' needs are met during care transitions between providers may reduce the rates of subsequent re-hospitalization as well as costs. The limitation of this study was that the use of data from a single center may limit the generalization of the results. Therefore, a wider range of patient outcomes, not just hospital readmission rates, needs to be considered.

### **Outstanding Laboratory Tests**

Walz et al. (2011) conducted a longitudinal survey between 2003 and 2005 to measure the proportions of a cohort of 564 patients who were discharged with pending laboratory tests from a single large academic medical center to sub-acute care. They identified that approximately one-third of sub-acute care patients had laboratory tests outstanding at discharge, but few were documented within hospital discharge summaries. It was recognized that the results may underestimate the prevalence of pending laboratory tests at smaller hospital facilities with fewer resources. To improve transition of care, they recommended that any pending laboratory results should be included with the discharge summary. They found that 60.9% of the discharge documents contained instructions for a follow up appointment. No significant difference was found, however, between patients with a documented follow up appointment vs. those without, with respect to hospital readmission, emergency department visits, or mortality 30 days after discharge. They concluded that national efforts to ensure follow up for all patients after hospital discharge may not be beneficial or cost-effective. The strength of these longitudinal surveys or cohort studies is that they achieved their objectives

of quantifying the effects of the prescribed interventions. The threat to validity was that the convenience samples were not necessarily representative of the populations from which they were drawn. The use of data from single centers may limit the generalization of the results.

### **Reengineered Discharge Programs**

The Institute for Healthcare Improvement (IHI) has a substantial track record of working with clinicians and staff in clinical settings and health care systems to improve transitions in care after patients are discharged from hospital and to reduce avoidable re-hospitalization. In 2009, the IHI presented a systematic review based a large amount of literature (158 articles published between 1995 and 2009). This review highlighted that many researchers and institutions are trying to identify multiple strategies to reduce avoidable re-hospitalization, mainly by means of reengineered discharge programs. It is evident that most of the interventions have focused on patients with heart failure. A variety of interventions seems to be promising; but the evidence is not always conclusive concerning the effects of, for example, early post-discharge follow up and enhanced patient education and self-management training, as defined in the discharge summaries. The authors recognized that when multiple interventions are implemented, it is difficult to discern the impact of any single intervention; therefore, different interventions cannot be placed into an order of relative effectiveness. They recognized that hospital re-admission rates may be easy to measure, but they are not necessarily the most important outcomes of patient care. As such, a wider range of other patient outcomes needs to be considered.

A typical reengineered discharge program was evaluated by Jack et al. (2009). The program consisted of a package of multiple interventions aiming to minimize discharge failures among 749 patients admitted to one general health care center. The in-house interventions included: (a) the use of a nurse discharge advocate to educate patients about the correct use of medication after their discharge from the hospital and to make arrangements

for follow up appointments; (b) the use of an improved discharge summary (called the *after hospital care plan*) to provide critical information for both the patient and the patient's primary care provider; and (c) a telephone call from the clinical pharmacist to the discharge patients, two to four days after discharge, reinforcing the discharge plan and reviewing the prescribed medications. The number of visits per month after discharge of patients in the intervention group was significantly lower than the number of visits per month of the patients in the control group. The validity and reliability of the results were, however, limited because the patients in this study tended to be younger and had fewer co-morbid conditions than those in other studies.

### **b. Synthesis of Evidence**

Despite the importance for cutting costs and improving the quality of patient care, recent research to explore the practices and policies for improving transition from the hospital to the primary care office in order to reduce the hospital re-admission rate for heart failure patients is relatively limited and inconsistent. It is widely recognized that there is no simple solution, and multiple interventions are required. The best practices include a mixture of (a) pre-discharge interventions to ensure that all patients are prepared to leave the hospital by being fully informed of their diagnoses and prescribed treatments and (b) post discharge interventions, including the use of critical documentation (e.g., individualized discharge plans) to ensure a smooth transition of care along the chain of patient management, between nurses, clinicians, pharmacists, families, and other care workers. Follow up appointments with knowledgeable care providers and appropriate pharmacological interventions to ensure medication reconciliation are essential to ensuring that best practices are realized.

Since multiple pre-discharge and post-discharge interventions are usually implemented simultaneously, the effectiveness of each intervention when considered in isolation is largely unknown. Consequently, the evidence is not conclusive; and the results

are conflicting. Inconsistencies and flaws in some of the reviewed studies were identified, which limited their validity and reliability. It is evident that recently proposed interventions for improving transition from the hospital to the primary care office in order to reduce hospital readmission rates for heart failure patients, such as the STAAR and H2H, have not yet been optimized (Institute for Healthcare Improvement, 2009). In particular, the quality of discharge summaries to facilitate more timely transfer of pertinent patient information between hospital physicians and primary care physicians needs to be improved. Also, the consistency of the information provided in discharge summaries, including information about medication reconciliation, pending laboratory tests, and scheduled follow up appointments warrant further evaluation. The lack of consistent communication in the discharge summaries provides a rationale and direction for this QI project.

### **c. Application of a Theory, Model, or Conceptual Framework**

The theoretical basis for improving the transition of care from the hospital to the primary care provider for heart failure patients is consistent with Rogers' Theory of Diffusion of Innovations (Rogers, 1995). According to Rogers, diffusion is a process in which new ideas and behaviors are developed and introduced to individuals in order to better meet their needs. Ultimately, the individuals will either accept or reject these ideas.

Rogers identified five factors that may influence an individual's adoption or rejection of an innovation, specifically: (a) relative advantage; (b) compatibility; (c) complexity; (d) trialability; and (e) observability. These five factors can be related specifically to discharge interventions that include the use of effective discharge summaries. With respect to the relative advantage factor, the discharged patient leaves the hospital with a scheduled appointment in hand. Thus, a hospital re-admission for heart failure patients may be prevented due to the timely scheduling of the follow up appointment. With respect to the compatibility factor, the primary care providers will be better able to meet the needs of their

patients if they have access to discharge summaries that explain their patients' recent hospitalization, medication reconciliation, and any outstanding laboratory test results. With respect to the complexity factor, computer generated discharge instructions should be written in simple language, helping patients and their caregivers to understand the instructions. Because this innovation is perceived to be easy to use, the patients will be more likely to follow through with a visit to their primary care physicians. With respect to the trialability factor, it is possible for practitioners to collect electronically stored data to audit the implementation of the patient discharge process. Given that this information is computer generated, it is possible to audit interventions and review their effectiveness, making modifications as needed. With respect to the observability factor, when physicians and other hospital practitioners observe the effectiveness of improved discharge summaries, they will see the benefits of the innovation. After discussion and reflection, they may then decide to implement the innovation in their own healthcare settings.

### **3: Project Description, Implementation, and Monitoring**

#### **a. Population**

The healthcare setting for this QI project was an acute care hospital located in the City of Tampa, Florida. The hospital is a 400 bed teaching facility, affiliated with a medical school, and currently provides services to more than 116,000 adult men and women (ages 18 and older). The population for this study consisted of active and retired veteran patients (ages 65 years and older) diagnosed with a history of heart failure, comprising all socioeconomic and ethnic groups living in Tampa, admitted to, and discharged from the Chest Pain Unit or Coronary Care Unit at the hospital. The key stakeholders engaged in this project included the attending physicians, the Associate Chief of Quality Improvement, one Advance Registered Nurse Practitioner (ARNP), one Doctor of Nursing Practice (DNP) Candidate, one Case Manager, two Care Coordinators, and the Chief of Ambulatory Services.

**b. Organizational Analysis of Project Site**

Tampa is the largest city within Hillsborough County in the Tampa-St. Petersburg-Clearwater Metropolitan Statistical Area. Tampa has a rapidly expanding population, currently increasing by 13% (approximately 4,300 residents) per year, with a predicted total of 376,040 residents in 2015. The proportion of veterans (aged 65 or over) in the Tampa population, from which the hospital patients are drawn, is currently about 15%; however, as the baby boomer generation enters retirement, this proportion is expected to expand rapidly in the current decade. Demographic changes in Tampa may put increasing pressure on healthcare services, and may also be associated with a lowering of the socio-economic status of the population, because the decreasing disposable incomes of the retirees may affect their ability to maintain homes and impact businesses sales (Hillsborough County Planning Commission, 2013). According to the US Census (2010) the Tampa population, from which the hospital patients are drawn, has a mixed racial composition, including 44.9% White; 26.1% African American; 19.3% Hispanic; 4.2 % “Some Other Race”; 2.9% “Person in 2+ Races”; 2.2% Asian; and 0.4% American Indian or Alaska Native.

**c. Evidence of Stakeholder Support and Letter of Agreement**

The stakeholders’ participation and support for this QI project was important for its success. The stakeholders were consulted to ensure that the goals of this project were achieved, specifically (a) a timely completion and transfer of complete discharge summaries for heart failure patients, including data referring to outstanding laboratory and diagnostic tests, medication reconciliation, and timely follow-up appointments with primary care physicians; and (b) the prevention of hospital re-admissions for heart failure patients, thus avoiding any potential penalties for patient re-admission within 30 days of discharge.

The letter of agreement is on file with the Chief Nurse of Quality Improvement at the hospital and at the University of Massachusetts, Amherst with the DNP Program Director.

(See Appendix A for the Stakeholders' Agreement Letter).

**d. Constraints to Implementation at the Project Site**

One constraint to the implementation of this project at the hospital setting in question was that not all the attending physicians might comply with the mandate to improve the quality of the discharge summaries. Schall et al. (2012) recommend that the foundation for optimal patient follow up is to encourage physicians to prepare standardized discharge summary documents, and that ideally, the primary care practice and the hospitalists should agree on the information that needs to be shared, the format of the documents, and the preferred methods of communication. The transfer of information should be designed as a two-way system, so that information between the primary care office and the hospital can occur rapidly, as needed. Consequently, the DNP candidate acted as a facilitator to organize appropriate training-in the form of seminars, so that the stakeholders were aware of this QI project, and their obligations to support the use of discharge summaries that complied with the Joint Commission on Accreditation of Healthcare Organizations (2008) standard IM.

6.10, EP7 (see Appendix B).

**e. Protocol/Plan for Project**

The project design, goals and objectives, outcome indicators, budget, PDSA cycle, time plan, and ethical considerations are described as follows:

**i. Project Design and Feasibility**

The design of the proposed study was a QI project. The project was designed in three phases. The first phase was the collection of baseline data. The second phase was the implementation of a quality improvement intervention and the collection of further data. The third phase was the evaluation of the data collected before and after the intervention. The project design was feasible for a QI project based on evaluation of data in electronic medical records (Baldwin, 2006).

In phase one, the DNP candidate engaged in the collection of secondary data from the electronic medical records held by the hospital. Historically collected electronically stored discharge summaries for the months of October to December were audited to establish a base line for the identification of discrepancies in the transition of patient care. The DNP candidate collected a random sample of discharge summaries for 30 patients by creating a query from the computer database. Random sampling reduced sampling bias and ensured that the discharge summaries were representative of the patient population from which the samples were drawn (Alreck & Settle, 2004). In the second phase, the DNP candidate implemented an intervention for quality improvement involving seminars with the stakeholders. After the intervention, the DNP candidate audited electronic medical records of a further random sample of 30 patients to determine the effectiveness of the intervention. To begin the third phase, the data were entered manually into a template created in an Excel spreadsheet (see Appendix C).

## **ii. Goals, Objectives and Outcome Indicators**

The goal of this project was to determine the extent to which the use of standardized discharge summaries enhanced the transition of post hospitalization follow up care to primary care providers and, thereby, minimize discharge failures. Less time, money, and risk would be involved if this project was implemented on a small scale before implementing it with a larger sample (Langley et al., 2009). Consequently, the QI project was conducted at the stated hospital between the months of January 2014 through April 2014.

The objectives of the proposed study were to determine the extent to which the use of standardized JACHO discharge summaries was associated with (a) a high level of transition of care between the hospital and the primary care office; and (b) a low rate of hospital re-admission within 30 days of discharge. The outcome indicators measured in this study included the following:

1. Whether or not each patient's discharge summary complied with the criteria mandated by the Joint Commission on the Accreditation of Healthcare Organization's (2008) standard IM. 6.10, EP 7 with respect to the specified outcome indicators (see Appendix B);
2. Whether or not each patient's discharge summary was received by a primary care office within 24-48 hours after hospital discharge;
3. Whether or not each patient's discharge summary recommended a follow up appointment with a primary care physician within one week after hospital discharge;
4. Whether or not the discharge summary recommended that each patient received medication reconciliation within 24-48 hours after hospital discharge;
5. Whether or not the discharge summary recommended the sending of the patient's outstanding laboratory test results to a primary care office within 24-48 hours after hospital discharge. Although the Joint Commission's (2008) standard omits this indicator, it is included here because the absence of laboratory test results may sometimes be associated with patient safety concerns (Moore, McGinn, & Halm, 2007);
6. Whether or not each patient was readmitted to hospital within 30 days.

The following outcomes were viewed as indicators that the discharge summaries enhanced the transition of care and minimize discharge failures:

1. 100% of the discharge summaries complied with the Joint Commission on the Accreditation of Healthcare Organization's standard IM.6.10, EP 7;
2. At least 90% of the discharge summaries prepared by the hospital physicians were sent to a primary care office within 24-48 hours after the patient's discharge;
3. At least 90% of the discharged patients had a follow up appointment with their primary care physician within one week after the patient's discharge;
4. At least 90% of patients had medication reconciliation within 24-48 hours after their hospital discharge;

5. At least 90% of the patients had outstanding laboratory results sent to a primary care office within 24-48 hours after their hospital discharge;
6. Less than 30% of the discharged patients were readmitted within 30 days.

### **iii. Budgeting**

The budget for the implementation in this QI project has few expenses. The main anticipated expense for hospital resource was the time of the staff deployed to assist the DNP candidate extract and process the relevant patient information from the electronic medical records. A clinical informatics consultant already employed by the hospital was consulted as needed, on a no-cost basis; however the cost to the hospital of this service was approximated at \$1,360. The DNP candidate volunteered to work full time (40 h per week) to implement the QI project, but did not expect to receive any pro rata payment for his services.

The only direct incurred cost to the hospital (\$450) was for the DNP candidate to organize and conducting seminars to train physicians and other staff, and to purchase miscellaneous materials (see Appendix D). The data from hospital electronic records was transferred free of charge to the DNP candidate's computer, although there was a charge electronic storage media including CD's and USB flash-drives to store the files.

### **iv. IRB Approval and Ethical Considerations**

The purpose of this QI project based on historical patient records was for performance explaining the QI project in detail with the Chief Compliance Officer of the hospital, the DNP candidate was informed that this QI project and did not need Intuitional Review Board (IRB) approval. Nevertheless, the Health Portability and Accountability Act was followed to ensure and respect the privacy, anonymity, and confidentiality of all the participants.

### **v. Plan for Implementation and Evaluation**

The Plan, Do, Study, Act (PDSA) cycle was executed (Deming, 1986) as outlined in Appendix E. In the Plan Phase, the DNP candidate who had hospital access to all medical

records reviewed the existing discharge summaries currently available in the electronic records. In the Do Phase, the DNP candidate (a) implemented a training intervention, consisting of two seminars, to make the stakeholders aware of this QI project, and the hospital's obligations to comply with the need to provide Joint Commission standard discharge summaries, in order to improve transition of care. (see Appendix G.) The disseminated information included the criteria mandated by the Joint Commission on the Accreditation of Healthcare Organizations (2008) Standard IM. 6.10, EP 7 (see Appendix B). The attending hospital physicians were encouraged to ensure that the computer generated discharge summaries provided for each patient were compliant with the Joint Commission standards. They were also encouraged to make sure that the summaries are transferred to the patient's primary care office in a timely fashion for a trial period of three months January to March 2014.

During the Study Phase, the DNP candidate collected and analyzed the six outcome indicators extracted from electronic medical records for a time period of three months before, and three months after the intervention. Quality improvement projects usually report item-by-item measurements, with performance on each item reported separately as a percentage (Langley et al., 2009). Accordingly, the outcome indicators in this study were reported as percentages as listed above. The DNP candidate initially entered the data for all patients included in the electronic records during the specified time period into an Excel spread sheet. using the template presented in Appendix C. The data were exported from Excel to IBM SPSS version 20.0 to compute, tabulate, and compare the percentages for each of the six outcome indicators before and after the intervention, using the "Descriptive Statistics" procedure (Field, 2009).

In the Act Phase, the DNP candidate reflected on the findings, and evaluated the effectiveness of the discharge summaries. If the evaluation indicated that the discharge

summaries helped to enhance the transition of care, then recommendations were made to the stakeholders to continue with their use. If not, then the next change in the PDSA cycle was planned, involving recommendations to improve the transition of care in the future.

#### **vi. Timeline**

The timeline for this project began on December 1, 2013 and finished on April 30, 2014 (see Appendix F) as follows:

Phase 1: Implementation

December 1, 2013 to January 1, 2014.

- Recruitment process for selection of stakeholders to participate in the QI project to reduce hospital admission for patients with heart failure.
- Obtain letters of agreement.

January 1, 2014 to February 1, 2014

- Meeting with stakeholder
- The reviewing of existing discharge summaries.
- Planning for improvement in the discharge summaries process.
- Development of interventions.

February 2, 2014 to April 1, 2014

- Meeting with stakeholders to provide an update of QI project.
- Data collection for 3 months prior to the start of the QI project and 3 months after the start of the QI project.
- Data analysis

April 2, 2014 to April 30, 2014

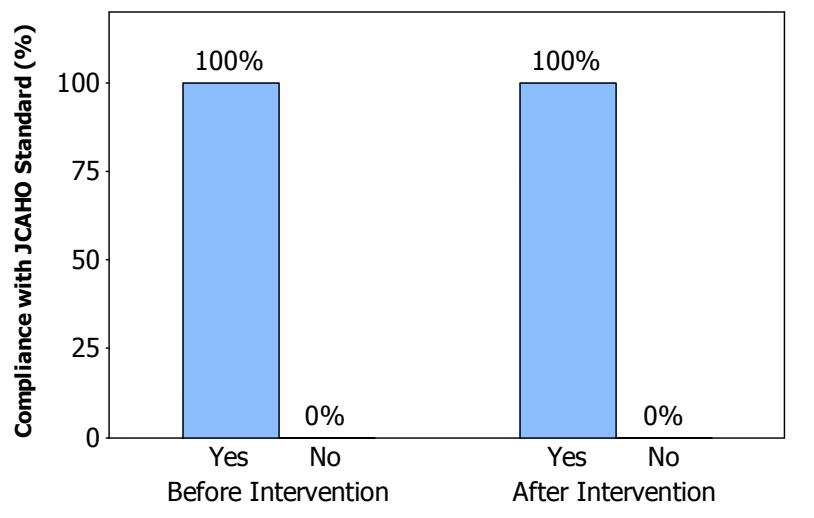
- Written evaluation of the QI project.
- Power Point presentation to the Stakeholders and University of Massachusetts.

### a. Results, Findings, and Data Analysis

The hospital records for 60 patients were evaluated, of which 30 were dated 01 October-2013 to 27 December 2013 (before the intervention) and 30 were dated 02 January-2014 to 11 February 2014 (after the intervention). The intervention consisted of two seminars (see Appendix G). The percentages of six outcome indicators before and after the intervention were evaluated: (1) Compliance with JCAHO Standard; (2) Receipt of Discharge Summary by Primary Care Office; (3) Recommended Follow Up Appointment; (4) Recommended Medication Reconciliation; (5) Outstanding Laboratory Test Results; and (6) Readmitted within 30 Days. The results are therefore presented in six sections.

#### 1. Compliance with JCAHO Standard

The first evaluation was to determine whether or not each patient's discharge summary complied with the criteria mandated by the JCAHO (2008) standard IM. 6.10, EP 7 (see Appendix B). The results, visualized in Figure 1, confirmed that (a) the attending physicians prepared discharge summaries for all 60 patients in the sample; and (b) 100% of the discharge summaries audited before and after the intervention complied with the standard.



*Figure 1. Compliance of Discharge Summaries with JCAHO standard IM. 6.10, EP*

#### 2. Receipt of Discharge Summary by Primary Care Office

The second evaluation was to determine whether or not each patient's discharge summary was received by a primary care office within 24-48 hours after hospital discharge. The results, visualized in Figure 2, confirmed that 100% of the discharge summaries evaluated before and after the intervention were so received.

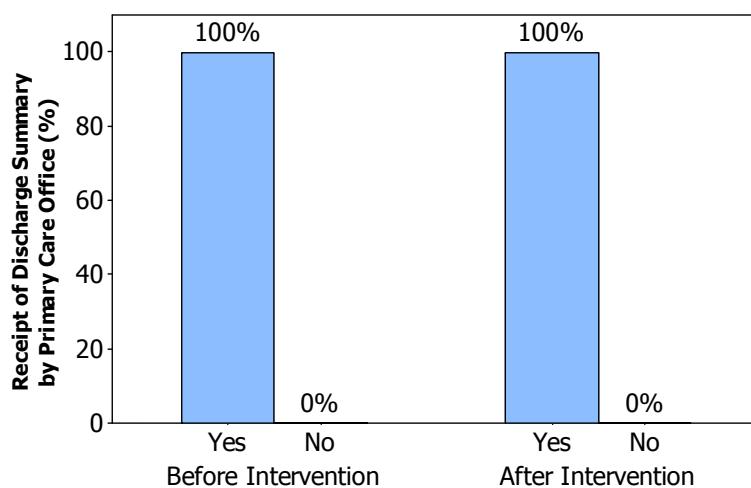
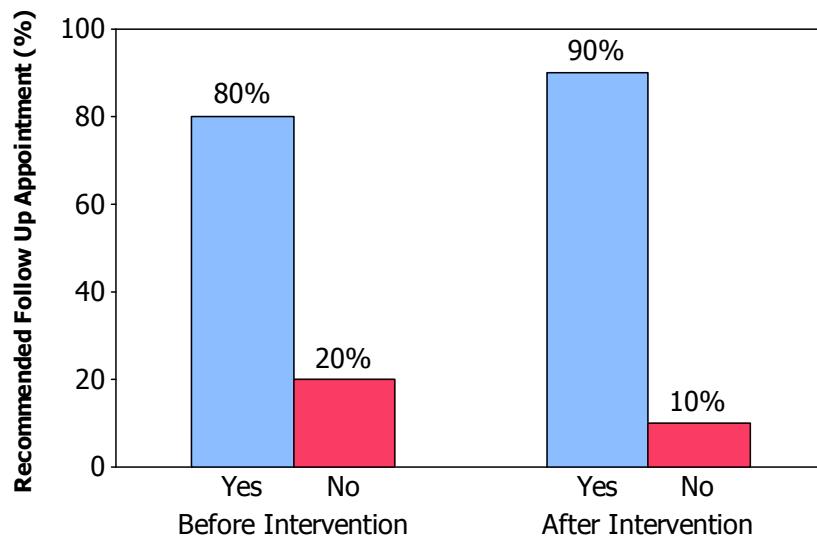


Figure 2. Receipt of discharge summaries by primary care office within 24-48 hours

### 3. Recommended Follow up Appointment

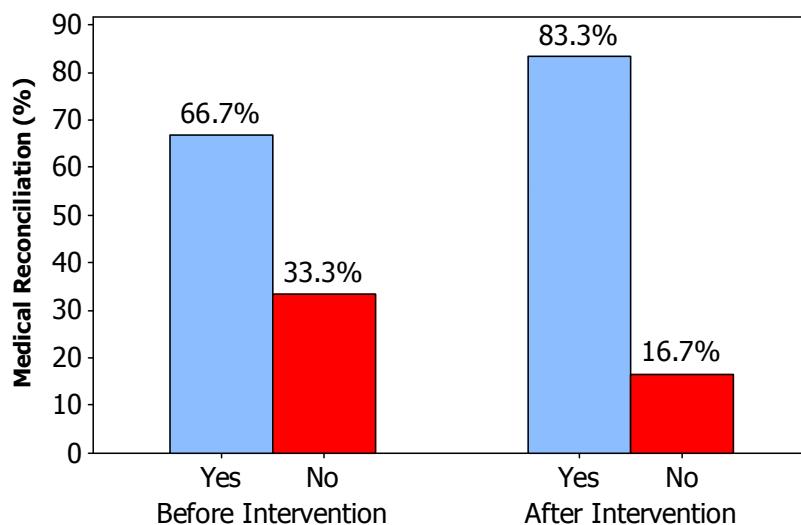
The third evaluation was to determine whether or not each patient's discharge summary recommends a follow up appointment with a primary care physician within one week after hospital discharge. The results, visualized in Figure 3, indicated that before the intervention 80% (24 patients) had a recommended follow up appointment but 20% (6 patients) did not. After the intervention 90% (27 patients) had a recommended follow up appointment but 10% (3 patients) did not. Consequently, after the intervention, there was a 10% improvement in the proportion of patients with recommendations for follow up appointments.



*Figure 3.* Follow up appointment with primary care physician within 24-48 hours

#### 4. Medication Reconciliation

The fourth evaluation was to determine whether or not the discharge summary indicated that medication reconciliation had been completed within 24-48 hours after hospital discharge. The results, visualized in Figure 4, indicated that before the intervention, medication reconciliation was completed for 66.7% (20 patients) but not for 33.3% (10 patients). After the intervention, medication reconciliation was completed for 83.3% (25 patients) but not for 16.7% (3 patients).



*Figure 4.* Medication reconciliation within 24-48 hours

Consequently, after the intervention, there was a 16.6% improvement in the proportion of patients with recommendations for medical reconciliation.

## 5. Outstanding Laboratory Test Results

The fifth evaluation was to determine whether or not the discharge summary included the sending of the patient's outstanding laboratory test results to a primary care office within 24-48 hours after discharge. The results, visualized in Figure 5, indicated that before the intervention, outstanding test results had been sent for 93.3% (28 patients) but not for 6.7% (2 patients). After the intervention, outstanding test results had been sent for 90.0% (27 patients) but not for 10.0% (3 patients). After the intervention, there was no improvement in the proportion of patients who had their outstanding laboratory test results sent to a primary care office; however, the 90% criterion was maintained.

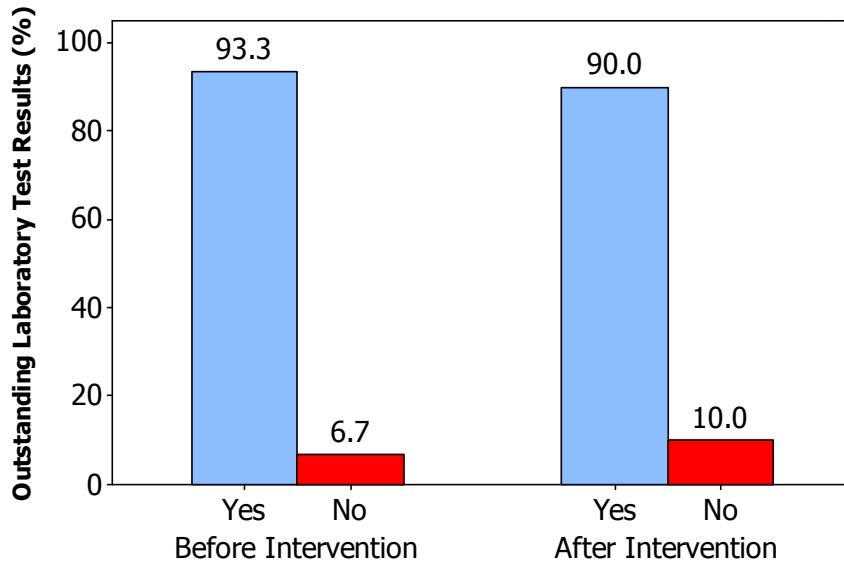


Figure 5. Outstanding laboratory test results sent to primary care office within 24-48 hours

## 6. Readmitted within 30 Days

The final evaluation was to determine whether or not each patient was readmitted to hospital within 30 days. The results, visualized in Figure 6, indicated that before the

intervention, 20% (5 patients) had been readmitted within 30 days (specifically 6, 7, 15, and 22 days after discharge) whereas 80% (25 patients) had not been readmitted. After the intervention, 10% (3 patients) had been readmitted within 30 days (specifically 10, 13, and 20 days after discharge) whereas 90% (27 patients) had not been readmitted. Consequently, after the intervention, there was a 10% reduction in the proportion of patients who had been readmitted within 30 days.

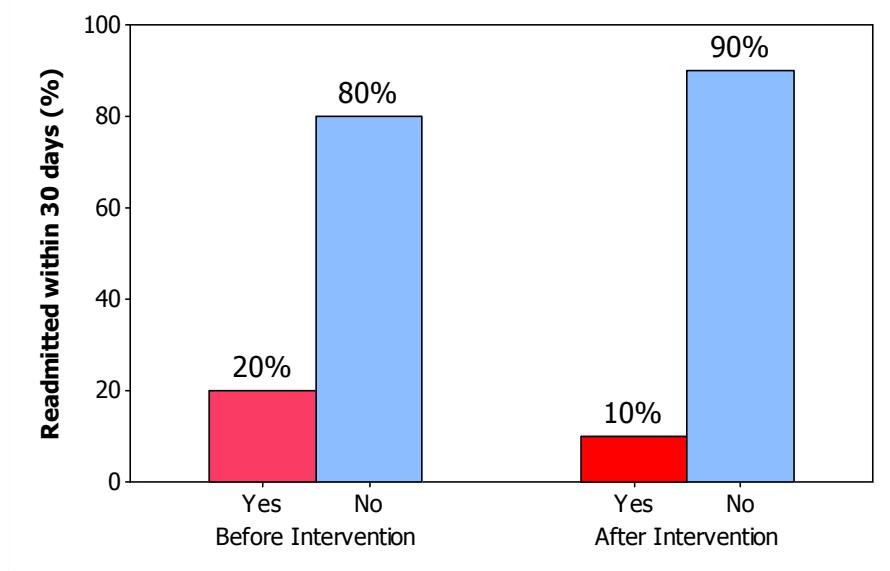


Figure 6. Readmitted with 30 days

### b. Interpretation, Discussion, and Conclusion

The evaluation of hospital records revealed that before and after the intervention, less than 30% of the discharged patients were readmitted within 30 days. There was a 10% reduction in the readmission rate (from 20% to 10%) after the intervention, implying the possibility that the intervention may have helped to reduce the readmission rate. In comparison, the Centers for Medicare and Medicaid Services (2011) and Casey (2012) reported that about one-third of heart failure patients are readmitted within 30 days of discharge. The readmission rate of the random sample of 60 patients served at the Chest Pain and Coronary Care Units at the Tampa Hospital was therefore less than the national average.

The following outcomes of this study were viewed as indicators that the discharge summaries satisfied the criteria to enhance the transition of care: (a) Before and after the intervention, 100% of the discharge summaries complied with all the components of the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) standard IM. 6.10, EP 7 (2008); (b) Before and after the intervention, 100% of the discharge summaries prepared by the hospital physicians were sent to a primary care office within 24-48 hours after the patient's discharge; (c) After the intervention , at least 90% of the discharged patients had a follow up appointment with their primary care physician within one week after the patient's discharge; and (d) Before and after the intervention, at least 90% of the patients had outstanding laboratory results sent to a primary care office within 24-48 hours after discharge. Although 90% was specified to define the effectiveness of the indicators, it must also be taken into account that, inefficient use of discharge summaries for less than 10% of the total number of patients could still be of clinical concern, because this may potentially have a deleterious impact on the health outcomes for individual patients.

The following outcome was viewed as an indicator that the discharge summaries did not satisfy the criteria to enhance the transition of care: less than 90% of the patients had medication reconciliation within 24-48 hours after discharge. After the intervention, there was a 16.6% improvement in the proportion of patients with medical reconciliation (from 66.7% to 83.3%) nevertheless; the recommended 90% criterion was not satisfied, despite the intervention. Medication reconciliation is a process for creating an up to date and accurate list of a patient's current medications and comparing this list to those in the patient record or medication orders. This process is essential to avoid errors of omission, duplication, drug-drug interactions, drug-disease interactions, and other discrepancies such as dosing errors. Medication reconciliation is a major component of safe patient care in any environment, but is particularly important at every transition of care, in which new medications are ordered, or

existing orders are rewritten (Barnsteiner, 2008). The Joint Commission (2006) recommended that medical reconciliation should include five steps (1) Constructing a list of current medications; (2) Constructing a list of medications to be prescribed; (3) Comparing the medications on the two lists; (4) Making clinical decisions based on the comparison; and (5) Communicating this information to the patient, caregivers, and other healthcare providers.

Although all of the discharge summaries evaluated in this study satisfied the standard criteria mandated by the JCAHO (2008) to construct a list of admission and discharge medications for each patient; the QI project criterion for the list to be communicated within 24-48 hours after discharge was not met for at least 90% of cases. Given the discharge summary's pivotal communication role in the transition of care, the apparent inefficient use of discharge summaries for more than 10% of patients with respect to medication reconciliation is of clinical concern. Not receiving medication reconciliation within 24-48 hours after discharge may potentially have a deleterious impact on the health outcomes for individual patients, and may possibly lead to increased readmission rates, particularly in acute care settings (Groszek, & Barnard, 2005; Jacobs, 2011; Sullivan, Gleason, Rooney). Timely medication reconciliation for adult hospitalized patients generally leads to better patient outcomes (Christensen & Lundh, 2013).

Although medication reconciliation is a required hospital practice (Institute of Medicine, 2006) recent research has indicated relatively poor hospital adherence to standardized medication reconciliation practices, due mainly to implementation challenges. Lack of coordination and agreement about roles and responsibilities between clinical pharmacists, nurses, and physicians, as well the considerable commitment required to review medication histories and complete the complex process, are some of the probable reasons for the wide variability in the quality of medication reconciliation (Meguerditchian, Krotneva, Reidel, Huang, & Tamblyn, 2013). Construction of an individualized list of medications for

each patient and making evidence based clinical decisions based on the list, as well as communicating this critical information between providers, is a very time consuming process. Rozich & Resar (2001) reported that the average time required for medical reconciliation is an additional 30 to 60 minutes per patient. Meguerditchian et al. (2013) reported average times of 46.2 minutes at admission and 19.4 minutes at discharge for medical reconciliation in internal medicine facilities, with longer times for geriatric cases presenting multiple comorbidities.

The current QI project revealed that a staffing issue was associated with more than 10% of the patients not receiving medication reconciliation within 24-48 hours after discharge. After discussing the findings with the stakeholders, the DNP candidate was informed that “the hospital is down several clinical pharmacists, which has contributed to deficiency in medication reconciliation”. Clinical pharmacists routinely provide medication therapy evaluations, and are the primary source of advice regarding the safe, appropriate, and cost-effective use of medications. Their daily practice involves regular consultation with patients and health care professionals including medication reconciliation. Their expertise is essential to avert medication errors that may ensue following inappropriate therapeutic decisions made at the point of prescribing. (American College of Clinical Pharmacy, 2008). The outcomes of heart failure patients are improved when clinical pharmacists are members of multidisciplinary healthcare teams (Gattis, Hasselblad, Whellan, & O’Connor, 1999). There is, however, a national workforce shortage of clinical pharmacists (Kenreig & Wagner, 2007; Knapp, 2012; Patry & Eiland, 2007). Heavy workload and high stress, as well as alternative employment opportunities in retail pharmacy, with better financial compensation, have contributed towards elevated job turnover among clinical pharmacists (American College of Clinical Pharmacy, 2010).

There are many other potential challenges associated with implementation of effective medication reconciliation processes across the continuum of care when providers already feel burdened with bureaucracy. Information transfer is complicated because caring for one patient generally involves multiple providers and information sources, so that errors and delays often occur at transition points (Burke, 2005). Developing and implementing effective standardized medical reconciliation programs is very complex, considering that they must be implemented across multiple sites of care, and many patients have numerous comorbidities, requiring a long list of historical, current, and future medications gathered from a variety of widespread sources (Barnsteiner, 2008).

## **5. Plan for Post Project Continuation and Implications for Future Practice**

### **a. Quality Improvement Criteria**

The DNP candidate congratulates the stakeholders for meeting their professional responsibilities to comply with the following quality criteria: (a) the readmission rates (20% before the intervention and 10% after the intervention) were less than 30% and well below the national average; (b) all of the discharge summaries satisfied the components of the JCAHO (2008) standard IM. 6.10, EP 7; and (c) all but one of the six quality indicators to enhance the transition of patient care were satisfied. The attending physicians complied with the DNP candidate's recommendations (see Appendix G – Seminar One), as well as recently published endorsements (Hernandez et al., 2010; Kripalani et al., 2007; Sommers & Cunningham, 2011; Walz et al., 2011) to use discharge summaries that facilitate timely transfer of pertinent patient information and follow up care between hospitals and primary care physicians. Roger's (1995) Theory of Diffusion of Innovations was demonstrated in practice, because innovative policies regarding the use of improved discharge summaries were developed and used by the hospital in order to better meet the needs of clinicians and patients.

The final “Act” phase of the PDSA cycle requires the DNP candidate to collaborate with the stakeholders in the Chest Pain and Coronary Care Units at the City of Tampa Hospital and translate the available evidence into practical recommendations. Because ensuring timely transition of care between secondary and primary providers should not necessarily involve increased resources (Hernandez, et al., 2010; Jack et al., 2007; Sommers & Cunningham, 2011) the DNP candidate recommends improvements that do not have major resource implications to the Tampa hospital.

### **b. Implications for Future Practice**

The only deficiency revealed by this QI project of relevance to future practice was that the medication reconciliation process sometimes took an excessive time to complete (i.e., it was not finished within 48 hours after discharge for more than 10% of cases). This deficiency was reported by the stakeholders to be associated with a shortage of clinical pharmacists. The staff recruitment team at the hospital cannot be blamed for this shortage, which is a recognized national clinical workforce problem (American College of Clinical Pharmacy, 2010).

Acute care units have multiple admissions and discharges per day, and every individual admission and discharge involves the expenditure of staff time to collate and interpret medication data (Sullivan et al., 2005). Staff shortages increase the time taken to complete the admission and discharge process, and hinder timely medication reconciliation (Barnsteiner, 2008; Meguerditchian, et al., 2013). Consequently, the findings of this study translate into the need for the hospital to recruit a full complement of clinical staff to expedite the medical reconciliation process in the future. Faced with a temporary shortage of clinical pharmacists, the organizational workflow among the available clinical staff (expressed in terms of the number of minutes expended per patient day) could be changed. Research evidence indicates that through reorganization of organizational workflow, improved

coordination of processes that operate across the continuum of care between secondary and primary providers can be achieved without necessarily increasing the available resources (Cain & Haque, 2008). For example, educating patients about the correct use of medication after their discharge from a hospital can be conducted effectively by nurse advocates (Jack et al., 2009).

### **c. Post Project Continuation**

With respect to the post project continuation, involving further revolutions of the PDSA cycle, the DNP candidate recommends that, in general, more extensive research is needed on all aspects of the medication reconciliation process (not only staffing and workflow issues) in order to provide an evidence base for reducing the impact of adverse medication events on hospital readmissions. Most of the recent studies on medical reconciliation reported in the literature, including this Capstone Project, were single-site QI projects based on small sample sizes (Barnsteiner, 2008; Meguerditchian et al., 2013; Sullivan et al., 2005). Consequently, the current QI project and others conducted elsewhere exhibit limited external validity, meaning that the conclusions drawn from evaluating a small sample of medical records over a limited period of time cannot necessarily be generalized so that they apply to the entire population of heart failure patients discharged from all hospitals at all times. No previous studies describe or explain the trajectory of the medication reconciliation process along the entire continuum of care from admission to an acute care facility, transfer from one level of care to another (e.g., acute care to general care), and discharge back to the primary care office. Consequently, more multisite studies across the continuum of care are recommended to assess the wider scope of the medical reconciliation issues revealed by this QI project.

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## **Appendix A**

**Letter of Agreement (In process of being obtained from UMASS)**

## Appendix B

### Joint Commission-mandated component definitions

Joint Commission-mandated components	Consensus definition
Reason for hospitalization	Chief complaint (any description of the patient's primary presenting condition); AND/OR History of present illness (a description of a patient's initial presentation to the hospital admission including a description of the initial diagnostic evaluation)
Significant findings	Primary diagnoses (admission/discharge diagnoses noted in the discharge summary)
Procedures and treatment provided	Hospital course (a description of the events occurring to a patient during his/her hospital stay); AND/OR Hospital consults (a description of surgical, medical, other specialty or allied health consults a patient experienced as an inpatient or a specific statement that "no consults" occurred); AND/OR Hospital procedures (a description of surgical, invasive, non-invasive, diagnostic or technical procedures a patient experienced as an inpatient or a specific statement that "no procedures" occurred)
Patient's discharge condition	Any documentation that gives a sense for how the patient is doing at discharge or the patient's health status on discharge
Patient/family Instructions (as appropriate)	Discharge medications (a listing of all discharge medications OR a statement noting that admission medications are unchanged AND a listing of admission medications OR a statement noting that admission medications are unchanged except for a specific number of medications AND a listing of the altered medications AND a listing of admission medications); AND/OR Activity orders (orders for a patient's activity level upon hospital discharge); AND/OR Therapy orders (orders for physical or occupational therapy are present within the discharge summary or a reason is documented as to why such orders are not present); AND/OR Dietary instructions (a listing of a patient's recommended dietary intake); AND/OR Plans for medical followup (designation of a specific professional, professional type, or clinic for medical followup AND/OR a specific listing of appointment dates and times for medical followup AND/OR a specific timeframe for medical followup)
Attending physician's signature	An electronic or physical signature of the attending physician on the discharge summary

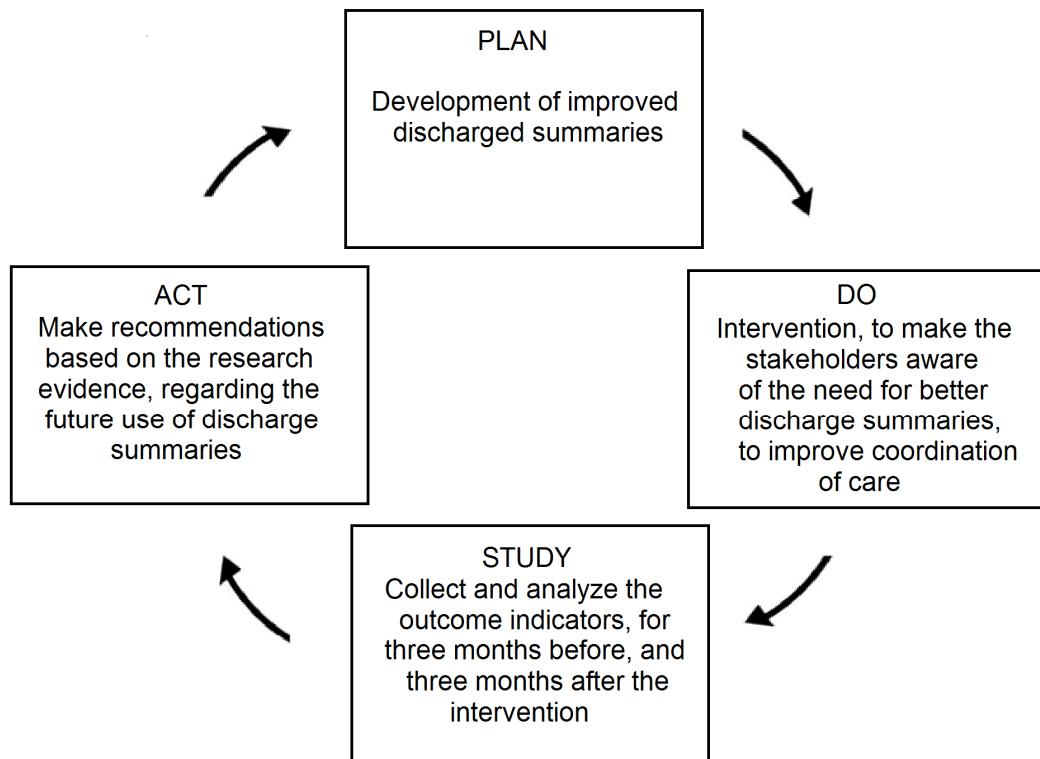
Source: Joint Commission on Accreditation of Healthcare Organizations (2008)

## Appendix C

## Date Entry Template (Excel Spreadsheet)

**Appendix D**  
**Proposed Budget**

Line Item Description	DNP Candidate Expenses	Hospital Contribution	Project Expense
Personal (DNP candidate)	\$0.00	\$0.00	\$0.00
Equipment	\$0.00	\$0.00	\$0.00
Materials and supplies	\$0.00	\$50.00	\$50.00
Staff Training	\$0.00	\$400.00	\$400.00
Informatics Consultant		\$1,360	\$1,360
<b>Total Cost</b>		<b>\$1,810.00</b>	<b>\$1,810.00</b>

**Appendix E****PDSA Cycle**

## Appendix F

### Timeline Work Plan

Task	Dec	Jan	Feb	Mar	Apr
	2013	2014	2014	2014	2014
<b>Recruitment of Stakeholders</b>  <b>Letter of Agreement</b>	X				
<b>Planning</b>  <b>Development of Interventions</b>  <b>Meeting with Stakeholders</b>		X	X		
<b>Data Collection</b>  <b>Meeting with Stakeholders</b>		X	X	X	
<b>Data Analysis</b>  <b>Meeting with Stakeholders</b>		X	X	X	
<b>Written Evaluation of the Project</b>  <b>Power Point</b>  <b>Presentation to Stakeholders and UMASS</b>					X

## **Appendix G**

### **Seminar Topics**

#### **Seminar One**

Overview the project proposal

Discuss current readmission rates

Review discrepancies in current discharge summaries

Discuss proposed interventions

Timely follow-up appointments with primary care physicians or specialists

Medication reconciliation

Outstanding lab results

Patient education

Compliance with the Joint Commission on Accreditation of Healthcare Organization (2008) standard IM.6.10.EP7 mandates for the fundamental components of hospital discharges summaries in the United States.

#### **Seminar Two**

Share the results of data collection

Discuss and evaluate the results of the implementation plan

Suggest future goals and process improvements