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Improving Transitions of Care From Hospital to Community Provider for Patients with Type II Diabetes Mellitus

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A Quality Improvement Approach to Improve Transitions of Care from Hospital to Community

Provider for Patients with Type II Diabetes Mellitus

by

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TABLE OF CONTENTS

LIST OF TABLES	6
LIST OF FIGURES	7
ABSTRACT	8
STATEMENT OF THE PROBLEM	9
Background and Significance	10
ORGANIZATIONAL ASSESSMENT	11
Summary of Care Transmission Report.....	13
Establishing Follow-up Care.....	14
Documentation of Follow-up Information.....	14
Hospital Readmission and ED Visits	15
PROJECT IDENTIFICATION.....	16
Purpose.....	16
Objectives	17
Anticipated Outcomes.....	17
SUMMARY AND STRENGTH OF THE EVIDENCE	18
Bundled Interventions.....	18
Follow-up with PCP.....	18
Discharge Phone Call.....	20
Transmission of Discharge Summary	21
Theoretical and Conceptual Frameworks	22

TRANSITIONS OF CARE	4
METHODS	24
Setting	24
Macrosystem	24
Microsystem.....	25
Project Intervention.....	25
Bundled Interventions	25
Ethical Considerations	27
Plan for Project Evaluation	27
Organizational Barriers.....	29
Stakeholders	29
System Processes	30
Stakeholder Meeting	31
RESULTS	31
Primary Outcomes	32
Secondary Outcomes	36
Follow-up appointments	35
Transmission of discharge information	35
Discharge phone calls	36
Nursing documentation.....	36
Care transitions scores	37
Patient portal engagement.....	38
DISCUSSION	39
Objective 1: Training Staff	41

Objective 2: Follow-up Appointments.....	41
Objective 3: Transmission of Discharge Information.....	42
Objective 4: Discharge Phone Calls	42
Objective 5: Documentation	42
Limitations	43
Recommendations.....	47
Cost-Benefit Analysis	50
Implications for Practice.....	51
REFERENCES	54
Appendix A.....	61
Appendix B.....	62
Appendix C.....	64
Appendix D.....	65
Appendix E.....	66
Appendix F.....	67
Appendix G.....	68
Appendix H.....	69
Appendix I	70
Appendix J	71
Appendix K.....	76
Appendix L	77
Appendix M	79
Appendix N.....	80

LIST OF TABLES

Table	Page
1. PCP Data for Hospital A.....	12
2. Outcome Measures.....	29
3. Population Characteristics	31
4. Bundled Interventions.....	33
5. Hospital Care Transition Scores	38

LIST OF FIGURES

Figure	Page
Figure 1. Control group face sheets.....	13
Figure 2. Chart review for patient follow-up information (control group).....	15
Figure 3. Aggregate data compiled from January 2016.....	16
Figure 4. Surgical population compared to intervention group.....	35
Figure 5. Secondary outcomes.....	36
Figure 6. Chart review for patient follow-up information (intervention group).....	37
Figure 7. Patient portal registration.....	39
Figure 8. Intervention group face sheets.....	44

ABSTRACT

Poorly coordinated care transitions result in nearly half of discharged patients' experiencing at least 1 medication error and 1 in 5 Medicare beneficiaries readmitted within 30 days.

Repercussions of suboptimal transitions of care greatly impact the nation's economy costing between \$12 billion and \$44 billion annually. Ineffective handoffs between providers at hospital discharge contribute to suboptimal patient outcomes; therefore, strategies to improve transitions of care are necessary to provide quality care while decreasing health care expenditure. A quality improvement project was conducted on an inpatient surgical unit to decrease hospital readmissions and emergency department visits. Proposed interventions for patients with type II diabetes mellitus discharged home included (1) a follow-up appointment arranged with an outpatient provider prior to discharge and (2) receipt of a follow-up phone call within 48 to 72 hours. A process for providing discharge information to outpatient providers was assessed. A total of 58 patients met inclusion criteria: 91% patients received at least 1 intervention, 48.2% had a follow-up appointment arranged prior to discharge, and 29.3% received a discharge phone call within the proposed timeframe. There was a significant negative correlation with the number of interventions a patient received and decreased hospital readmissions ($r = -.131$). Health care in the United States has become increasingly fragmented and highly complex. Nurses have a pivotal role for ensuring patients' experience a seamless transition throughout the continuum of care. In accordance with achieving a safe, timely, effective, efficient, equitable, patient-centered health care system a bundled intervention methodology may in fact serve to improve patient outcomes while decreasing health care expenditure.

Keywords: care transitions, care coordination, bundled interventions.

Since the Institute of Medicine (1999, 2001) published *To Err is Human: Building a Safer Health System* (Institute of Medicine, 1999) and *Crossing the Quality Chasm: A New Health System for the 21st Century* (Institute of Medicine, 2001), the healthcare system within the United States has become increasingly fragmented (Naylor, Aiken, Kurtzman, Olds, & Hirschman, 2011) and highly complex (Thomas, 2016). Patients who are discharged home from the hospital are increasingly susceptible to poor outcomes as a result of poorly coordinated transitions of care (Snyderman, Salzman, Mills, Hersh, & Parks, 2014). Transitions of care occur when patients move between health care practitioners, settings, or home as their state of health changes (The Joint Commission, 2012). Many of the problems identified throughout transitions of care result from the current healthcare system lacking a nationally adopted standardized high quality process for handoff between providers (Thomas, 2016). Without a standardized process, nearly one in five medical patients experience an adverse event within the first several weeks following hospital discharge (Misky, Wald, Coleman, 2010). Unfortunately, suboptimal transitions of care from the hospital threaten the quality and safety of patient care thus contributing to readmissions, adverse medical events, and death (Hesselink et al., 2012). Enhancing the quality of care transitions is imperative to our nation's economy because poorly coordinated transitions in care from the hospital setting cost an estimated \$12 to \$44 billion dollars annually (Dreyer, 2014).

Statement of the Problem

Diabetes mellitus along with other chronic medical conditions (i.e. chronic obstructive pulmonary disease, chronic renal failure, liver disease, congestive heart disease, malignancy, etc.) are associated with an increased risk of hospital readmissions (Dungan, 2012). In 2007, the nation spent nearly \$174 billion dollars on diabetes alone with the majority of expenditure

directly related to inpatient care (Dungan, 2012). Diabetes also accounts for nearly 480,958 inpatient hospital stays per year and contributes to 20.3% of hospital readmissions (Saccomano, 2014). The Healthcare Cost and Utilization Project identified diabetes as one of three conditions with the highest number of 30 day all cause hospital readmissions for Medicaid (Dangi-Garimella, 2014).

Research has shown that insulin resistance increases during surgery resulting from the amount of stress placed on the body, which in turn leads to elevated glucose levels (Dangi-Garimella, 2014). Consequently, these conditions place the patient at increased risk for delayed wound healing, surgical site infections, and ultimately hospital readmissions. The financial impact of these surgical site infections is tremendous; costing more than \$3 billion dollars annually (Martin et al., 2016). Identifying ways to prevent hospital readmissions in patients with diabetes would significantly reduce health care costs and promote quality patient outcomes. With half of patients lacking follow-up care within 30 days of discharge (Jackson, Shahsahebi, Wedlake, & DuBard, 2015) an important initial step for hospitals to consider is to adopt a multifaceted program tailored towards enhancing care transitions which bridges the gap between the inpatient and outpatient settings.

Background and Significance

A variety of factors have been identified as contributing to ineffective care transitions with differing root causes among health care organizations (The Joint Commission, 2012). Ineffective transitions of care have been attributed to delayed communication or inaccurate transfer of information between providers which together negatively impacts patient safety and interrupts the continuity of care (Snyderman et al., 2014). Although discharge summaries serve as the primary method of communication between hospitalists and primary care providers

(PCPs), oftentimes vital information (e.g. lab tests, image results, etc.) is not transmitted in a timely manner, lacks quality information, or is not available at the time of initial patient follow-up (Snyderman et al., 2014). In fact, discharge summaries are only available at approximately 12% to 34% of first post-hospitalization visits (Snyderman et al., 2014). In order to promote patient safety after discharge and avoid duplication of services it is important that discharge summaries be sent to outpatient providers in a timely and accurate manner (Villanueva, 2010). Thus, urgent efforts are needed to create a more effective handoff in communication between inpatient and outpatient providers to improve clinical outcomes, reduce resource utilization, and minimize national healthcare expenditure (Misky et al., 2010).

Organizational Assessment

An organizational assessment of Hospital A showed that between January 1 and January 10, 2016 only 14.96% of discharge information was transmitted to outpatient PCPs. One factor contributing to the identified breakdown in communication between the inpatient and outpatient providers was directly related to an ineffective admission process. When a patient is admitted to the hospital the admission clerk asks the patient for the name of his/her PCP and enters the providers name into the hospital registry. If the provider's name is not found within the system the patient's chart is identified as either having: (a) no PCP, (b) PCP not found, or (c) no PCP assigned. In order for a PCP to be entered into the registry the admitting clerk is required to send the hospital analyst an email with the provider's name. The hospital analyst is then responsible for conducting a detailed search to confirm that the provider is credentialed and does not have any current citations. Unfortunately, completion of this process may take up 72 hours. The ramifications of this process are extensive but one obvious example is the impact for patients

who are coded for 24 hour observational status; the system will not update prior to their time of discharge therefore the PCP will not receive any discharge information.

Additional data was obtained from the regional director of patient access depicting percentages of capturing PCP information, for patients admitted to Hospital A, between January and June 2016. Based on the information provided it would appear that the majority of health care consumers seeking treatment at Hospital A did not establish primary care service with an outpatient provider (see Table 1).

Table 1

PCP Data for Hospital A

Month	Number of Patients	Number of Primary Care Providers Entered in System	Percentage of Capture Rate of Primary Care Providers
January	3337	519	16%
February	3481	607	17%
March	3595	616	17%
April	3408	555	16%
May	3355	521	16%
June	3245	542	17%

The implications surrounding breakdowns in communication between the hospital and outpatient PCPs as well as the inefficient admission process were investigated at the microsystem level. A retrospective chart review was conducted on all patients with type II

diabetes discharged home from the surgical unit of Hospital A during the month of January 2016 to identify how many patient charts lacked the identification of a PCP. Out of the 44 charts that met inclusion criteria, 31 (70.45%) had a PCP listed; 6 (13.6%) had no PCP; 6 (13.6%) had PCP Not Found; and 1 (2%) had no PCP assigned (see Figure 1).

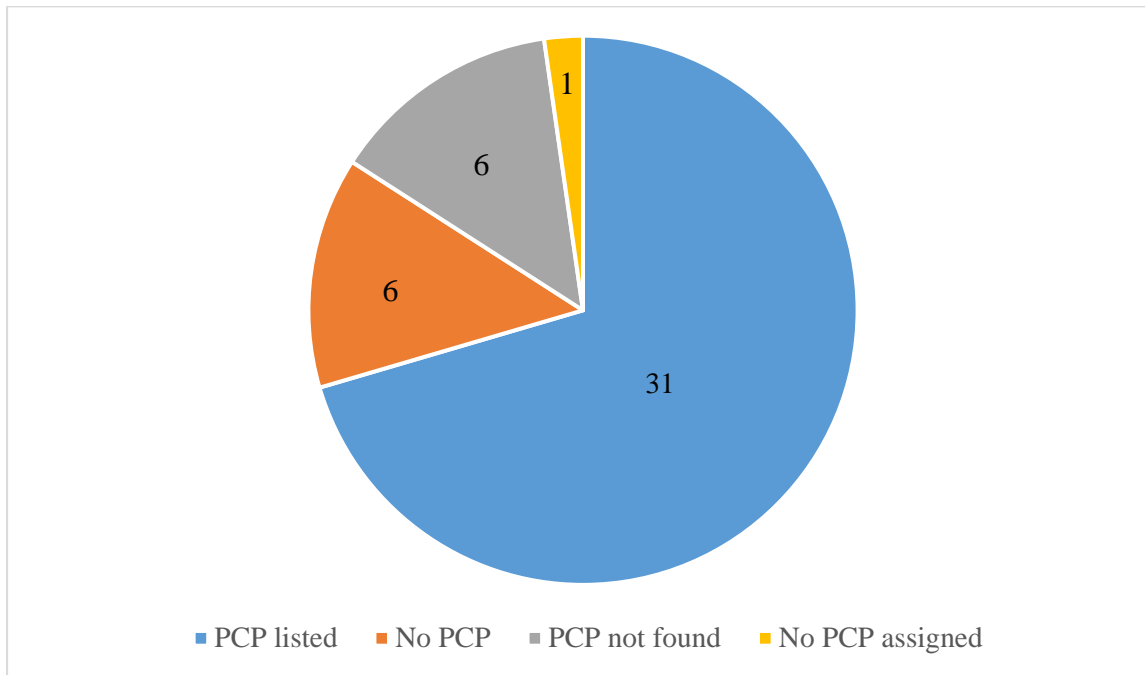


Figure 1. Control group face sheets.

Summary of Care Transmission Report

Data were also obtained to identify whether discharge information was sent to patients PCPs. Currently Hospital A transmits discharge information to PCPs within the community using an electronic mail server via simple mail transfer protocol (SMTP). Unfortunately, only the outpatient providers that have signed on with the hospital's Novo interface are able to successfully receive electronically transmitted information.

A transmission report of discharge information was obtained from nursing informatics on the 44 patients that met inclusion criteria for the quality improvement project. Transmission records confirmed that nine out of the 44 patients (20.4%) had discharge information transmitted

to their PCPs while the remaining 35 (79.5%) patients did not have information sent.

Unfortunately, when PCPs in the outpatient setting do not receive discharge information in a timely manner then coordinated care across the continuum is delayed if not inhibited. These delays in handoff communication affect not only the patient but the provider as well because transfer of vital information is missed.

Establishing Follow-up Care

Prior to June 2016 Hospital A did not arrange follow-up appointments for patients discharged home from the organization. Also, the hospital had not established tracking measures to determine whether patients were arranging follow-up appointments with medical providers (specialist or PCP) following discharge. As collected data identified, PCPs within the community were not receiving discharge information from Hospital A and patients were not tracked following hospitalization. It was proposed that Hospital A may benefit from adopting a bundled intervention approach to improve care transitions which focused on quality patient outcomes and recognized timely follow-up as a core element.

Documentation of Follow-up Information

Patient medical record reviews were conducted to assess documentation of patient follow-up information. It was evident through the review, that nurses on the surgical unit did not document patient follow-up information using a standardized approach. Each of the 44 patient charts had inconsistencies in nursing documentation. Twenty-five (56.8%) of the 44 charts lacked recommendations for post-hospitalization care with a specialist and/or PCP (see Figure 2).

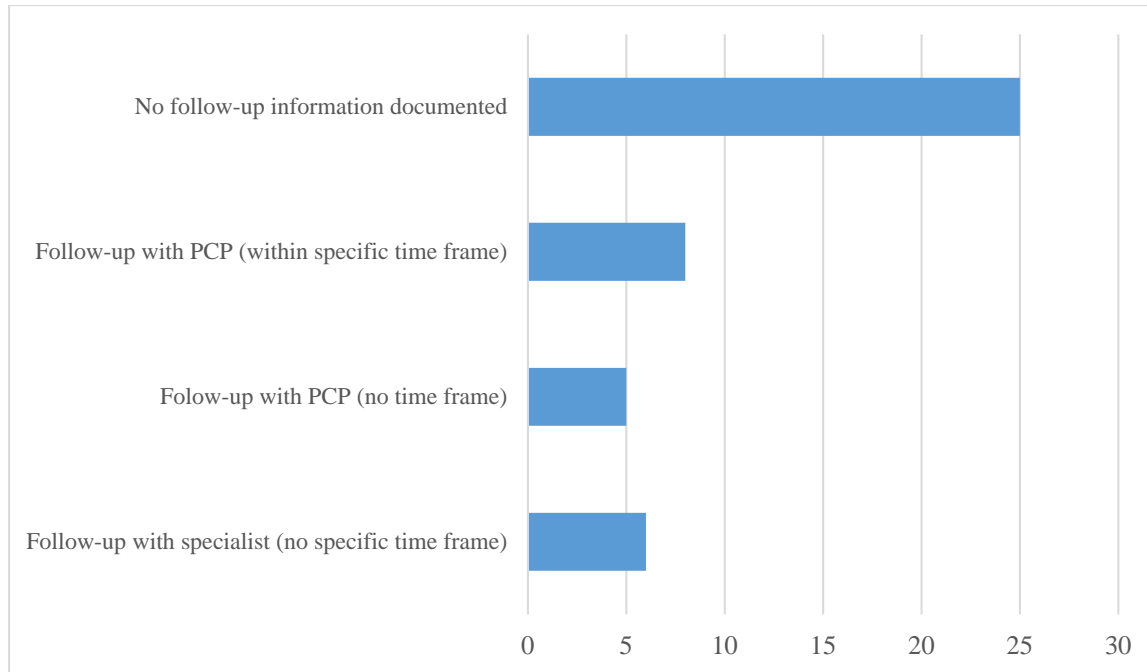


Figure 2. Chart review for patient follow-up information (control group).

Hospital Readmission and ED Visits

A subsequent measure of care was evaluated by conducting a retrospective chart review to identify the number of hospital readmissions and emergency department (ED) encounters that occurred within 30 days after discharge. Out of the 44 patient charts reviewed, 4 (9.1%) patients returned to the ED within 30 days and were sent home while 9 (20.3%) patients were readmitted to the hospital. Additionally, one of these patients was readmitted to the hospital twice within 30 days of their initial date of discharge. Based on information available within the charts, there was inconclusive evidence whether patients followed up with their PCP or specialist after discharge. According to data collected during the organizational assessment, an effective approach to decrease hospital readmissions and promote quality outcomes was warranted and ideally would incorporate the entire care team including patients, hospitalists, nurses, and primary care providers (Tang, 2013).

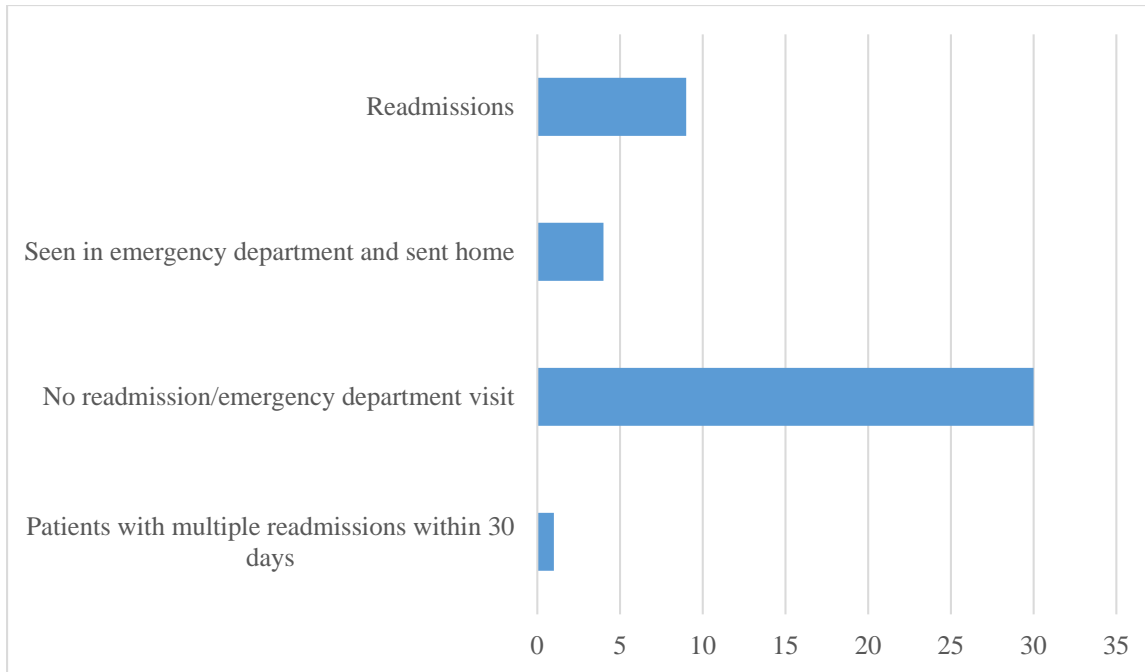


Figure 3. Aggregate data compiled from January 2016.

Project Identification

Purpose

The purpose of the quality improvement project was to improve transitions of care for all patients with type II diabetes mellitus discharged home from the surgical unit within Hospital A. The process originated with the nurse obtaining a discharge order for the patient. The specific aims for the QI project were to improve the quality of care transitions by ensuring 80% of patients with type II diabetes mellitus discharged home from the surgical unit of Hospital A had a follow-up appointment arranged with a PCP prior to discharge; 75% of patients received a follow-up phone call; and 80% of discharge summaries were sent to the patients' PCPs within seven days of hospital discharge by August 1, 2016.

Objectives

- By June 13, 2016, 80% of surgical staff would be trained on the necessary steps to effectively carry out their expected roles and responsibilities for the proposed bundled interventions.
- By August 1, 2016, 80% of all patients with type II diabetes mellitus discharged home from the surgical unit of Hospital A would have a follow-up appointment arranged with a PCP in the community prior to leaving the hospital.
- By August 1, 2016, 80% of all PCPs managing patients with type II diabetes mellitus discharged home from the surgical unit of Hospital A would receive discharge information within seven days of patients discharge.
- Beginning June 16, 2016 75% of all patients with type II diabetes mellitus discharged home from the surgical unit of Hospital A would receive a follow-up phone call within 48 to 72 hours of hospital discharge.
- By June 27, 2016, 100% of day shift surgical nurses would document appropriate follow-up information (PCP name, date, time, address) in the discharge section of patients' medical records.

Anticipated Outcomes

Anticipated outcomes of the project were: (a) enhanced communication between providers, (b) increased patient follow-up, (c) timely receipt of patient information by community providers, (d) decreased readmissions, and (e) decreased encounters to the emergency department.

Summary and Strength of the Evidence

Bundled Interventions

As transitions between the inpatient and outpatient setting have been identified as a 'high-risk' and vulnerable period of time for patients, a literature review was conducted to identify effective hospital based interventions which decrease readmission rates and ED visits within 30 days of discharge. Strategies to reduce hospital readmissions are crucial to providing quality health care while eliminating unnecessary health care expenditures (Grafft et al., 2010). After conducting a thorough literature review it was identified that no single intervention consistently reduced the risk of 30-day hospital readmissions and ED visits (Hesselink et al., 2014; Kripalani, Theobald, Anctil, & Vasilevskis, 2014; Snyderman et al., 2014; White, Carney, Flynn, Marino, & Fields, 2014). Rather, successful outcomes occur more frequently when a combination of various interventions (termed 'bundled interventions') are implemented (Burke, Kripalani, Vasilevskis, & Schnipper, 2013; Kripalani et al., 2014; Snyderman et al., 2014). Effective interventions proven to reduce readmission rates for patients discharged home include a combination of early discharge planning, medication reconciliation, synchronous communication between inpatient and outpatient providers, scheduling follow-up appointments for patients, discharge phone calls, and involvement of a care transitions coach to encourage active participation in self-care (Burke et al., 2013; Kripalani et al., 2014).

Follow-up with PCP

Multiple studies have shown a correlation between early follow-up with a PCP and decreased hospital readmission rates. Misky et al. (2010) found that hospital readmission rates were significantly higher in patients who did not follow-up with their PCP within four weeks of hospital discharge compared to those with timely follow-up. Brooke et al. (2014) found that early

follow-up (within two weeks of hospital discharge) with a PCP, significantly decreased the risk of hospital readmissions in patients who had open thoracic aortic aneurysm repair with perioperative complications. In fact, readmission rates were 35.0% in patients who did not follow-up compared to 20.4% of those that did (Brooke et al., 2014). Sharma, Kuo, Freeman, Zhang, & Goodwin (2010) found that patients with chronic obstructive pulmonary disease (COPD) who had a follow-up visit with either a PCP or a pulmonologist following hospital discharge were less likely to be seen in the ED or readmitted to the hospital compared to patients who did not follow-up. Patients, with COPD, who followed up within 30 days of hospitalization had 14% fewer ED visits and 9% fewer hospital readmissions within 30 days after discharge (Sharma et al., 2010). Although the optimal time between discharge and initial follow-up is unknown, follow-up is encouraged within 14 days of discharge (Snyderman et al., 2014) and should be as early as seven days or earlier for high risk patients (Burke et al., 2013). Prompt follow-up offers the PCP an opportunity to identify conditions which lead to the patient's hospitalization (Society of Hospital Medicine, 2016). At a minimum, the post hospitalization visit should include a review of the patient's current medications and their understanding of each, a review of follow-up instructions, and an assessment of the patient's ability to manage his/her self-care.

Clearly, patients who have follow-up shortly after hospital discharge are less likely to be readmitted to the hospital (Snyderman et al., 2014). Additionally, establishing the follow-up appointments prior to hospital discharge, and ensuring patient and caregiver preference for appointment dates/times increases the likelihood that patients will attend their appointments (Burke et al., 2013; Snyderman et al., 2014).

Discharge Phone Call

Studies were reviewed to assess effectiveness of post discharge telephone calls as an element of a bundled intervention for a hospital to home transition program. Although a systematic review of the literature conducted by Bahr et al. (2014) showed inconclusive evidence that discharge phone calls led to decreased readmissions and emergency department use, several studies have demonstrated a positive correlation between the intervention and enhanced patient outcomes (Balaban, Weissman, Samuel, & Woolhandler, 2008; Costantino, Frey, Hall, & Painter, 2013; Harrison, Hara, Pope, Young, & Rula, 2011; Harrison, Auerbach, Quinn, Kynoch, & Mourad, 2014).

Follow-up phone calls conducted shortly after a patient is discharged from the hospital provide health care associates with an opportunity to reinforce discharge education (Snyderman et al., 2014), medication instructions, and follow-up arrangements (Harrison et al., 2014). Balaban et al. (2008) found that 85% of patients (N = 47) who received a follow-up phone call within 24 hours after discharge were more likely to attend a follow-up visit with their outpatient provider compared to 59% of patients (N = 49) who did not receive a call. Additionally, Harrison et al. (2011) found that patients who received a discharge phone call within 14 days of hospital discharge were 23.1% less likely than the comparison group to experience a 30-day hospital readmission.

A subsequent study examined whether a post discharge telephone call would reduce 30-day hospital readmissions in patients 18 to 89 years of age with Medicare Advantage Plan coverage (Costantino et al., 2013). Results from this study and others have shown that discharge phone calls have the greatest impact on reducing readmissions when performed as close to the day of hospital discharge as possible (Costantino et al., 2013; White et al., 2014). Secondly,

patients that received the intervention experienced fewer visits to the emergency department and higher attendance rates in outpatient follow-up visits compared to subjects in the control group (Costantino et al., 2013).

Transmission of Discharge Summary

Ineffective patient handovers contribute to hospital readmissions and are influenced by various circumstances: poor exchanges of information, organizational, technical (e.g. lack of shared electronic information systems), or patient factors (Hesselink et al., 2014). Technical factors leading to breakdowns in communication result in delayed transmission of discharge summaries sent from the hospitalist to outpatient PCPs. Several studies have used various interventions to overcome breakdowns in communication which include discharge planning guidelines, discharge letter templates, medication reconciliation checklists, and shared electronic patient information platforms (Graumlich, Novotny, Nace, & Aldag, 2009; Koehler et al., 2009; Schnipper et al., 2006).

Timely receipt of discharge summaries may contribute to decreased hospital readmission rates. Van Walraven, Seth, Austin, & Laupacis (2002) found that patients who followed up with a provider that had received a discharge summary at the time of follow-up were less likely to be readmitted to the hospital. Although study results have revealed the importance of PCPs having a discharge summary in hand when a patient arrives to the clinic for their first follow-up appointment, problems surrounding timely transmission continue to plague the current health care system. Chen, Brennan, & Magrabi (2010), examined the effectiveness of sending computer generated discharge summaries to general practitioners (GPs) via email, fax, postal, and hand delivery. Results of the study revealed that positive receipt rates of discharge summaries did vary significantly by function with email (73.9%) and fax (69.4%) being significantly higher than

mail (43.8%) and hand delivery by the patient (24.2%). The majority of the GPs in the study indicated that fax was the preferred method for receiving a discharge summary (Chen et al., 2010). Although fax or email are the most commonly used methods for hospitals to transmit discharge summaries to outpatient providers, it is important that hospitals evaluate efficient processes to ensure timely delivery of patient information. Given the paucity of literature regarding specific hospital based interventions which reduce hospital readmissions and ED encounters, this study focused on evaluating the effectiveness of a bundled intervention with a target population who is at increased risk for hospital readmissions.

Theoretical and Conceptual Frameworks

The theoretical framework used to guide this project was Rogers' Theory of Diffusion of Innovations. E. M. Rogers identified five categories of adopters of new ideas: innovators, early adopters, early majority, late majority, and laggards (as cited in Kaminski, 2011). Innovators are described as individuals who demonstrate a deep desire to be the first to try the new idea (Boston University School of Public Health, 2016). Early adopters generally embrace change opportunities knowing that a need for change exists (Boston University School of Public Health, 2016). Those who fall in the early majority group typically need to see evidence that the innovation works before they demonstrate a willingness to adopt a change idea (Boston University School of Public Health, 2016). Individuals in the late majority group are often times skeptical of change and wait until the majority have tried the innovation before adopting it (Boston University School of Public Health, 2016). Lastly, laggards are typically conservatives who are bound by tradition (Boston University School of Public Health, 2016). Not only are they skeptical of change but they are the most difficult group to adopt a change idea (Boston University School of Public Health, 2016). When promoting an innovation it is beneficial to

understand the aforementioned categories in order to distinguish which learning strategy is most effective to promote change (Boston University School of Public Health, 2016).

According to Diffusion of Innovations theory, Rogers proposed that prospective adopters of an innovation move through a series of five stages (knowledge, persuasion, decision, implementation, and confirmation) before fully committing to change (as cited in Harder, 2015). Rogers also identified five characteristics which influence how quickly an individual adopts an innovation: relative advantage, compatibility, complexity, observability, and trialability (as cited in Harder, 2015). Rogers' theory suggests that an innovation is more likely to diffuse quickly across a social system if it is perceived as having low complexity with high relative advantage, compatibility, observability, and trialability (as cited in Harder, 2015). Relative advantage refers to the degree to which a person perceives an innovation as superior to a previous state (Rogers, 1997). In regards to relative advantage and implementing a bundled intervention associates must perceive the innovation as having a greater relative advantage compared to the previous practice for a rapid rate of adoption to occur. Compatibility is defined as the degree to which a potential adopter perceives the innovation to be consistent with the current norms and values of a social system (Rogers, 1997). Thus, the innovation must align with the organizations missions and values to become fully adopted.

The proposed QI interventions accentuate Hospital A's core values of excellence and compassion by showing high standards of service to the patient in a spirit of love and compassion. Complexity refers to the degree to which an innovation is perceived as difficult to understand and implement (Rogers, 1997). In order for an innovation to be adopted quickly it is crucial for the innovation to be proposed and explained in a manner that is easily understood (Rogers, 1997). Therefore, staff will need to receive training on their roles and responsibilities

prior to implementation of the QI project. Trialability is the degree to which an innovation can be tested over a short period of time (Rogers, 1997). In regards to the bundled intervention, data will be collected and reviewed frequently to measure program effectiveness and adjustments will be made as needed. Observability refers to the availability with which results of an innovation are observed by others (Rogers, 1997). Simply stated, the easier it is for an individual to see the results the more likely they are to adopt the innovation (Rogers, 1997). With this in mind, it will be beneficial to keep each associate (unit clerk, nurse, charge nurse) informed of how their actions contribute to anticipated outcomes (increased patient follow-up, decreased hospital readmissions, increased patient satisfaction, etc.).

The Plan, Do, Study, Act (PDSA) cycle was used to systematically guide the direction and testing of the bundled interventions; to learn from the testing; and to make informative decisions to direct the necessary process improvements (Nelson, Batalden, & Godfrey, 2007).

Methods

Setting

Macrosystem. The quality improvement project took place on a surgical inpatient unit within Hospital A. Hospital A is a fully accredited acute care hospital located within the medical center of a large urban area. As a Level IV trauma hospital, the health care organization offers specialty care in orthopedics, telemetry, emergency, gastroenterology, medical, surgical, intermediate care, and intensive care. The institution is renowned for its leadership within the community and for providing exceptional patient care. It is also recognized as a certified chest pain center by the society of cardiovascular patient care, a high performer in nephrology and orthopedics by U.S. News, and has received the gold seal of approval by the Joint Commission. Receiving prestigious recognition from local and national entities exemplifies the organization's

vision to become a leader, partner, and advocate in the creation of innovative health and wellness solutions which improve the lives of individuals and communities so that every patient can experience both the healing presence and love of Jesus Christ.

Microsystem. Patients admitted to the surgical unit are either scheduled for a surgical procedure or recovering from surgery. The average daily census is sixteen, nurses work at a six to one patient ratio, and each day there is an average of three admissions with three discharges. From July 2014 to June 2015 (FY15) there were a total of 4,767 hospital days, 963 full admissions to the unit, 1,906 discharges, 549 admissions coded observation status, and the average length of hospital stay was 3.15 days. The most common admitting diagnoses were acute pancreatitis, cystic fibrosis with pulmonary manifestations, septicemia not otherwise specified (NOS), calculus of the ureter, pneumonia organism NOS, diverticulitis of the colon without hemorrhage, and malignant neoplasm of the prostate. The age distribution of patient's seen during FY15 showed: 41% were between 19 and 50 years of age; 45% were between 51 and 75 years of age; and 13% were over 75.

Project Intervention

Bundled Interventions. The DNP student met with surgical staff (unit clerks, primary care nurses, charge nurse, and medication LVN) beginning June 4th through June 13th 2016 during the associates scheduled 12-hour shift to provide education on the QI project. The DNP student created a PowerPoint presentation to use when training each of the associates. After viewing the slide show and listening to a presentation given by the DNP student, each associate was provided with role specific algorithms detailing a stepwise approach to successful completion of each bundled intervention (Appendix C-F).

- Intervention 1: Once a provider (hospitalist, resident, NP) places a discharge order in the computerized patient order management (CPOM) system, the unit clerk take a face sheet from the patient's chart along with a work station of wheels (WOW) to the patients room to be enrolled in the patient portal (provided the patient permits) and confirm the name of the PCP.

If the face sheet has 'No PCP,' 'PCP not found,' or 'PCP not identified' the unit clerk will ask the patient for the name of their current PCP. If the face sheet is incorrect the unit clerk will transcribe the correct provider name and phone number. If the patient lacks a PCP and would like to be referred to one then the unit clerk will provide the patient with a list detailing names and locations of providers within the Hospital A provider group. If the patient lacks health insurance and a PCP, then the unit clerk will provide them with information regarding CareLink. CareLink is a financial assistance program that allows residents of the county, not covered under public or private health insurance, to gain access to quality health care services through the University Health System (University Health System, 2016).

If the patient is accepting of a follow-up appointment then the unit clerk will call the PCP's office, using the hospital phone in the patients room, to arrange an appointment (ideally within seven days of discharge). Once the appointment is confirmed the unit clerk will document the date, time, location, and name of the PCP on a follow-up reminder card for the patient (see Appendix G). The reminder card will be given to the primary care nurse who will document the follow-up information in the patients chart. The reminder card will be returned to the patient when the primary care nurse reviews the discharge information with the patient prior to discharge.

- Intervention 2: The medication LVN will conduct follow-up phone calls on patients discharged home from the surgical unit within 48 to 72 hours. A total of three attempts will be made to contact each patient.
- Intervention 3: The unit clerk will fax the summary of care to the patient's PCP within 24 hours of hospital discharge.

Ethical Considerations

The QI project presented no more than minimal risk to the subjects. The proposed interventions are all common practices within inpatient settings and did not involve any procedure for which written consent was required. The primary participants of the intervention were hospital staff assigned to the surgical unit and there was no expectation for them to perform any requirements for the project that are not expectations of their current roles and responsibilities within the unit. Although discharge phone calls required active participation from the patients, there was already a process in place on a subsequent unit within Hospital A. Each of the interventions were new processes for surgical staff; primarily unit clerks, primary care nurses, and the medication LVN.

Specific safeguards (password protection on the DNP students computer, master list of patient names kept in a locked file cabinet in the director's office, which only the DNP student had a key) were implemented to assure maximum security of patient information. All patient information was numerically coded without identifiable information.

Plan for Project Evaluation

The primary outcome measures for the QI project were hospital readmissions and ED visits within 30 days of discharge (see Table 2) which were gathered using Hospital As electronic medical record (EMR). It is important to note, the DNP student only had access to

Hospital A's EMR. Therefore, information regarding readmissions and ED visits to surrounding hospitals or free standing emergency facilities was not obtained.

Secondary outcome measures included 1) documentation of patients' follow-up arrangements (by nurses) in the electronic medical record, 2) verification of discharge phone calls made by the charge nurse or medication LVN within 48 to 72 hours of discharge, and 3) whether discharge information was sent to the patients PCP within one week of discharge (see Table 2).

The DNP student obtained information regarding discharge phone calls from the 'discharge phone call' binder located at the nurse's station, which was created to monitor patient responses to the discharge questionnaire (see Appendix H). The medication LVN would be responsible for making discharge phone calls between eight o'clock in the morning and three o'clock in the afternoon, Monday through Friday. The medication LVN was also responsible for documenting the patient's account number, date, and response to each of the five questions on the discharge questionnaire. The medication LVN would attempt to reach each patient a total of three times and was required to document the situation encountered (e.g. voicemail, wrong number, busy signal, etc.).

The DNP student was responsible for calling every patient's PCP within one week of the patient's discharge date to confirm whether or not the provider received discharge information from the hospital. The DNP student would then document confirmation that discharge information was or was not received in the intervention table (see Appendix I) along with the date and time that the phone call was made.

Table 2

Outcome Measures

Outcome Measure	Defined	Source	Implementation	Data Collection
Hospital Readmission within 30 days	Patient information within the EMR regarding readmission	EMR	June 13, 2016	Through September 1, 2016
ED visit within 30 days	Patient information within the EMR regarding visit to the ED	EMR	June 13, 2016	Through September 1, 2016
Follow-up appointment arranged	Documentation by nurse shows that a follow-up appointment was arranged with patient's PCP	Discharge section of patient's chart within Meditech System	June 13, 2016	August 1, 2016
Discharge information sent to PCP	Documentation that PCP received the discharge information within 24 hours of discharge	Intervention Table	June 14, 2016	August 1, 2016
Discharge phone call	Documentation that the medication LVN made discharge phone call between 48 to 72 hours after hospital discharge	Nurse discharge phone call binder located within nurses station	June 14, 2016	August 4, 2016

Organizational Barriers

Stakeholders. After meeting with a key stakeholder of Hospital A regarding the proposed bundled interventions, the DNP student was told that intervention three (faxing of the patient's

discharge information) could not be implemented. The DNP student was informed that discharge summaries could not be faxed because the hospital utilized an electronic process to ensure information was sent directly to PCPs within the community. After multiple meetings with various stakeholders, it was discovered that the only way an outpatient PCP could receive discharge information from Hospital A, was if the provider had a secure Novo interface established with the hospital. However, after analyzing transmission reports from the control group (in January 2016) it was evident that multiple community providers lacked the ability to receive discharge information.

Additionally, faxing discharge information to a PCP was prohibited because this method of communication prevents the hospital from meeting stage two of meaningful use which addresses electronic transmission of patient care summaries across multiple settings (McBride & Tietze, 2016). In 2011, the Centers for Medicare and Medicaid Services (CMS) initiated incentive programs for hospitals to exchange data electronically between providers to increase care coordination (McBride & Tietze, 2016). Thus, hospitals that adopt and implement electronic health records and health information exchange data programs are eligible to receive Medicaid and Medicare incentives which amount to millions of dollars over time (McBride & Tietze, 2016).

System Processes. Based on a retrospective chart review of patients with type II diabetes mellitus who were discharged home from the surgical unit in January 2016 (control sample) it was observed that two charts were labeled with No PCP yet the admitting nurse had verified that the patient did in fact have a PCP. In fact, the nurse had included the PCPs contact information (name and phone number) in the admission data within the patient's medical record. After identifying this breakdown in communication, the DNP student met with the supervisor of

admitting to address the reasons that contributed to the mislabeling of patient records. The DNP student was informed that personnel from admitting were not able to view admission data within patient's medical records therefore the pertinent information, obtained by the admission nurse, never populated to the patients face sheet. Consequently, neither of these patients' PCPs received any discharge information from the hospital.

A subsequent contributing factor to patients face sheets being mislabeled originated from patients frequently not remembering the name of their PCP when going through the admission process. Therefore, patients were occasionally entered incorrectly into the system as not having a PCP. Based on these findings a process improvement opportunity was warranted as a direct result of the DNP student's retrospective chart review.

Stakeholder Meeting. To overcome several organizational barriers the DNP student invited a small focus group, comprised of key stakeholders, to meet and discuss the identified issues surrounding transitions of care from the inpatient to outpatient setting. As a result of the small focus group two specialty areas were tasked with creating solutions to the recently discovered problems: 1) nursing informatics needed to investigate why every PCP did not receive discharge information and 2) admitting needed to devise a way to effectively capture PCP information.

Results

Between June 13, 2016, and August 1, 2016, a total of 58 patients with type II diabetes mellitus were discharged home from the surgical unit and met inclusion criteria for the quality improvement project (see Table 3). Hospital readmissions and ED visits were monitored for 30 days following initial date of hospital discharge.

Table 3

Population Characteristics

Variable	Control group (n = 44)		Intervention group (n = 58)	
	n	(%)	n	(%)
Gender				
Male	21	(47.7%)	28	(48.3%)
Female	23	(52.3%)	30	(51.7%)
Race				
Hispanic	20	(45.5%)	34	(56.9%)
White	18	(40.9%)	20	(36.2%)
African American	5	(11.3%)	4	(6.9%)
Chinese	1	(2.3%)	0	0
Age				
18-30	0	0	2	(19%)
31-40	2	(4.5%)	5	(8.6%)
41-50	7	(15.9%)	14	(24.1%)
51-60	4	(9.1%)	18	(29.3%)
61-70	13	(29.5%)	9	(13.8%)
71-80	9	(20.5%)	8	(15.5%)
81-90	6	(13.6%)	2	(3.4%)
91-100	3	(6.8%)	0	0
Insurance				
Insured	40	(90.9%)	52	(89.7%)
Non-insured	4	(9.1%)	6	(10.3%)

Primary Outcomes

Out of the 58 patients in the intervention group 44 (75.8%) patients were neither readmitted nor returned to the hospital's emergency department within 30 days of discharge (see Table 4). However, the remaining 14 patients had a total of 9 (15.5%) readmissions and 18

(31.0%) ED visits to the hospital within 30 days of discharge with several patients having multiple re-encounters (see Table 4). Four (6.9%) patients returned to the ED twice after hospital discharge, 1 (1.7%) patient returned to the ED three times, and 1 (1.7%) patient was readmitted three times after initial discharge (with related admitting diagnoses). Results indicated an inverse correlation between the number of interventions a patient received and a decreased risk of hospital readmissions. Patients who received the entire bundled intervention (scheduled follow-up appointment, discharge phone call, and discharge summary sent to PCP) were not readmitted within 30 days of discharge. The two patients that received the bundled intervention and visited the ED (within 30 days of discharge) returned to Hospital A before the date of their post hospital follow-up visit.

Table 4

Bundled Interventions

Patients Receiving Bundled Interventions			
Intervention	ED visit within 30 days		Total
	1 (Yes)	2 (No)	
0	2	3	5
1	1	18	19
2	7	16	23
3	2	9	11
Total	12	46	58
Readmissions within 30 days			
0	0	5	5
1	0	19	19
2	7	16	23
3	0	11	11
Total	7	51	58

A chi-square test was used to analyze whether or not there was an association between receiving the bundled interventions and experiencing a re-encounter to the hospital. Results indicate that there was a significant association between receiving the bundled intervention (all three components) and not being readmitted to the hospital within 30 days of discharge, $\chi^2 (3) = 12.114, p = .007$. Conversely, there was not a significant association between receiving the bundled intervention and returning to the ED within 30 days of discharge, $\chi^2 (3) = 5.265, p = .153$.

Follow-up appointments and discharge phone calls were offered to 100% of patients discharged home from the surgical unit. Between June 13 and August 1, 2016 a total of 178 patients were offered at least one element of the bundled intervention. Among the 178 patients, 65 (37%) had a follow-up appointment scheduled with their PCP prior to discharge, 16 (9%) had an appointment scheduled with a specialist prior to discharge, 4 (2.2%) patients received information regarding CareLink, and 98 (55%) patients received a discharge phone call (either completed or voicemail was left).

Among the 178 patients that were discharged home from the surgical unit a total of 28 patients returned to the ED whereas 23 patients were readmitted to the hospital within 30 days of discharge (see Figure 4). Among these 51 re-encounters, 27 (53%) patients were included in the intervention group. Therefore, patients with type II diabetes mellitus accounted for the majority of re-encounters to the hospital. Demographic data was not collected on patients that did not meet inclusion criteria, consequently, contributing factors that may have attributed to hospital readmissions and ED visits were not analyzed. Results highlight that patients with type II diabetes mellitus accounted for the majority of hospital re-encounters therefore adopting a

bundled intervention which targets this vulnerable population may contribute to superior patient outcomes.

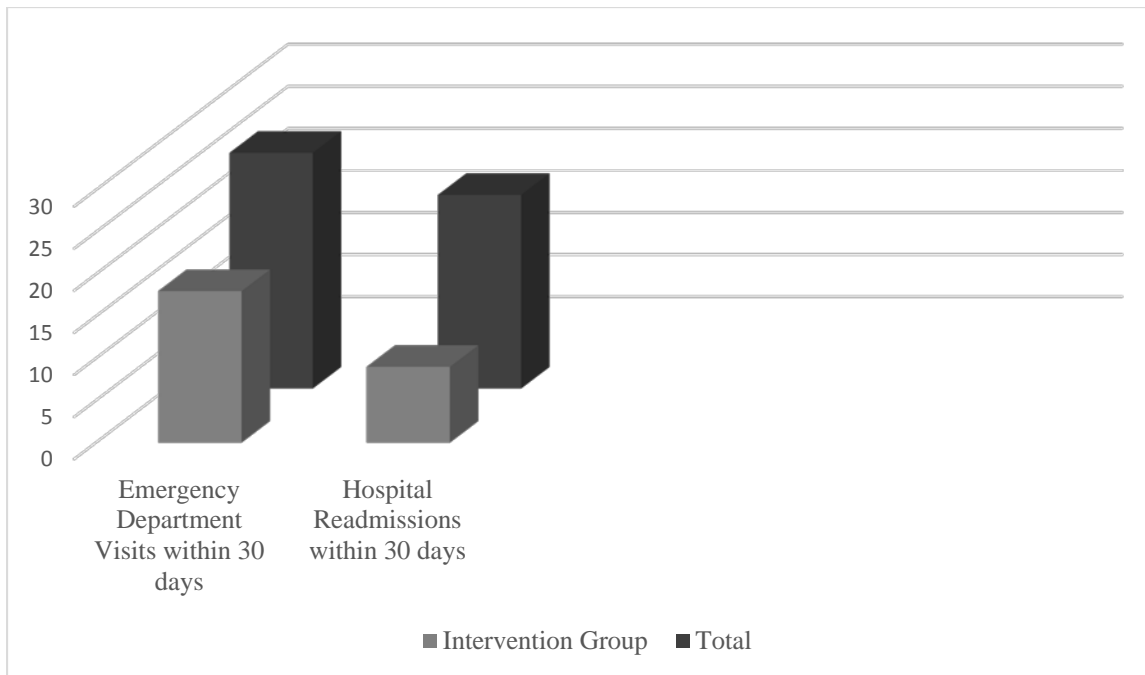


Figure 4. Surgical population compared to intervention group.

Follow-up appointments. Among the 58 patients in the intervention group, 21 (36.2%) patients had a follow-up appointment established with their/or a new PCP at the time of discharge or shortly thereafter (in the case of those patients discharged over the weekend), 7 (12.2%) patients had a follow-up appointment arranged with a specialist (urologist, surgeon, etc.), whereas 30 (52.6%) patients lacked follow-up appointments (see Figure 5).

Transmission of discharge information. It was determined that of the 58 patients that met inclusion criteria only 24 (41.3%) PCPs reported receiving some form of information regarding hospital discharge (i.e. discharge summary, summary of care, or discharge note) (see Figure 5). One PCP's office would not release any information about receiving discharge information, one PCP reported that they could only receive information via fax, and five offices reported not having the reported patient in their electronic system.

Secondary Outcomes

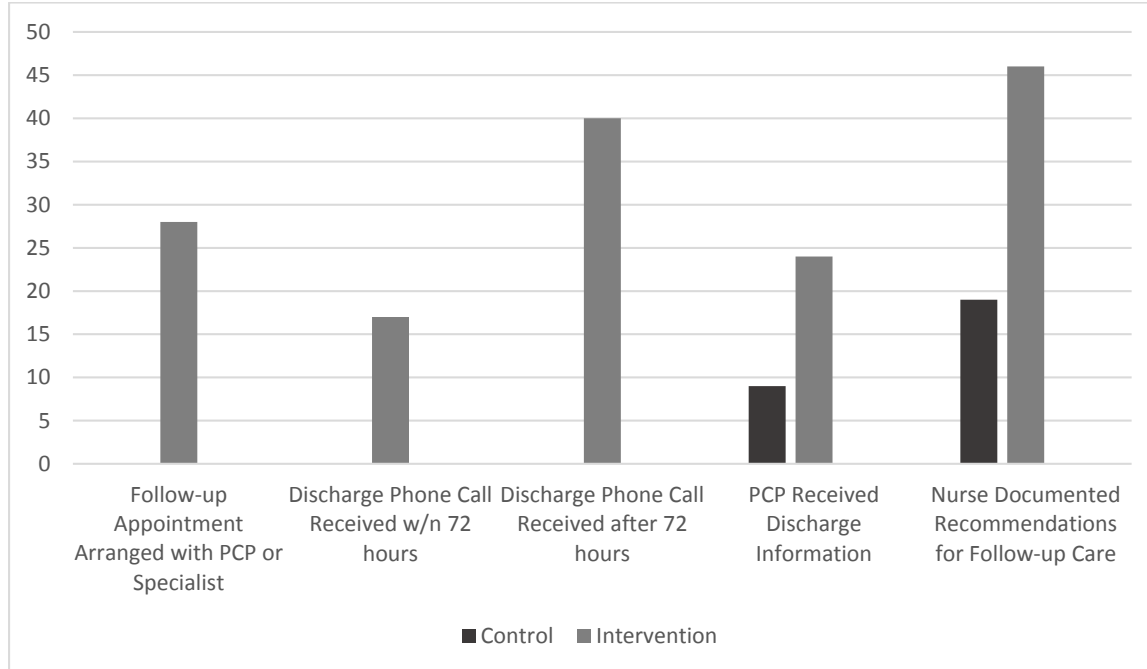


Figure 5. Secondary outcomes.

Discharge phone calls. With regards to discharge telephone calls, 57 (98.27%) patients were attempted to be called following their hospital stay. One patient was readmitted within 72 hours of hospital discharge and as a result was not contacted. While the majority of the patients received a discharge follow-up phone call, only 17 (29.3%) patients received a call within the proposed timeframe (48-72 hours) (see Figure 5). Among the 57 patients that received a discharge phone call: 32 (55.17%) responded to the questions posed by the medication LVN; six (10.3%) were listed with incorrect telephone numbers; 12 (20.68%) were left messages, three (5.17%) were called on three consecutive days with no answer; one (1.7%) was Spanish speaking only and could not understand the questionnaire in English; one (1.7%) hung up on the nurse; and two (3.44%) had mailboxes that were full and could not receive a voicemail.

Nursing documentation. Although 21 (36.2%) patients had follow-up appointments arranged with a PCP only 12 charts had the date, time, and location of the appointment along

with the providers name documented (see Figure 6). Surgical nurses documented recommendation for follow-up care in 46 (79.3%) of the 58 charts (see Figure 5).

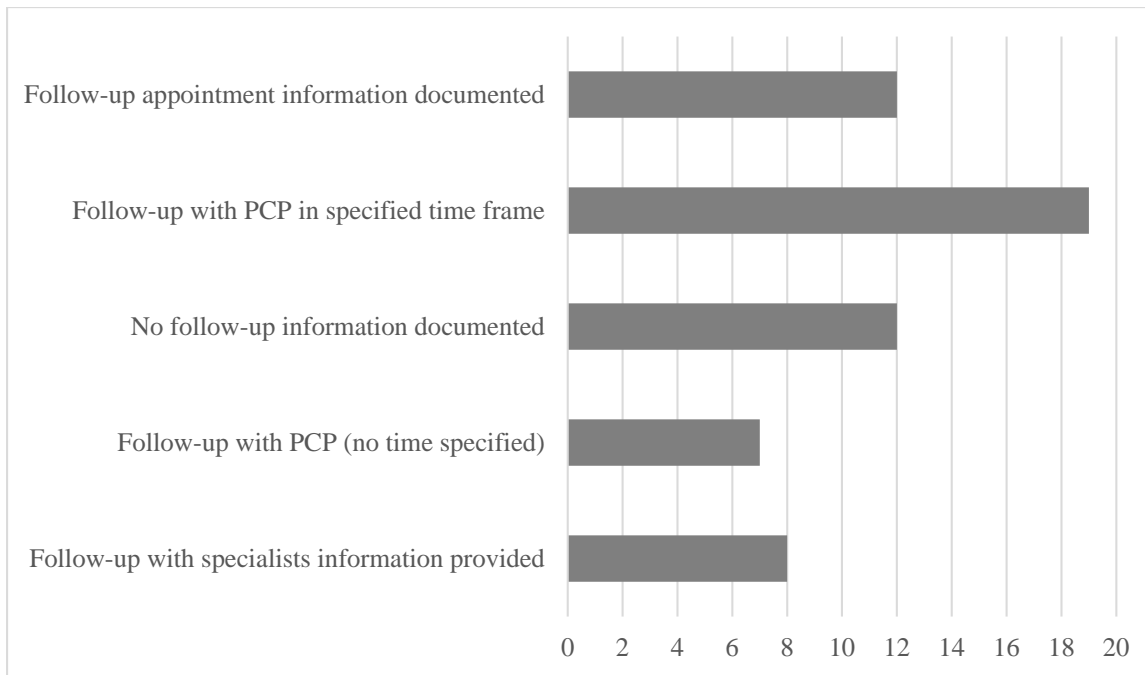


Figure 6. Chart review for patient follow-up information (intervention group).

Care transitions scores. Although transition scores (measured by the consumer assessment of hospital providers and systems (CAHPS) survey) were not a primary or secondary outcome it was anticipated that the bundled interventions would aid in improving these scores. Furthermore, comparing survey scores from the pre-intervention timeframe with those during the implementation phase would serve as an additional measurement of organizational effectiveness in observing for differences in patients perceptions of care transitions.

Hospital A tracks care transition scores using the CAHPS survey which was developed by the Centers for Medicare and Medicaid Services (CMS) and the Agency for Healthcare Research and Quality (AHRQ) to evaluate patient's perceptions of care received (DelBoccio et al., 2015). Survey results are collected on a monthly basis and benchmarked against other hospitals at a local, regional, and national level (CMS^a, 2015). The survey consists of 32

questions related to patient experiences involving communication with physicians and nurses; responsiveness of hospital staff; pain management; communication about medications; cleanliness and quietness of hospital environment; discharge information; transitions of care following hospital discharge; and overall rating of the hospital (CMS^b, 2015). In 2013, the CAHPS hospital survey adopted three questions from the care transitions measure (CTM-3) which specifically focus on patients perceptions of quality and effectiveness of care transitions from the hospital to subsequent locations of care (DelBoccio et al., 2015). According to Hospital A's survey results there was a steady improvement in care transition scores from May to August 2016.

Table 5

Hospital Care Transition Scores

CAHPS by Discharge Date				
	May 2016	Jun 2016	Jul 2016	Aug 2016
	Top Box	Top Box	Top Box	Top Box
Care Transitions	47.8	56.5	65.0	91.7

Patient portal engagement. Health care organizations across the nation have adopted patient portals as a means to promote population health by engaging patients in their care, improving patient outcomes, while supporting transitions between office visits (McBride & Tietze, 2016). Additionally, patient portals are viewed as a means to reduce health care expenditure as duplication of services are reduced (McBride & Tietze, 2016). Hospital A adopted the patient portal in 2014 to provide patients with the ability to access and view secure health information online following discharge. Based on the bundled interventions it was

anticipated that portal engagement would increase over time. Currently stage 2 of meaningful use, proposed by CMS, requires that 5% of patients either download and/or transmit information using the patient portal (McBride & Tietze, 2016) and between July and September 2016 Hospital A exceeded the threshold. The number of patients who were enrolled into the patient portal also increased during project implementation.

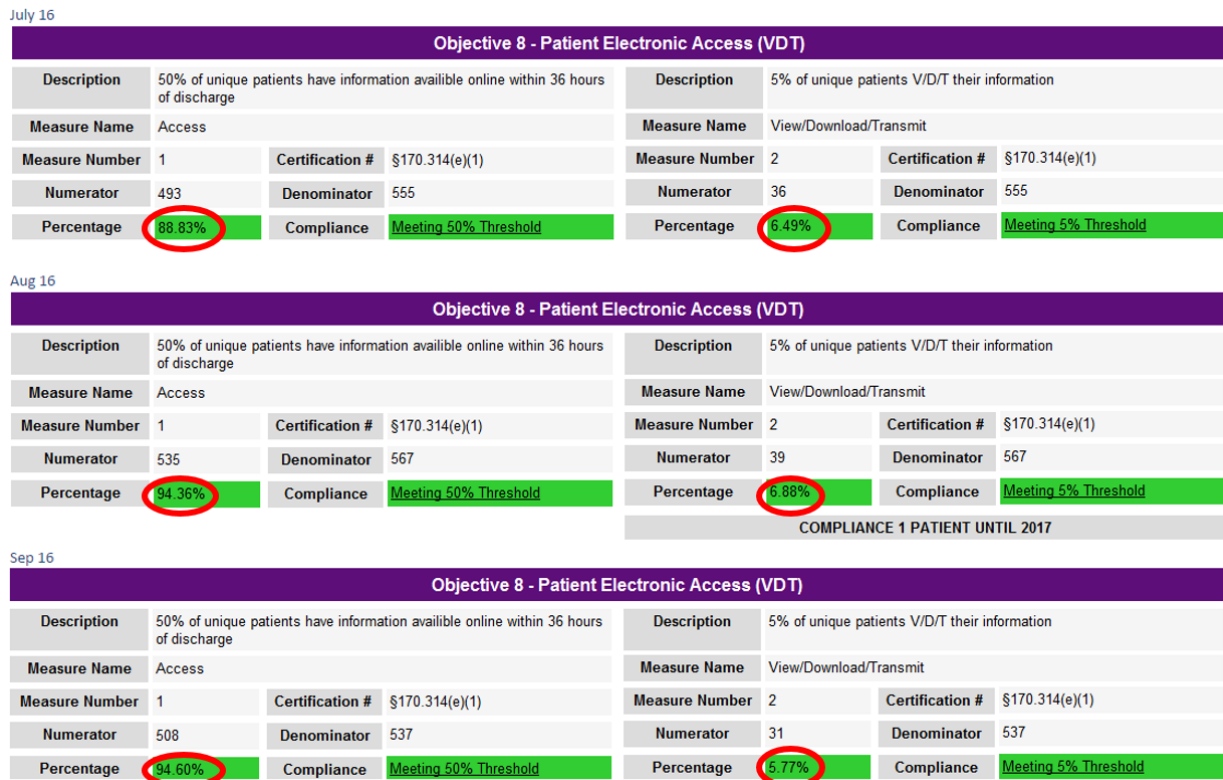


Figure 7. Patient portal registration.

Discussion

In order for the bundled intervention to become successful the surgical staff had to be willing to change their current practice. Prior to project implementation the DNP student surveyed the surgical staff using the American Association of Critical-Care Nurses (n.d.) unit change readiness assessment survey (see Appendix J) and quickly identified that keeping team members updated on patient outcomes and project initiatives was a high priority. With the

intention of keeping the staff aware of how their work impacted patient outcomes weekly graphs were displayed on the unit huddle board depicting the number of patients discharged home from the surgical unit with an established follow-up appointment. Staff had an opportunity to review the data regularly during morning safety huddles. This was extremely valuable to the night shift staff because although they were not directly involved in arranging follow-up appointments they were highly interested in discovering methods to improve patient outcomes.

Originally unit clerks on the unit expressed concern over the additional workload required for the bundled interventions; specifically regarding time requirements to assist patients schedule a follow-up appointment. During the first few weeks of implementing the project, it took the unit clerks between eight and twelve minutes to schedule one patient's follow-up appointment and complete a follow-up reminder card. However, by the third week, they had mastered the routine with completion times ranging from three to seven minutes. The unit clerks also raised concerns about infection control measures when using patient phones to call PCPs for follow-up appointments. It was decided that unit clerks would continue to speak with patients at the bedside about follow-up arrangements but they would make an appointment using a telephone at the nurse's station.

It was anticipated that there might be staff on the unit who were skeptical of the project; considered "laggards" to implementation of the project. Using Diffusion of Innovations (as cited in Kaminski, 2011) as the theoretical framework to guide project implementation it was anticipated that older surgical nurses might be identified as laggards secondary to their conservative nature and reluctance to embrace new ideas. Individuals skeptical of change and those who did not understand the value of the proposed interventions stalled implementation

efforts. These individuals were identified early and received encouragement and ongoing feedback.

Objective 1: Training Staff

The project objective of training 80% of surgical staff (unit clerks, primary care nurses, charge nurse and medication LVN) by June 13, 2016 was not achieved; 17 out of 22 (77.3%) associates were trained. The objective was not met because of conflicts with staff schedules (e.g. paid time off, vacation, sick leaves, etc.) and the DNP student's schedule. However, 100% of surgical staff were successfully trained by June 21, 2016.

When devising a plan for project implementation, it was originally anticipated that surgical staff could be trained during a 30-minute educational workshop. However, staff requested to not come in on their days off and a 30-minute workshop could not be budgeted so the DNP student conducted ten minute huddles at the nurse's station prior to shift change in order to educate staff members about the QI project. When educating the surgical staff about the QI project the DNP student trained the unit clerks to offer follow-up appointments to all patients discharged home from the surgical unit. Similarly, the medication nurse was trained to call ALL patients discharged home from the surgical unit. By offering the bundled interventions to every patient discharged home from the surgical unit, it was anticipated that a unit level behavioral change would be adopted quicker, the project would be sustained, and quality indicators (e.g. readmissions and ER visits within 30 days of hospital discharge) would be reduced.

Objective 2: Follow-up Appointments

The proposed objective that 80% of all patients with type II diabetes mellitus discharged home from the surgical unit would have a follow-up appointment arranged with a PCP in the community prior to leaving the hospital was not met (36.2% scheduled). Additionally, 12% of

patients had a follow-up appointment scheduled with their specialist prior to discharge. Factors contributing to patients not receiving a follow-up appointment were related to: patients requesting to schedule their own appointments, lack of coverage by a unit clerk (primarily after 3 p.m. on weekdays), one patient left against medical advice (AMA), and one PCP office required patients to schedule their own appointments.

Objective 3: Transmission of Discharge Information

Objective 3 was not implemented. However, data were collected throughout the course of the QI project to determine if there were breakdown in communication between hospitalists and outpatient PCPs that were relevant to care transitions (41.3% receiving discharge information). Throughout the course of the project nursing informatics and admitting worked to address deficient processes that contributed to breakdowns in communication within the system.

Objective 4: Discharge Phone Calls

Missed opportunities to complete discharge phone calls within the proposed timeframe (29.3% within 72 hours of discharge) were attributed to the workload of the medication LVN as well as the patient call manager system. The patient call manager was designed to eliminate patient names from the master list three days after hospital discharge. Furthermore, the medication LVN was the only associate responsible for making discharge telephone calls and patients were missed if she was absent from work (related to sick days, vacation, etc.).

Objective 5: Documentation

According to objective 5 it was expected that 100% of day shift nurses would document information regarding follow-up arrangements (PCP name, date, time, address) in the discharge section of each patients chart. The purpose of nurses documenting this information in the patients chart was for patients to receive two reminders (follow-up appointment card and discharge

instructions) about their post hospitalization follow-up care. Even though this goal was not met the results indicate that surgical nurses adopted a change in documentation skills by understanding the importance of communicating the necessity for follow-up with either a PCP or a specialist. Charts reviewed in January 2016 showed that nurses neglected to document recommendations regarding post-hospitalization follow-up care in 25 of the 44 charts (56.8%). After nurses were educated on where/how to document follow-up care only 12 (21%) of the 58 charts lacked recommendations. Nurses floating to the surgical unit who did not receive education on the QI project and previously identified laggards (older nurses that were not willing to change their practice) contributed to objective five not being met.

Limitations

According to the 58 patient face sheets from the intervention group 42 (72.4%) had a PCP listed, eight (14%) had 'No PCP,' four (7%) had 'PCP Not Found,' and four (7%) had 'No PCP Assigned' (see Figure 8). Seven (12%) face sheets were incorrectly labeled with 'No PCP' when the patient did indeed have a provider or the face sheet had the name of the patients former PCP listed.

During the project implementation phase it was evident that problems contributing to low PCP capture reports remained a threat to an efficient process. Therefore, the supervisor of admitting and the DNP student collaborated to identify methods to increase the PCP capture rate on patient face sheets. The supervisor of admitting formulated a goal to raise Hospital A's PCP capture rate to 90% by September 2016. Documentation of the correct information in the patient's record was crucial to promote continuity of care among health care providers. For instance, if the hospitalist needed to relay critical information to a PCP they should be able to refer to the patients face sheet to obtain the provider's name and contact information.

Additionally, secondary purposes of this information are used for justification of reimbursement from third party sources (e.g. insurance companies and clinical research, epidemiological studies, health care statistics, or to influence health policies) (Hospital billing, n.d.).

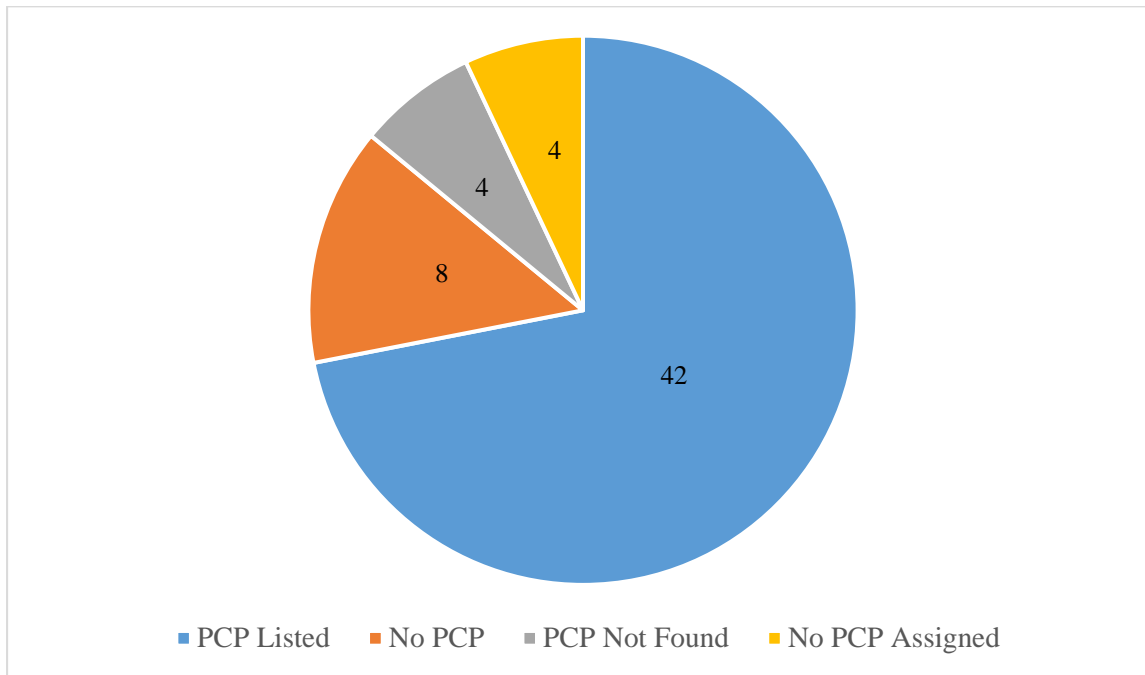


Figure 8. Intervention group face sheets.

The DNP student worked alongside the admitting department to increase obtaining correct information regarding PCPs. It was first proposed that associates from admitting would receive daily patient census reports detailing which patients were identified with No PCP, PCP Not Found, or PCP Not Identified. Upon receipt of the report in the morning an associate from admitting would be expected to follow-up with either the patient, a family member, or the patient's primary nurse to verify the name of the patients PCP. At this time the DNP student had added a section to every patient white board on the surgical unit which would be used by admitting nurses to capture information pertaining to PCPs. However, within one month it was determined that this plan was not sustainable because associates from admitting did not have

time to leave the office to round on inpatients as this left those responsible for patient intake shorthanded.

Throughout the implementation phase of the project the DNP student met on a weekly basis with the supervisor of admitting to review mislabeled face sheets from patients who were discharged home from the surgical unit. Each time the DNP student submitted updated face sheets the supervisor promptly corrected the information and/or sent an email to credentialing for the provider to be added to the hospital registry system. By the end of July 2016 it was yet again determined that the current process (relying on the DNP student to provide the supervisor of admitting with updated face sheets) was inefficient and not plausible for sustainability. After collaborating about future endeavors to enhance the process it was decided that unit clerks from the surgical unit would receive computer training on updating PCP information in real time beginning September 2016. With this new process, the expectation was that patient information would be corrected or updated upon a patient's admission to the surgical unit. Ideally, this would promote coordinated care transitions between the hospital and the community as discharge summaries could be sent electronically (provided that the PCP is set up with the hospital's Novo interface) in a timely manner. Secondly, an updated face sheet would reduce the amount of time required to schedule a patient's follow-up appointment because unit clerks would no longer have to verify that provider information was correct.

An 80% success rate for scheduling follow-up appointments was unrealistic. Patients demonstrated hesitancy when unit clerks offered to assist with scheduling appointments primarily due to the absence of their personal calendars on hand to commit to a specific date/time. Scheduling follow-up appointments for patients discharged late in the day on weekdays (after five o'clock in the afternoon) and on the weekend was difficult as primary care

offices were closed. Using the PDSA improvement cycle the DNP student trained the weekend unit clerk to follow a similar algorithm (see Appendix K) used by the weekday unit clerks. The unit clerk on Monday, would review the face sheets of patients discharged over the weekend and would call PCPs of patients who requested a follow-up appointment. After confirming an appointment the unit clerk would then call the patient to inform them of the date, time, location, and name of the provider they would be seeing.

After collecting data for three weeks, it was discovered that many of the patients were refusing to have their follow-up appointment scheduled stating they would rather schedule it themselves. An element missing from the bundled intervention was an educational handout for the patient, indicating the importance of follow-up appointments being made prior to leaving the hospital (see Appendix L).

Another limitation that impacted successfully achieving objective two was the absence of a unit clerk on the surgical unit after three o'clock in the afternoon, Monday through Friday, for six weeks during project implementation. This meant that patients discharged later in the afternoon were not able to have a unit clerk arrange a follow-up appointment. These conditions may have contributed to 30 patient not having a follow-up appointment established before leaving the hospital.

The original plan for the bundled interventions was to have the charge nurse conduct discharge phone calls. However, it was determined that the medication LVN would be a more appropriate person to conduct discharge calls given the relationship that developed during the course of the patient's stay (job description required administering medications to all patients on the surgical unit, Monday through Friday from eight o'clock in the morning until three o'clock in the afternoon). Thus, it was anticipated that the formation of a trusting and caring relationship

would be an important component to the success of patients answering the nurse's questions, which focused on care transitions, as they might be more inclined to provide open and honest feedback about their hospital experience. It was difficult contacting the patients due to incorrect listing of telephone numbers and once the patient was reached, there were isolated incidences of language barriers. The need for an educational handout not only describing the transition process and the need for post-hospitalization follow-up care but also to let the patient know that they would be receiving a follow-up phone call was evident (see Appendix L). Unfortunately, the handout was not available for implementation during the course of the QI project because of a marketing delay. It is expected that upon release by marketing, the handout will be dispersed to all patients discharged home from the surgical unit.

Recommendations

During project implementation it was recognized that not having a unit clerk after three o'clock in the afternoon was contributing to patients discharged from the hospital without a follow-up appointment. Upon recommendation, the surgical unit hired a unit clerk to cover three o'clock in the afternoon until eleven o'clock in the evening. Secondly, recommendations were made to the director of the surgical unit to designate a phone (away from the nurse's station) for the medication LVN to conduct discharge phone calls for one hour during the day. To date, the medication LVN makes discharge calls in an office away from the nurse's station using a dedicated phone line from two to three o'clock in the afternoon Monday through Friday.

In order to address the issue of the language barrier when making discharge phone calls, it was recommended that a certified language translator call the patients who require translation. It is important that all patients receive the discharge phone call and information. Although Hospital A currently has a contract with an interpreter service for associates to use when

communicating with patients who speak languages other than English, the ability to have a conference call (comprising three individuals) has not yet been established. It was recommended that the organization invest in a more efficient means for translational services when conducting discharge phone calls.

In an effort to reach patients who may be at work between the hours of eight o'clock in the morning and three o'clock in the afternoon, it was recommended that the timeframe for making follow-up calls be extended. After reviewing the call logs from the intervention group, the DNP student made the director of the surgical unit aware of the number of family members who reported the patient was at work when the follow-up call was made. By September 1, 2016 the surgical director hired a second medication LVN who would be on the unit Monday through Friday from six o'clock in the afternoon to eleven o'clock in the evening. After collaborating with the surgical director it was decided that the newly hired evening medication LVN would dedicate one hour during the shift (Monday through Friday) to conduct discharge phone calls (from six o'clock to seven o'clock in the evening) targeting those patients who were missed by the day shift medication LVN.

A second recommendation for Hospital A was to identify a more efficient method for transmitting discharge information to providers within the community. Based on the organizational assessment as well as results from the QI project, multiple PCP offices lack a secure Novo interface connection to receive information from Hospital A. Additionally, one PCP office stated they were only able to receive faxes. One proposed method for sending discharge information to community providers would be to revert to a previously used process within the hospital where patients received their summary of care (SOC) at the time of discharge. Information within the SOC included: the name and phone number of the admitting/attending

physicians, information regarding insurance providers, advance directives, active problems, past problems, family history, social history, plan of care, discharge instructions, functional/cognitive status, allergies/reactions/alerts, current home medications, past home medications, immunizations, acute vital signs, procedures, encounters, encounter diagnosis, lab results, microbiology results, and radiology/departmental procedures. Ultimately, primary nurses would be responsible for printing the SOC packet at the time of discharge and encourage the patient to take the information with them to their initial follow-up appointment.

The DNP student met with the chief hospitalist in August 2016 to discuss findings from the QI project specifically related to breakdowns in processes related to transmission of discharge information to outpatient providers. The chief hospitalist was well aware of the recognized breakdowns in communication and informed the DNP student that the hospitalist group was in the process of hiring a site transition associate who would be solely responsible for ensuring discharge summaries are sent to outpatient providers in a timely manner.

Many of the studies reviewed prior to implementation of this QI project tailored bundled interventions to specific populations with the majority targeting patients with congestive heart failure (CHF). Given the results of the study it is recommended that Hospital A offer the bundled intervention methodology to patients on the telemetry, orthopedic, and medical units. Critical care units (ICU and IMCU) generally do not discharge patients home, rather patients are transferred to step down units (e.g. medical, surgical, telemetry, or orthopedic) and then discharged home. Therefore these units might not benefit from offering a bundled intervention approach. Although the results of the project indicate that surgical staff were capable of enhancing care transitions disseminating these findings to subsequent units will require associates to be highly engaged and willing to adopt a change in behavior. Just as laggards can

stall implementation of new processes, in this case they contributed to patients being discharged home without a follow-up appointment in place.

Cost-Benefit Analysis

Anytime a new process is brought before a leadership team questions are raised regarding sustainability of the initiative. A cost benefit analysis was created to share with stakeholders to show that the cost of the bundled interventions is significantly less than the cost of a hospital readmission. The total cost incurred by the DNP student to print 120 follow-up appointment cards was \$38.75. Additionally, the director of the surgical unit had a desk placed in her office specifically designated for discharge phone calls. Other necessary resources included a desktop computer which cost \$950 plus a phone line with a telephone which cost \$326.93. Based on the bundled interventions and the associates already in place on the surgical unit who could execute all portions of the intervention, there was no need to create a full time employee (FTE). The DNP student created standard work documents (see Appendix M-N) to show that on average arranging a follow-up appointment required seven minutes whereas a discharge phone call required six minutes to complete. Thus, if the surgical unit averages five patient discharges a day, the unit clerk could expect to spend approximately 35 minutes arranging follow-up appointments. However, it is anticipated that with unit clerks now having access to updated face sheets on admission to the surgical unit the proposed time requirements will be decreased.

According to 'Statistical Brief #142' the average cost of a hospital readmission secondary to any cause is approximately \$11,200 (Rizzo, 2013). Unfortunately the burden of receiving treatment in an inpatient setting is displaced on the government, third party payers (insurance companies), employers, patients and their families (Pfundner, Wier, & Steiner, 2013). As health care expenditures continue to rise and the average life expectancy increases, hospitals play an

integral role in adopting interventions that focus on quality patient outcomes, improved care coordination, and achieving savings (Hines, Barrett, Jiang, & Steiner, 2014). By implementing a bundled intervention methodology focusing on enhanced care transitions for patients discharged home from the hospital, organizations could expect a large return on investment (ROI). A ROI would originate from no/reduced penalties initiated by CMS, increased patient volume, and improved consumer assessment of hospital providers and systems (CAHPS) scores.

Implications for Practice

Benefits of the discharge phone calls were evident by comments made by patients on completed questionnaires. One patient was discharged home with written instruction to follow an insulin sliding scale however, administration parameters were not provided in the discharge instructions. In this situation the medication nurse was able to review the patients EMR and instruct the patient on how to use the sliding scale that had previously been used during their hospital stay. Another patient reported experiencing symptoms such as coughing, lethargy, constipation, and increased drainage from a surgical wound. The medication nurse was able to provide the patient with the surgeon's phone number and instructed the patient to call immediately. Discharge phone calls permitted the medication nurse to track patients post hospitalization; for example when reviewing the questionnaire it was found that five (8.6%) of the patients who requested to schedule their own follow-up appointment did in fact schedule their own appointment.

After reviewing the positive effects of these calls the DNP student and the director of the surgical unit debriefed with the medication nurse and collaboratively decided that one hour of every shift would be strictly devoted to making discharge phone calls. By mid-August the director of the surgical unit had an extra phone line established specifically for the medication

nurse to use for conducting discharge phone calls. This was important because prior to the designated phone line, the medication nurse would leave messages for patients to call back to the nurse's station for any questions or concerns which prevented the patient from having a direct line for communicating with the nurse. With this new process the medication nurse was able to record a voicemail informing patients that she would access the mailbox daily and would return calls Monday through Friday between two o'clock and three o'clock in the afternoon.

The quality improvement project required collaborative efforts from multiple change agents across the healthcare system. As such, there was a need for buy-in from each stakeholder to recognize the implications of the identified problems. The DNP student assumed a leadership role throughout the planning, implementation, and evaluation stages of this QI project. Strong communication skills, leadership abilities, and collaborative skills were required to gain buy-in from all stakeholders.

The organizational vision of becoming a high reliability organization (HRO) committed to high levels of quality and safety was in-line with the project goals of improving transitions of care to reduce hospital readmission and ED visits. Each year millions of patients are directly affected by care received within a hospital organization by virtue of health care associated infections, medication errors, or during transitions from one setting to another (Chassin & Loeb, 2013). An essential feature of any HRO is the ability to identify practices and processes which create disturbances and vulnerabilities for patient outcomes (Christianson, Sutcliffe, Miller, & Iwashyna, 2011). Based on this project's organizational assessment, an operational and system issue was identified that would impact patient outcomes. It was anticipated that an evidence based process improvement approach using change management approaches would improve care

transitions and lead to adoption of a sustainable change to improve the needs of not only the target population (patients with type II diabetes mellitus) but all patients.

The overall assumption of the QI project was that by directing patients back to their PCP for prompt follow-up care (ideally within seven to fourteen days) hospital readmissions rates and ED visits would decline. Patients who lacked a PCP at hospital discharge were given an opportunity to establish long term care with an outpatient provider. The interventions improved communication between hospitalists and outpatient providers as providers in the community were made aware that their patient had been discharged home from the hospital. Additionally, PCPs who received a discharge summary were informed of events that took place in the hospital therefore duplication of services were mitigated. Increased communication between inpatient and outpatient care settings provided the PCP with the ability to provide safe, effective, patient-centered, timely, efficient, and equitable care (AACN, 2006).

Doctoral prepared nurses are in a pivotal position to design, direct, and evaluate quality improvement processes that improve patient outcomes and support population health (AACN, 2006). Additionally, as members of the health care team, they possess the skills to analyze the cost-effectiveness of practice initiatives paying close attention to patient risks and health care outcomes (AACN, 2006). It is anticipated that the project results will lead to multiple system level change initiatives to include: adoption of bundled interventions on all units, unit clerks will receive training on updating face sheets in the Meditech system, and adoption of a new process for ensuring outpatient providers receive discharge information. As evidenced by project findings each of these changes will contribute to safe and improved patient outcomes.

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Appendix A

Letter of Support

[REDACTED]

May 6, 2016

To UIW Institutional Review Board:

I am aware of Laura Thompson completing a DNP project within [REDACTED]

[REDACTED]

[REDACTED]. The project is titled *Improving Transition of Care from Hospital to Community Provider for Patients with Type II diabetes Mellitus*. It aims to improve the transition of care for patients with type II diabetes mellitus discharged from the hospital to a community provider. It involves establishing a follow-up appointment for the patient with a community provider prior to hospital discharge, ensuring timely transmission of the patient summary of care to the patient's community provider, and providing the patient with a discharge follow-up phone call within 48-72 hours after hospital discharge.

[REDACTED]

[REDACTED]

Appendix B

Table 6

Timeline for QI Project

Task	Aug '15	Sept '15	Nov '15	Dec '15	Jan '16	Feb '16	Mar '16	Apr '16	May '16	June '16	July/ Aug '16	Sept to Dec '16
Microsystem Assessment	X	X	X									
Recruitment of Stakeholders			X	X	X							
Needs Assessment					X	X	X					
Retrospectiv e Chart Review					X	X	X					
Development of Interventions						X	X	X				
Meeting with Stakeholders					X	X	X	X	X	X	X	X
IRB Submitted to UIW and Hospital A								X	X			
Received IRB									X			

Appendix C

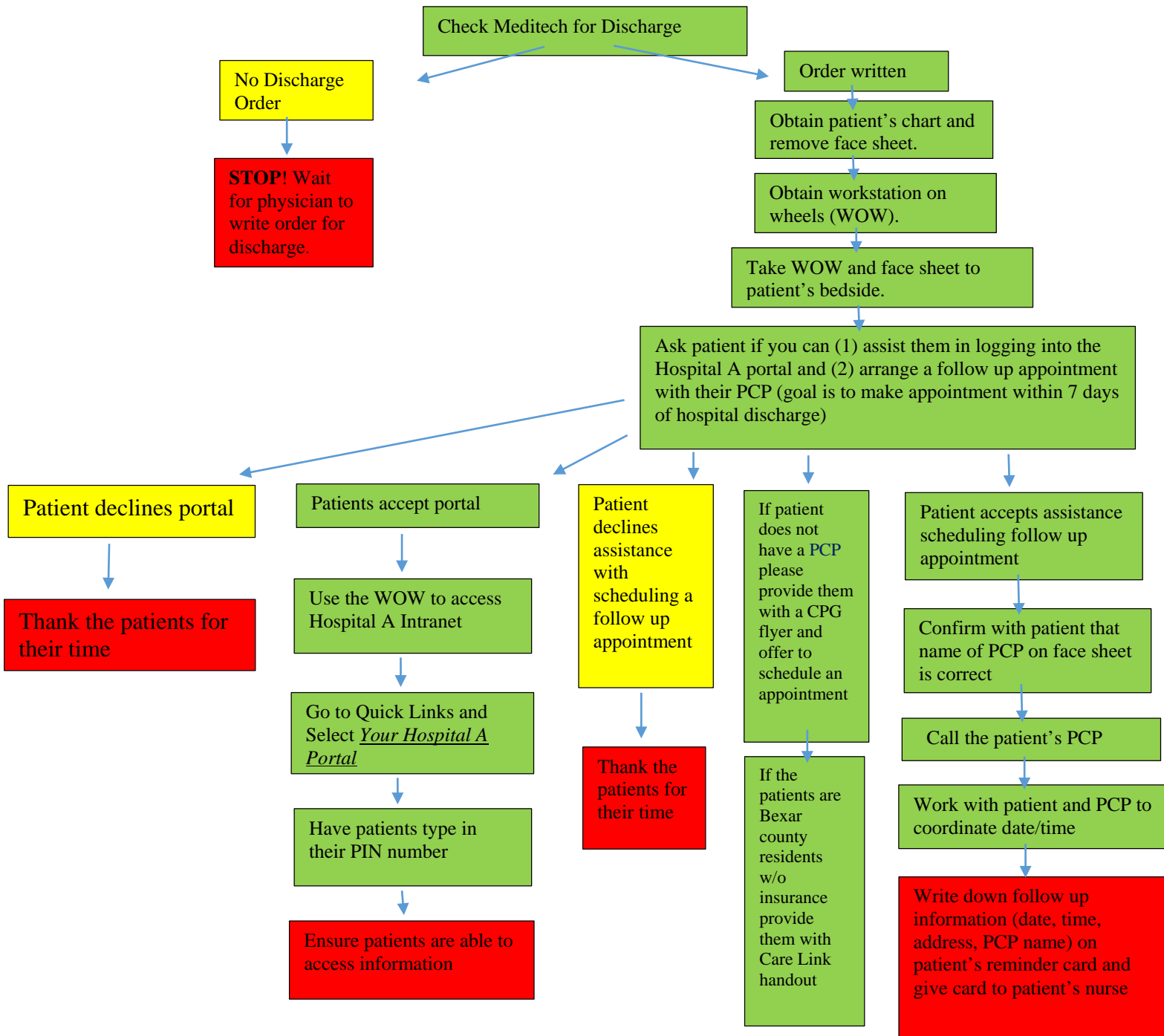


Figure 9. Algorithm for unit clerks to arrange patient follow-up appointments.

Appendix D

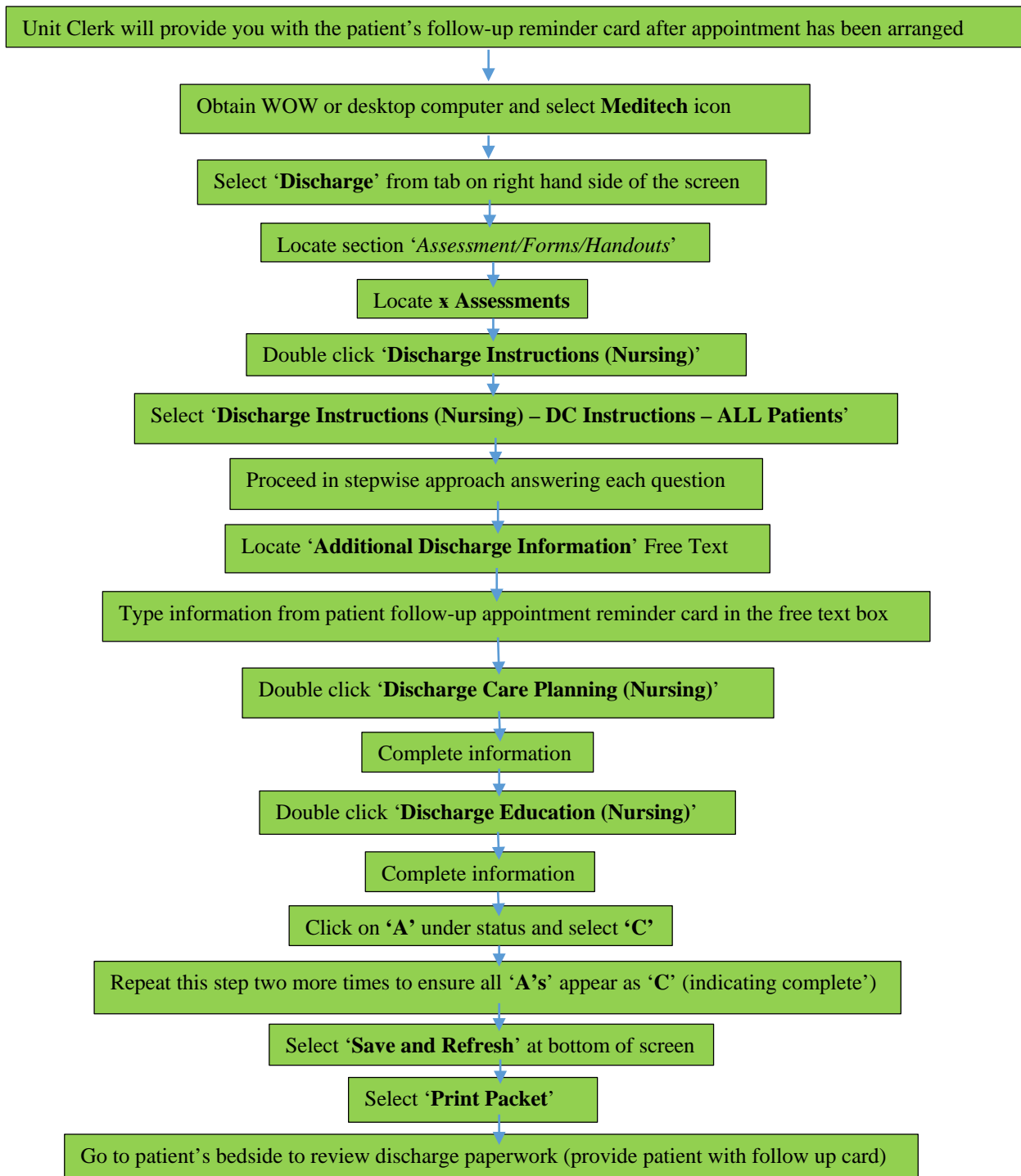


Figure 10. Algorithm for primary care nurse.

Appendix E

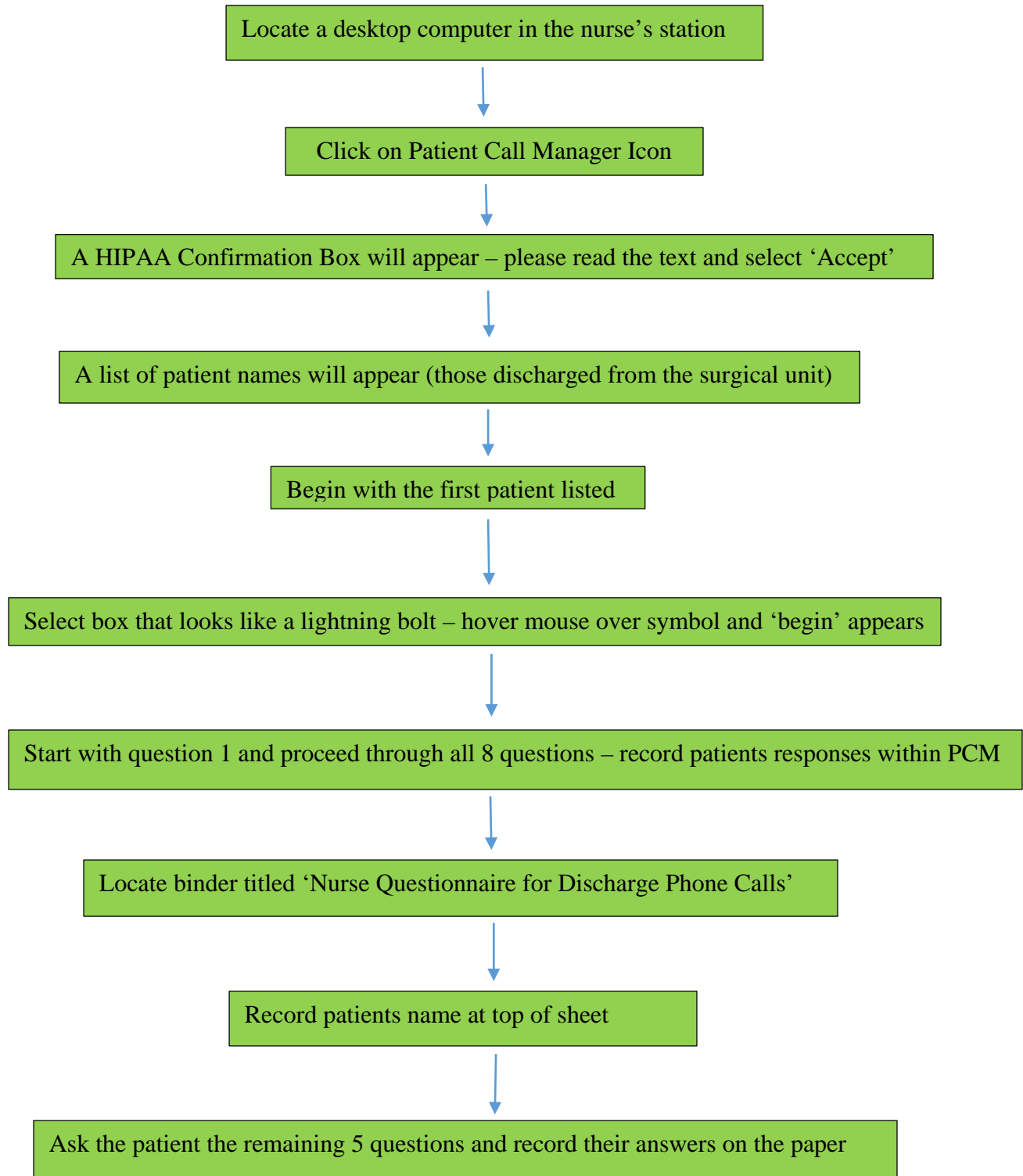


Figure 11. Algorithm for discharge phone calls.

Appendix F

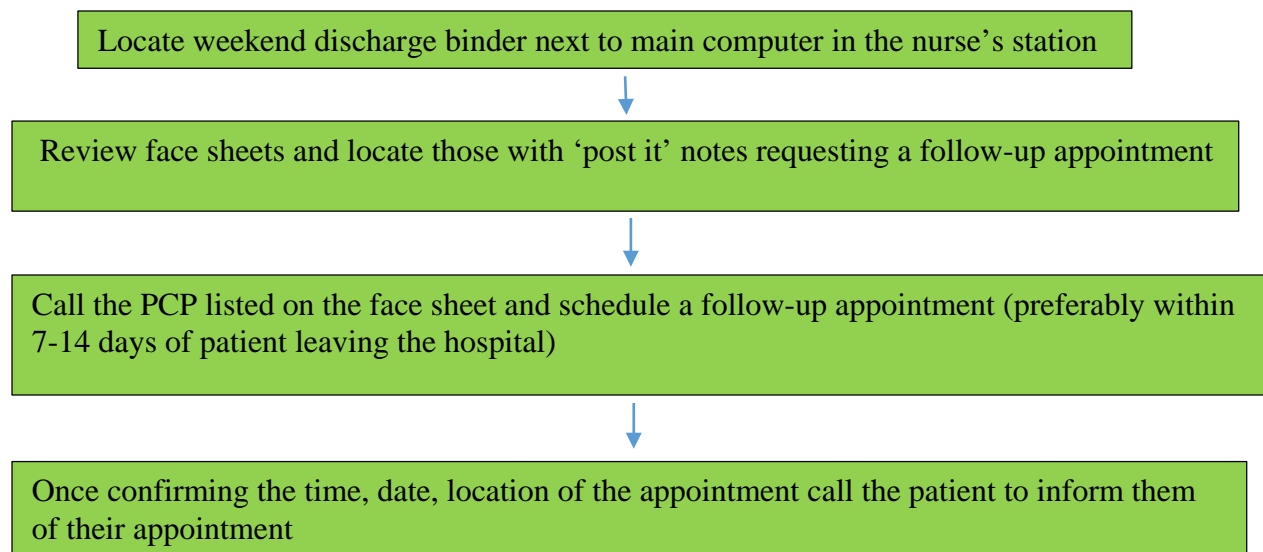


Figure 12. Algorithm for unit clerk to follow on Monday.

Appendix G

Follow-up Appointment

With your provider: _____

At this location: _____

Mon Tue Wed Thu Fri

Date: _____ at _____ a.m.
p.m.

To reschedule your appointment please call your provider at:

Figure 13. Follow-up appointment cards.

Appendix H

Patient Name: _____ **AI:** _____

1. Did you have a follow-up appointment arranged with your PCP before you were discharged from the hospital?

Yes	No	Comments:
-----	----	-----------

2. Have you already followed-up with your PCP?

Yes	No	Comments:
-----	----	-----------

3. Do you plan on attending your follow-up appointment?

Yes	No	Comments:
-----	----	-----------

4. Did you receive any medication prescriptions when you were discharged from the hospital?

Yes	No	Comments:
-----	----	-----------

5. Were you able to fill your prescriptions?

Yes	No	Comments:
-----	----	-----------

Figure 14. Nurse questionnaire for discharge phone calls.

Appendix J

American Association of Critical-Care Nurses

Unit Change Readiness Assessment

	Not at all	To some extent	To a great extent
--	------------	----------------	-------------------

A. Quality and safety as priorities

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| <ul style="list-style-type: none"> • We have a shared sense of purpose that quality and patient safety are our highest priorities. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> • Quality and patient safety are included in our unit’s main goals or pillars of performance. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> • The unit leadership is actively involved in reviewing our unit’s performance on quality and patient safety measures. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> • We have open communication among physicians, staff and patients about quality and patient safety. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <p><i>Overall, our unit’s organizational structure places a high priority on quality and patient safety.</i></p> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

My concerns in this area are:

B. Management processes

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| <ul style="list-style-type: none"> • Our management processes emphasize meeting quality performance standards and provide the resources we need for supporting quality improvement. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> • We have an anonymous, non-punitive way of reporting events and errors. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

	Not at all	To some extent	To a great extent
<ul style="list-style-type: none"> • Our leadership responds actively when patient safety issues are identified. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • We document patient safety standards in protocols and guidelines that are clear and easy to understand. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Overall, our unit’s management processes are designed to place a high priority on quality and patient safety.</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

My concerns in this area are:

C. Unit leadership

<ul style="list-style-type: none"> • Everyday events are connected to our larger purpose through stories and rituals. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • Our unit governance structures and practices minimize conflict between the multiple missions and priorities of the various professional disciplines. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> • Our unit is led as an alliance between the leadership team and the clinical team. 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Overall, leaders within our unit are passionate about service, quality and safety and have an authentic, hands-on style.</i></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

My concerns in this area are:

Not at all To some extent To a great extent

D. Training

We provide ongoing training for staff that helps them build skills to improve quality and patient safety.

My concerns in this area are:

E. Accountability

- Our unit provides incentives or rewards (financial or nonfinancial) for high levels of patient safety.
- Our unit leaders (such as nursing, pharmacy, physicians) accept responsibility for quality and safety.
- We have accountability, innovation and redundant processes to ensure quality.
- Our unit has a policy of transparency and information is shared at all levels (from top to bottom and vice versa).

Overall, our leaders are accountable for service, quality and safety

My concerns in this area are:

Not at all To some extent To a great extent

F. Data systems

Overall, we have effective data systems: they are functional and allow us to obtain data when needed.

My concerns in this area are:

G. Results focused

- We continuously strive to improve and we benchmark our performance against external standards as a measure of success.

- In decision-making, we focus on the likely results to guide our choice of performance improvement approach, rather than always following a particular approach (such as Six Sigma).

Overall, we are driven to focus on results.

My concerns in this area are:

H. Collaboration

- The relationships between administration, physicians, nurses and other staff are typically collaborative in our unit.

- We provide frequent recognition of employee contributions at every level.

	Not at all	To some extent	To a great extent
• Employees value each other's critical knowledge when problem-solving.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• We have a sense that teamwork among staff members is encouraged.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Overall, we have a sense of collaboration among all staff in working to improve patient safety.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

My concerns in this area are:

Figure 15. Unit change readiness assessment survey.

Appendix K

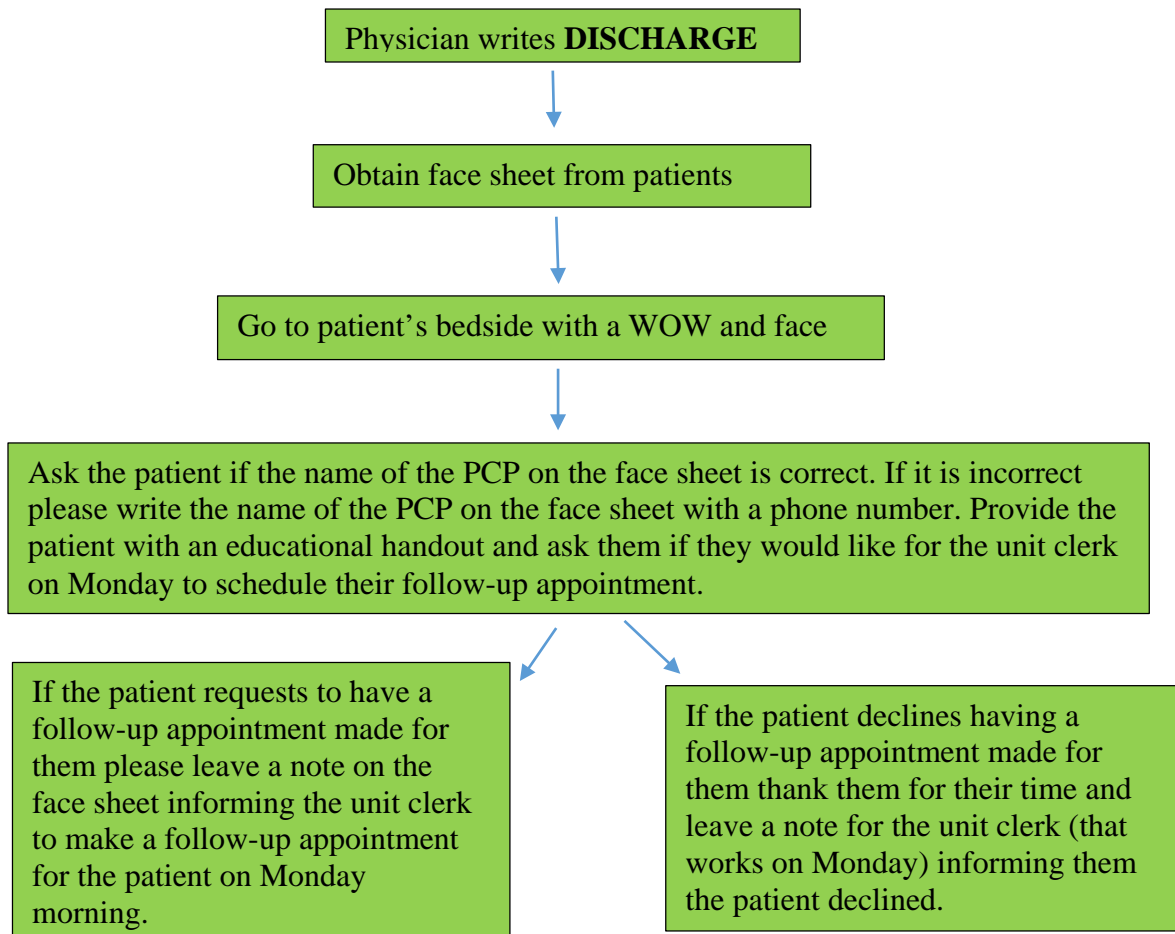


Figure 16. Algorithm for unit clerks to follow for weekend discharges

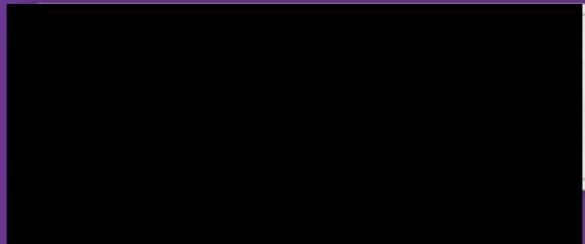
Appendix L

On behalf of your care team
we want you to know that it
has been a privilege caring
for you!



Following Your Stay

Your MedSurg Team.



Things to know after your stay.

Follow Up

Following up with your provider is very important and we would like to assist you in scheduling an appointment. Prompt follow-up will allow your provider to:

- Continue monitoring your condition after discharge.
- Review your medication list.
- Complete any additional testing.

Attending your follow-up appointment decreases the risk of being re-admitted to the hospital.

Discharge Phone Call

You will also receive a discharge phone call shortly after you return home. One of our nurses will be calling to check on you and answer any questions you might have.

Call your provider immediately if you develop:

- Fever of 101 degrees or higher
- Severe or uncontrollable pain
- Chills
- Nausea
- Vomiting
- Swelling/redness/foul odor to a surgical site
- Trouble breathing



Medication

You may have been prescribed antibiotics and pain medication. Things to know when taking these medications:

Antibiotics

If you were prescribed an antibiotic, be sure to take it exactly as directed.

Pain Medication

If you were prescribed pain medication, you may experience constipation.

Additionally, if you have been given any new medications, make sure to tell your provider about these.

The [redacted] team is here for you as you recover. If you have any questions or concerns please call: [redacted]



Figure 17. Patient educational handout.

Appendix M

Standard Work Document

Process:	Arranging Follow-up Appointments
Staff Involved:	Unit Clerk and Nurse Process
Date:	6/13/2016



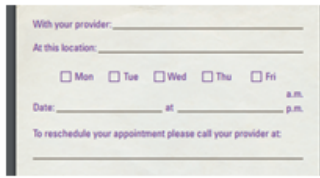
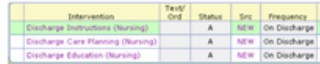

Step:	Time:	Process Explained:	Example:																				
1	248 sec	<p>Unit Clerk obtains Face Sheet from Patient Chart, obtains WOW, and walks to patients room</p> <p>*Patient is set up on hospital portal</p> <p>*Name of PCP is confirmed</p> <p>*If patient does not have a PCP the patient is provided [redacted] handout</p>	 <p>Patient Portal</p>																				
2	164 sec	<p>Unit Clerk calls PCP office to schedule follow-up Appointment</p> <p>*After confirming appointment Unit Clerk fills out follow-up card</p>																					
3	10 sec	<p>Unit Clerk gives completed card to primary care RN</p>																					
4	420 sec	<p>Primary Care RN completes discharge paperwork</p>	 <table border="1"> <thead> <tr> <th>Intervention</th> <th>Task/Ord</th> <th>Status</th> <th>Svc</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>Discharge Instructions (Nursing)</td> <td></td> <td>A</td> <td>NEW</td> <td>On Discharge</td> </tr> <tr> <td>Discharge Care Planning (Nursing)</td> <td></td> <td>A</td> <td>NEW</td> <td>On Discharge</td> </tr> <tr> <td>Discharge Education (Nursing)</td> <td></td> <td>A</td> <td>NEW</td> <td>On Discharge</td> </tr> </tbody> </table>	Intervention	Task/Ord	Status	Svc	Frequency	Discharge Instructions (Nursing)		A	NEW	On Discharge	Discharge Care Planning (Nursing)		A	NEW	On Discharge	Discharge Education (Nursing)		A	NEW	On Discharge
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5	300 sec	<p>Primary Care RN reviews paperwork with patient and provides patient with follow-up card</p>																					

Figure 18. Standard work document for follow-up appointments.

Appendix N

Standard Work Document

Process:	Discharge Phone Call
Staff Involved:	RN Process
Date:	6/13/2016





Step:	Time:	Process Explained:	Example:
1	30 sec	RN logs on to desktop computer and selects 'patient call manager'	
2	20 sec	RN selects patients name, telephone icon, and dials patients phone number	
3	325 sec	RN reviews discharge questionnaire with patient and documents responses	
4	10 sec	RN files questionnaire in 'Nurse Discharge Phone Call' Binder	

Figure 19. Standard work document for discharge phone calls.