TRANSITIONAL CARE COACH PROGRAM EVALUATION AT A SOUTHWEST URBAN MEDICAL CENTER

by

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DEDICATION

This project is dedicated to my family. To my children, who have endured many hours of my absence, both physical and emotional. Each of you are capable of far more than you can imagine. Do not let anything get in the way of going after your dreams. To my parents, who have shown endless amounts of encouragement and understanding. Finally, to my husband, the hammock and lemonade await you.

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ABSTRACT

In an effort to reduce hospital 30-day readmissions a Transitional Care Coach Program (TCCP) was developed in 2014 at a Southwest Urban Medical Center. The CDC Framework for Program Evaluation (2012) applies insight and experience gained from past program experience to effect change in practice and improve patient outcomes. The evaluation seeks to determine TCCP utilization, to assess its impact on 30-day readmission rates for high-risk patients, to inform stakeholders of a viable follow-up program, and to determine evidence-based interventions for program improvement. This TCCP program evaluation describes characteristics of patients who participated in the program, assesses whether interventions were delivered as intended, and determines if interventions reduced hospital 30-day readmission rates compared to readmission rates prior to program implementation. Descriptive statistics are used to describe the patient population, health status, and program utilization. For the diagnoses of acute myocardial infarction (AMI), chronic obstructive pulmonary disease (COPD), heart failure (HF), and pneumonia (PNA), Chi-square test analyses were performed to compare 30-day readmission rates of the TCCP participants and readmission rates for this medical center for the time period prior to program implementation. The primary finding of this program evaluation is an overall numerical decrease in hospital readmission rate by 3% compared to the baseline data. Although the change (a decrease) was in the desired direction, the degree of change was not statistically significant based on pooled data. A statistically significant decrease was observed only for the AMI diagnosis. However, as any decrease in readmissions decreases the financial burden to both the organization and the patient, the TCCP appears to have had a positive impact. It is recommended that a renewed TCCP be conducted to allow for (1) an increased timespan for data collection, (2) an increased

number of medical categories assessed to allow for more non-parametric statistical analysis (e.g. adding categories of Total Joint Replacement and Sepsis diagnoses), (3) tracking of number of days to readmittance to allow for improvement to be measured and analyzed beyond a single dichotomous category. Evidence-based recommendations have been made to continue and improve interventions that further reduce hospital readmissions.

INTRODUCTION

Currently our loved ones suffering from chronic illnesses may occupy the last years of their lives cycling in and out of hospitals and transitioning between multiple health care providers, which can bleed out the remaining financial resources they have worked their lives to save. We can improve the quality of their final years by empowering them to manage their chronic illnesses, and by keeping them comfortably at home instead of unnecessarily in acute care facilities. Over six million people require constant support from family, social, and medical support systems in their communities (Naylor et al., 2013). That number will increase substantially as the United States Department of Health and Human Services estimates there will be over 150 million Americans suffering from one or more chronic illnesses by 2020 (Berry et al., 2011). Undoubtedly, patients with chronic illness will sacrifice financial resources on medical needs, but their resources should not be depleted on readmissions to, and treatment in, hospitals if their care can be managed at home or in assisted living facilities where their quality of life can be maximized. One of the goals of the Patient Protection and Affordable Care Act of 2010 is to reduce readmission rates by 20% (CMS, 2015). The medical community will fail to reduce readmissions unless they empower the chronically ill patients to manage their own care. Partnering with the patient to ensure safe transitions of care will facilitate this empowerment, reduce readmissions, conserve patient and community resources, and improve quality of life. (Hocutt, 2015)

Patients with chronic illness comprise a vulnerable population because they require continual and detailed monitoring to address their health and social needs if they are to successfully self-manage their health from home. Chronically ill patients are particularly susceptible to adverse events such as exposure to contagious illnesses, medication errors, or

worsening symptoms during transitions of care (Naylor, Aiken, Kurtzman, Olds and Hirschman, 2011). In order to improve patient outcomes and reduce adverse events after a hospitalization, such as readmission within 30-days, these patients require careful management of their needs during transitions of care. This program evaluation describes a regional medical center's transitional care program and outlines a plan to improve program implementation and evaluation of the effect the program may have had on outcomes, using 30 day readmission rates as a proxy.

Background

Cost

Hospital readmissions are costly and associated with poor care (Kruse et al., 2013). Centers for Medicare and Medicaid Services (CMS) estimate approximately 20% of Medicare payments (totaling over $17 billion) are spent for avoidable hospital readmissions (Jenks, Williams, and Coleman, 2009). The implementation of the Patient Protection and Affordable Care Act (PPACA) established the Hospital Readmission Reduction Program (HRRP) that imposes financial penalties to incentivize the reduction of avoidable hospital readmissions (Joynt, Sarma, Epstein, Jha, & Weissman, 2014). Centers for Medicare and Medicaid Services (CMS, 2015) have established a goal to reduce 30-day hospital readmissions by 20% as compared to readmission rates in 2010. Hospitals are responding to this potential reduction in Medicare reimbursement by implementing programs to address avoidable 30-day readmissions.

All-cause hospital readmissions cost over $41 billion in 2011 (Hines, Barrett, Jiang & Steiner, 2014). The three diagnoses currently associated with the highest number of readmissions are congestive heart failure, sepsis, and pneumonia (Hines et al., 2014). The cost of hospital readmissions is enormous and the financial toll it takes on patients, communities, and hospitals consumes limited resources. Not only are these patients spending inordinate amounts of

time at providers' offices, laboratories, and pharmacies, but each hospital admission imposes personal financial expense and hardship. Hospital readmissions are financially burdensome for both patients and hospitals which significantly impact quality of life for these patients and limit the hospital resources available to all patients. Hospitals and their local communities will present a multitude of challenges, some generalizable to all communities and some unique to each, which must be addressed to achieve significant reductions in readmissions. However, only some challenges will be generalizable to all hospitals and communities. The evidence presented in the literature review below indicates that the best evidence-based interventions to implement can only be determined by assessing the hospital and its specific community. The challenge to reduce hospital readmission rates nationwide, therefore, is substantial.

Indicators for Successful Interventions

Patients with chronic illness often have complex comorbidities, polypharmacy, multiple providers, and challenging social circumstances that result in a high-risk for readmission. These patients frequently utilize acute care services for symptom management. A systematic review by Verhaegh et al. (2014) identified aspects of care transitions that help reduce adverse events and hospital readmission. These authors concluded that high-intensity interventions for successful care transitions could effectively reduce hospital readmissions. These interventions should, at a minimum, include nursing care coordination, communication from hospital to community provider, and a provider home visit within three days after discharge (Verhaegh et al., 2014). Any miscue these patients experience with care transitions compromises the integrity of their care and places them at greater risk for readmission.

Transitional Care Program

The innovation of a Transitional Care Program (TCP) has evolved out of necessity to ensure continuity of care, prevent adverse outcomes, and reduce hospital readmissions (Naylor et al., 2011). Effective components of TCP are unique and should be tailored to the patient population served by the hospital. Skillful communication is required to engage the patient and properly inform providers in the community (Mansukhani, Bridgeman, Candelario, & Eckert, 2015 & Naylor, Hirschman, O'Connor, Barg, and Pauly, 2013). However, thorough and effective communication must also be compliant with the Health Information Portability and Accountability Act (HIPAA) of 1996 designed to protect patients against improper use of their medical records. An extensive review of the literature is presented below.

Local Impact

This Southwestern regional medical center serves a moderate to high-risk socioeconomic population that includes both urban and rural communities. The 30-day hospital readmission rate has traditionally been comparable to the national average for diagnoses of heart failure, myocardial infarction, chronic obstructive pulmonary disease, hip and knee replacement, and pneumonia (Medicare.gov Hospital Compare, n.d.). The Regional Medical Center Community Benefit Report 2015 and 2016 Plan (2015) lists priority goals that include improving chronic disease management, reducing hospital admissions and readmissions, and improving continuity of care and care transitions. Evaluating the pilot Transitional Care Coach Program (TCCP) aligns with the institution's Community Needs Assessment and Hospital Vision to identify areas of opportunity for further improvement of chronic illness care and reduction of financial burdens to both patients and the hospital.

Purpose

This project evaluates the pilot Transitional Care Coach Program (TCCP) at a Southwestern regional medical center, intended to reduce the 30-day hospital readmission rate. The goal is to better understand the patients who utilized the program, the delivery of program services, and the impact of program utilization on patient outcomes, and specifically 30-day readmission rates. Given the diverse needs of the community that this medical center serves (including urban versus rural and specific diagnoses), this evaluation will include a detailed review of the patient population. These data will provide information to Transitional Care Program members and medical center administrators for program improvement and justification for program continuation. Ultimately the goal of this program is to reduce hospital readmissions by 20% in order both to meet the goals set by CMS and also to improve healthcare outcomes for patients and the community. Currently, a formal program evaluation has not yet been conducted.

Purpose Statement

The Purpose of this Doctor of Nursing Practice project is to provide a program evaluation of the TCCP to better understand the utilization of the program, to inform stakeholders of a viable follow-up program, and to determine evidence-based interventions for program improvement and further reduction of hospital 30-day readmission rates. These findings will inform future efforts to improve care transitions.

Study Questions

1. What are the characteristics of patients (e.g., age, gender, diagnoses) who participated in the TCCP?
2. Did the TCCP deliver interventions as intended to high-risk for readmission patients?

3. During the TCCP were the hospital's 30-day readmissions reduced compared to the readmission rate prior to program implementation?

LITERATURE REVIEW

Effective transitional care interventions must be identified and assessed for potential matches to specific needs at the local level. Literature searches were performed in PubMed, CINAHL, and EMBASE using the search terms transitional care, hospital readmission, chronic illness, medication reconciliation, shared-decision making, health literacy, and patient engagement. The search was narrowed to include peer-reviewed studies published in English within the past six years (2010 to 2016). A total of 13 studies were evaluated to identify both effective transitional care strategies for implementation and also potential barriers to implementation and effectiveness (See Appendix A). Levels of evidence rating on the accepted studies were determined using the Melnyk and Fineout-Overholt (2005) rating scale.

Challenges to Transitional Care Interventions

Acknowledging challenges to transitional care interventions is an important step in identifying effective options to implement. Burke, Link, Bails, Fang, and Janjigian (2016) performed a retrospective chart review to determine causes for 335 unplanned hospital readmissions within the first seven days. Over 46% of hospital readmissions were determined to have an unpredictable cause for readmission. Patient behavior accounted for 18.8% of readmissions, and 16.7% of readmissions were related to a deficiency in the discharge process. Patients leaving against medical advice accounted for 11.6% of readmissions and 6.6% of readmissions were determined to be unnecessary. This study alone reveals the significance of the challenges that are facing hospitals seeking to reduce readmissions. Almost half of hospital readmission may be outside the ability of the hospitals to predict or control.

Patient Level Challenges

Patients with complex illnesses and multiple comorbidities are frequent consumers of healthcare and often the focus of hospital readmissions. Hung and Leidig (2015) performed a qualitative review of a transitional care pilot program implemented to reduce hospital readmissions. A contextual factor described was that some patients who qualified for the services were too ill to coach. A systematic review evaluating health literacy strategies found similar barriers to effective transition and self-care (Cloonan, Wood & Riley, 2013). These authors cited complex comorbid conditions and complicated treatment plans as barriers to effective patient education for successful self-care at discharge. A qualitative case study review by Joynt, Sarma, Episein, Jah, and Weissman (2014) cites the diversity in patient needs as a contributing factor to failures of transitional care implementations to reduce hospital readmissions. This study reveals the reality that complex patients with chronic illnesses require interventions that are tailored to their specific needs in their home environments. Patients' level of complexity should be taken into account and their specific needs addressed with personalized interventions to prevent hospital readmissions. The more diverse and specific the needs of patients, the more difficult creating a streamlined and economically practical TCP may become.

Operational Level Challenges

Reducing readmissions can also be difficult from the operational level. Financial resources are required in order to implement effective interventions. Three studies cite lack of hospital leadership support, lack of finances, and lack of staff as barriers to a successful transitional care implementation (Cloonan, Wood, & Riley, 2013; Hung & Leidig, 2015; Joynt et al., 2014). Furthermore, four studies found that interventions (e.g. telemedicine, comprehensive hospital based intervention, and interdisciplinary transition team) implemented in the hospital setting

alone without care continuity in the community were unsuccessful in reducing 30-day hospital readmission rates (Joynt et al., 2014; Linden & Butterworth, 2014; Takahashi et al., 2012 & Arbaje et al., 2010).

Effective Interventions

A systematic review and meta-analysis identifying effective transitional care interventions to reduce 30-day hospital readmissions addressed high-intensity interventions (Verhaegh et al., 2014). High-intensity interventions consist of care coordination from a nurse, communication from the hospital to the community provider, and a follow-up visit in the home within 72 hours of discharge. Leppin et al. (2014) performed a systematic review and meta-analysis from 42 world-wide randomized controlled trials and found that interventions promoting self-care, using five unique components, and involving at least two providers to implement interventions were the most effective at reducing hospital readmissions. Examples of intervention components that are specific to the needs of the individual patient can include disease specific education, home health care visits, follow up with providers in the community, medication reconciliation, telephonic follow-up, telemonitoring, and others (Leppin et al., (2014). Jackson, Trygstand, DeWalt, and DuBard (2013) observed successful transitional care based on risk stratification and access to primary care for follow-up after discharge.

Effective patient discharge education also promotes effective interventions. Cloonan, Wood, and Riley (2013) found that to improve health literacy during the discharge process, verbal communication should be slow and free from medical jargon, written material must be easy to read, and a "teach back" approach to assess patient understanding should be incorporated. Hung and Leidig (2015) and Cropley (2012) concluded that communication and development of

a working relationship with the patient and community provider contribute to successful transitional care interventions.

Incomplete medication reconciliation, order discrepancies, and adverse events contribute to hospital readmissions (Phatak et al., 2015). Phatak et al. (2015) found that involving a pharmacist to perform medication reconciliation, education, and to provide three phone consultations after discharge resulted in decreased medication discrepancies with concomitant decreased hospitalizations and emergency room visits.

Strengths in Research

There is a common thread in the literature regarding the need for communication skills amongst multiple stakeholders in order to optimize the patient's ability to remain in their home environment after a hospitalization. This communication must exist between the patient and caregivers in the hospital, the patient and their community healthcare providers, the hospital providers and community providers, and the patient and pharmacist (inpatient and outpatient).

Gaps in Research

Despite the results from Leppin et al. (2014) which promote interventions that strengthen patient self-care, there is little evaluation of patient engagement and patient-centered care as components of transitional care in reducing hospital readmissions rates. Communication is necessary, but if the patient does not (or cannot) understand or self-manage a chronic illness, transitional care interventions will be less effective at reducing readmission rates.

Collaboration with community stakeholders (e.g. primary care practitioners) should promote successful patient self-care. The literature suggests the importance of this component. However, few research studies include this component in their transitional care interventions. Linden and Butterworth (2014) acknowledge the lack of follow-up with primary care providers

as a potential barrier to reducing hospital readmissions in their study. Jackson, Trygstad, DeWalt, and DuBard (2013) found that transitional care was effective at reducing hospital readmissions and their study participants all had access to a primary care provider for follow-up after discharge. Community care continuity must be a consideration when developing transitional care interventions.

Culturally relevant care is not reviewed in the literature. Successful transitional care interventions are not generalizable among all cultures. Specifically in this program evaluation, a significant member of our community is the Gila River Indian Community. Forming interpersonal relationships are fundamental to their culture (Martin, 2016). Interventions developed without making interpersonal connections with the hospital or community health workers may be largely ineffective at achieving any change much less at reducing readmissions.

KEY CONCEPTS

Transitional Care Definition

Transitional care is described as services provided to patients intended to promote continuity of care, prevent poor outcomes in vulnerable populations, and encourage safe transitions from one level of care to another (Naylor, Aiken, Kurtzman, Olds, & Hirschman, 2011). This definition of transitional care is broad and generalizable to many institutions. An evidence-based assessment of the needs of each facility and the specific community it serves is required so that transitional care interventions provided to vulnerable patients may reasonably be expected to improve patient outcomes.

Readmission Team

The key stakeholders for this project include the Care Coordination Director, the Senior Director of Nursing, the Chief Medical Officer, staff physicians, community physicians, the

Social Work Director, the Director of Community Services, and the Transitional Care Coach. Representatives of each discipline form the Readmission Team. The Readmission Team meets regularly to further the efforts of this hospital and its community improvement project.

High-Risk for Readmission Diagnoses

The Centers for Medicare and Medicaid Services has determined the top five diagnoses to track for readmissions are heart failure (HF), myocardial infarction (MI), chronic obstructive pulmonary disease (COPD), total joint replacement, and pneumonia (PNA) (CMS, 2016). These diagnoses were used as consideration to receive transitional care services during the program. The facilities' electronic health record utilizes a readmission-risk tool embedded in the admission assessment. The admission assessment assigns a score based on items in the admission assessment such as polypharmacy, end-stage disease processes, multiple comorbidities, etc.. A score of low (0-1), moderate (2-4), or high (>4) is assigned and scores of 2 or above triggers a notification to Care Coordination of the patient status.

Socioeconomic Considerations

Socioeconomic situations that were considered to put patients at a high risk for readmission were lack of primary care physician, lack of health insurance, polypharmacy (more than four medications due to risk of inability to obtain all medications and potential adverse drug reactions), and lack of transportation for follow-up appointments.

FRAMEWORK FOR PROGRAM EVALUATION

This program evaluation will utilize the Centers for Disease Control and Prevention (CDC) Framework for Program Evaluation in Public Health (CDC, 1999). The CDC program evaluation framework was developed to provide insight from past program experience, apply that insight and experience to current practice, and ultimately effect change in practice for improved patient

outcomes (CDC, 1999). The comprehensive framework for program evaluation must provide the stakeholders insight into the full scope of the issue, which is hospital readmission reduction through improved patient outcomes. When sufficient insight is gained, progress toward changing prior practice and effecting a reduction in hospital readmission rates can be made more easily. The CDC (2012) steps and standards encompass the evaluation process (see Figure 1). The core standards are incorporated with each step to bring integrity to the evaluation process. Framework standards and steps are reviewed in more detail below.

Figure 1. CDC (2012) Framework for Program Evaluation

Framework Standards

Utility, feasibility, propriety, and *accuracy* are core CDC Framework for Program Evaluation standards that promote a quality evaluation (CDC, 1999). *Utility* standards ensure the evaluation fulfills the intended usefulness for people who are impacted by the results. Engagement with program stakeholders aims to ensure that this evaluation focuses on key information and indicators that will aid in program improvement and justify continuation. *Feasibility* standards address the need for the evaluation to provide viable and practical

recommendations. *Propriety* standards cover ethical considerations involved with human subjects, distribution of findings, and how to address conflicts that occur during any step of the process. Confidentiality of patients and HIPAA compliance was ensured through recording of de-identified data only. Approval for this evaluation was secured from both the healthcare institution and University of Arizona IRB. *Accuracy* standards ensure that precise information and findings are conveyed throughout the evaluation and include the evidence-based recommendations. Evaluation questions were developed and systematically answered using appropriate quantitative research methodology; findings were evaluated in the context of evidence-based recommendations for transitional care. Elements of these framework standards were incorporated in each step of the evaluation process.

Framework Steps

The steps involved with CDC Framework for Program Evaluation (1999) begin and end with engaging the stakeholders. Close involvement with the stakeholders facilitates partnerships between stakeholder elements so that expectations may be clearly understood and disseminated while concerns can be recognized and addressed before effective communication may be compromised. Distant involvement from key stakeholders endangers the program outcomes and objectives (CDC, 1999). The evaluation process is a team effort and the stakeholders are key members of that team. Stakeholders should include those involved in administrative leadership, members affected by the program, and implementation program staff.

Program description is necessary for the stakeholders to understand the facets and objectives to evaluate. The description should include the need, effects, activities, resources, stages of development, context, and logic model required to administer the program (CDC, 1999). Stakeholder involvement in generating and defining the program description engages

participants and may optimize the ability to achieve reasonable results. Collaboration among team members is crucial to the production of an evaluation with results that have merit, reproducibility, and sustainability.

Evaluation design is the next step in the process. Evaluation design requires a description of the purpose and understanding of the desired outcome. Purposes for program evaluation include insight into current practice, attempts to change practice, assessment of program effects, or stakeholders' desire to make a change (CDC, 1999). The design is meant to connect the purpose of the evaluation with an evidence-based outcome to facilitate positive patient outcomes.

Credible evidence must be gathered so that program information that is relevant for stakeholders may be effectively presented. The strength of outcomes improves when credible evidence is sought and obtained (CDC, 1999). Valid recommendations are a result of credible evidence.

Thereafter, conclusions of the evaluation must be justified. Conclusions require a validation process agreed upon by the team members to provide merit to the results. Conclusions are based on the stakeholders' evaluation of which results are most likely to affect outcomes (CDC, 1999). Analyzing the conclusions provides the factual bases for discerning patterns of evidence and for understanding the desired outcomes. Further recommendations are developed from the conclusions.

Ensuring use and sharing lessons learned are important steps in the evaluation process. This process demands communication to process feedback, follow-up, disseminate, and discuss potential uses of the results from the evaluation (CDC, 1999). Results are useless if they are not shared and disseminated, even if the results are unexpected or undesirable (CDC, 1999). Sharing

the results with the stakeholders provides an opportunity to come together as a team, review the information and make evidence-based recommendations to improve outcomes.

CDC Program Evaluation Framework Effectiveness

Examples of the CDC program evaluation effectiveness are evident in the literature. Honeycutt et al. (2015) evaluated seven prevention research centers that applied the CDC framework for their program evaluations. This study found the CDC framework provided evidence-based approaches to guide evaluation in various public health settings. Rochester et al. (2011) used the CDC program evaluation framework to evaluate the feasibility of a standardized survey in a National Comprehensive Cancer Control program. Rochester and colleagues found value in performance measure feedback to improve surveys. Systematic evaluation promotes continual quality improvement projects.

CDC PROGRAM EVALUATION FRAMEWORK FOR TRANSITIONAL CARE COACH PROGRAM EVALUATION

A systematic approach to evaluating the Transitional Care Coach Program will identify ways to implement best practices and improve patient outcomes to reduce hospital readmissions if the program is successful. The CDC Program Evaluation Framework is a concise process to determine the results of the program, develop beneficial follow-up strategies, and plan for evidence-based interventions for the future (CDC, 1999). Significant effort was required to trial this pilot program. Using the CDC Program Evaluation framework to assess the trial will allow evaluators to extract the greatest value from its approach and results, and reveal effectiveness of interventions. The following will align the steps of the CDC Program Evaluation framework with the Transitional Care Coach Program Evaluation providing additional information in each step.

Step 1. Engaging the Stakeholders

The Senior Director of Nursing was the primary stakeholder and advocate of this pilot program with support from the Chief Nursing Officer, Readmission Team Members, and with financial support from the Corporation. Personal communication with the Senior Director of Nursing and Readmission Team revealed a need to evaluate the effectiveness of this novel approach, using a Transitional Care Coach Program, to partner with patients in order to reduce readmissions for program improvement and determine program continuation. Further evaluation was needed to assess the readmission population, determine the effectiveness of the interventions, and make recommendations for future implementation.

Step 2. Describe the Program: Transitional Care Coach Program Description

From August 2014 to November 2014, a modified Transitional Care Coach Program was piloted at a Southwestern regional medical center. Three Registered Nurses worked seven days a week to provide disease specific education, ensure connection to community resources, and improve continuity of care, with the goal of reducing 30-day all-cause readmissions in high-risk for readmission patients. A transitional care algorithm was developed (Figure 2) and used to identify patients that were high risk for readmission and to apply appropriate interventions to ensure continuity of care after discharge.

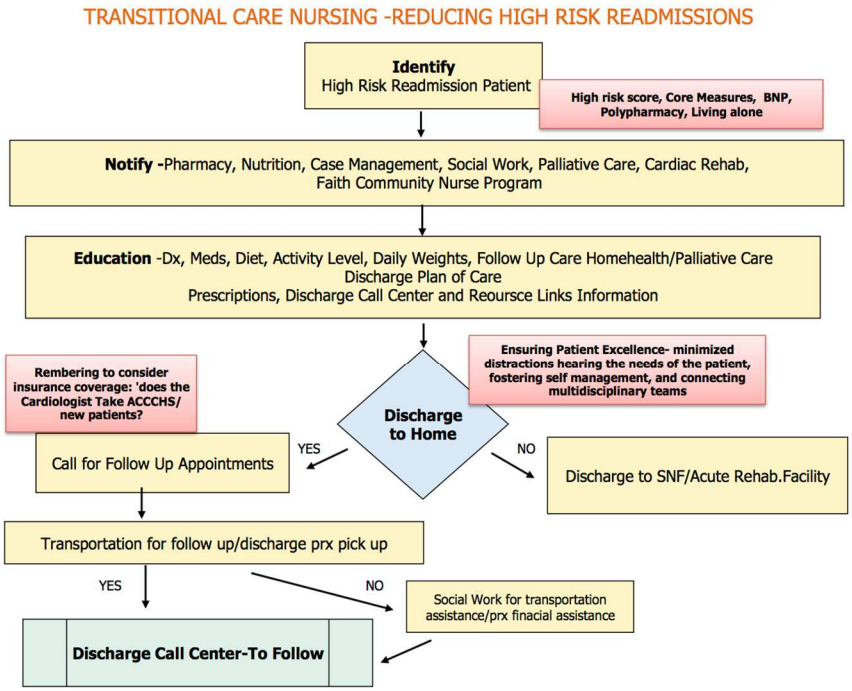

Figure 2. Transitional Care Algorithm (TCCP, 2014)

Program Overview

The Transitional Care Coach collaborated (as appropriate for each patient situation) with the Registered Nurse Care Coordinator, Discharge Planner, Pharmacist, Dietician, Social Work, Palliative Care, Cardiac Rehabilitation, and Faith Community Nurse Program to ensure necessary interventions had been addressed during their stay for safe and effective discharge to home. Patients received diagnosis specific education, a discharge plan of care, appropriate community resources (e.g., transportation to follow-up appointments, meals-on-wheels, assistance with cost of medication), and the Discharge Call Center number for questions after discharge. Patients with AMI were scheduled a follow-up appointment with the Cardiologist. Patients were contacted two days after discharge to ensure follow-up appointments were scheduled, medications were able to be filled at the pharmacy, and home health or palliative care

visits were scheduled. During follow-up calls new medications were reviewed with patients to reinforce understanding of their purpose and side effects, and to answer questions the patient had regarding their discharge instructions, symptoms, or follow-up instructions.

Logic Model

A logic model was developed for the purpose of analyzing the components and implementation of the Transitional Care Coach pilot program (Table 1). The use of a logic model helps to focus on quality and quantity of the program implementation and identify gaps in program objectives (Issel, 2009).

Table 1. Transitional Care Coach Logic Model

Inputs	Activities	Outputs	Short-Term Outcome (14 days)	Long-Term Outcome (30 days)
• Transitional Care RN • High-risk for readmission patient. • Readmission Team Members	• Disease specific education and support conducted by RNs • Medication reconciliation by Pharmacist for patients with HF or MI • Cardiac Rehab for HF and MI patients • Palliative Care consult as appropriate • Provide phone number to Discharge Call Center • Collect data	• Increase patient resources at discharge • Increase patient engagement with discharge process • Enhanced patient knowledge related to disease process and management, including follow-up plan and medication • Accurate medication list with	• Increase patient satisfaction with transitions of care • Increase patient engagement with their health care to achieve patient-centered care • Decrease adverse effects related to medications • Patients taking medications as prescribed	• Improved chronic disease self-management, including follow-up and early recognition of exacerbations or worsening health status • Improved quality of life and function • Decrease 30 day readmission rates

		attention to safety • Appropriate referrals and follow-up with PCP and specialty care (e.g. Cardiac Rehab, Palliative Care	• Improved follow-up with PCP and specialists	

TC = Transitional care, HF = heart failure, MI = myocardial infarction

Informal Evaluation

An informal evaluation of the program was previously conducted by program staff and includes an assessment of areas of opportunities and of lessons learned. This entailed program staff discussing barriers and ways to overcome obstacles such as earlier intervention (e.g., day of admission as opposed to just prior to discharge), improved provider buy-in, and scheduling of follow up with primary care providers.

Step 3. Focus Evaluation Design

Ethical Considerations

Healthcare providers strive to meet the needs of patients by following ethical principles of beneficence and non-maleficence. Hospitals complement this goal by providing a facility for appropriate testing and timely treatment to restore health and allow patients to be discharged to their rightful home and community.

Only de-identified patient information has been recorded. Electronic data has been password protected and kept in a secure, locked location. IRB approval was obtained through the University of Arizona and Regional Medical Center for this project. Patients records were

reviewed and their personal health information kept confidential and used solely for the purpose of this program evaluation. There was minimal risk to the patient by performing this program evaluation. Future patients may benefit from the results and recommendations from this evaluation, including program improvement and continuation.

Program Evaluation Cost

There is no financial cost associated with this program evaluation, which is a requirement of the Doctor of Nursing Practice program at The University of Arizona, College of Nursing.

Methods

This project utilized the CDC Framework for Program Evaluation (CDC, 1999) to conduct a formative evaluation for program improvement and assess the impact of program utilization on readmission rates. Quantitative, retrospective chart-review data from the pilot transitional care program was evaluated to assess program effectiveness and to recommend future program improvements.

Setting

The Southwest regional medical center Community Benefits Report (2015) described the hospital facility and its surrounding service area and identified challenges to provision of medical care. This medical center is a 338 bed acute care facility with Level I Trauma Center, open-heart surgery, neurosurgery, and orthopedics. The medical center serves surrounding urban and rural communities including Chandler, Gilbert, Mesa, Tempe, Ahwatukee, Sacaton, Apache Junction, Casa Grande, Pinal County, Gila River Indian Reservation, and Guadalupe. The community needs assessment revealed a moderate- to high-risk impact for socio-economic barriers and access to medical care. The community challenges that have been identified include "uninsured or underinsured, non-English speaking, high rates of poverty, injuries from violence,

and chronic illnesses" (Chandler Regional Medical Center Community Benefits Report 2015 and 2016 Plan, 2015).

Participants

The TCCP program sought to proactively assist high-risk for readmission patients and community stakeholders manage patient care and reduce baseline readmission rates as more fully described in Step 2, above. All patients who participated in the pilot transitional care program from August 1, 2014 to November 6, 2014 were included in this program evaluation. These dates were based on availability of program utilization data. All patients receiving the Transitional Care Coach Program intervention were first identified as high-risk for readmission using the readmission assessment that is a part of the electronic health record (EHR) and/or a diagnosis of HF, AMI, PNA, or COPD. The readmission assessment was based on the patient's answer to questions and data entered by the admitting nurse upon admission. Socio-economic situations and polypharmacy were also considerations for inclusion for the TCCP services. Based on preliminary reports, an estimated 250 transitional care patients were eligible to be included in this program evaluation. During the course of the program, 261 patients were identified as high-risk for readmission and participated in the TCCP program.

Step 4. Gather Credible Evidence

Data Collection

Participant data were collected on paper report sheets (Appendix B) and from electronic records (EHR and MIDAS bioinformatics data management system). These data included diagnosis (HF, AMI, PNA, COPD), readmission within 30 days (yes/no), program utilization, medication reconciliation, referrals to specialty care and various descriptive statistics as set out in Table 2.

Table 2. Variables Recorded during TCCP Program.

Category	Variables	Data Source
Sociodemographics	Gender, age, race, ethnicity, insurance, distance from the hospital (0-30 miles, 30-60 miles, and 60 or greater miles)	EHR
Health status	Readmission risk level and comorbidities.	EHR and report sheets
Program Utilization	Number of patients, Pharmacy medication reconciliation, cardiac rehab, patient education.	Report sheets
Outcome	Readmission within 30 days	EHR, MIDAS, and Medicare

Data Analysis

Descriptive statistics were used to analyze variables of patient characteristic that utilized the TCCP. Discrete categories of (1) TCC and No Readmission, (2) TCC and Readmission, (3) No TCC and No Readmission, and (4) No TCC and Readmission were evaluated for statistical significance using Chi-square with Yates correction for pooled data and for each diagnosis of AMI, HF, COPD, and PNA. Data for categories (3) and (4) were obtained from the Centers for Medicare Hospital Readmissions Reduction Program database on this medical center's readmission rates for the top five diagnoses (Medicare.gov Hospital Compare, n.d.).

Results

Patient Characteristics

A total of 261 patients were included in this analysis. The patient population (see Table 3) that utilized the TCCP intervention was 44.4% male and 55.6% female. Patients between the ages of 18 to 64 comprised of 40% whereas the geriatric population (65 years and greater) was 60%. Patients race and ethnicity, as self-reported, revealed that the majority of patients were

Caucasian (80.5%) followed by American Indian (7.3%), African American (6.9%), Hispanic (1.9%), Asian (1.5%), Pacific Islander (0.4%), and unknown (0.4%). The majority of patients had health insurance with the greatest being Medicare (59%) followed by Medicaid (14%), dual Medicare and Medicaid (12%), Commercial Insurance (11%) and Veterans Administration (3%); 3% of patients did not have health insurance. Most patients (87.4%) lived within 30 miles of the hospital with 16% living between 30 – 60 miles and 5.4% living greater than 60 miles from the hospital.

Table 3. Patient Characteristics

Category	N	%
Gender		
Male Gender	N = 116	44.4%
Female Gender	N = 145	55.6%
Age		
Age 18 – 64	N = 105	40%
Age 65 – 74	N = 61	23%
Age 74 – 84:	N = 63	24%
Age > 85:	N = 32	12%
Race		
Caucasian:	N = 210	80.5%
American Indian	N = 19	7.3%
African American	N = 18	6.9%
Hispanic	N = 5	1.9%
Asian	N = 4	1.5%
Pacific Islander	N = 1	0.4%
Race Unknown	N = 1	0.4%
Insurance		
Medicare Insurance:	N = 154	59%
Medicaid (AHCCCS)	N = 36	14%
Dual Medicare/Medicaid	N = 31	12%
Commercial Insurance	N = 28	11%
Veterans Administration	N = 4	3%
Self Pay/No Insurance	N = 8	3%
Distance from Hospital		
0 – 30 miles	N = 228	87.4%
30 – 60 miles	N = 19	16%
> 60 miles	N = 14	5.4%

Health Status

The vast majority (90.8%, n = 237) of TCCP intervention patients scored moderate (2-4) to high (>4) risk of readmission on the EHR assessment tool. In fact, only 9% (n = 24) of TCCP patients were initially considered low risk for readmission and later qualified for the intervention based on a high-risk diagnosis. Ninety percent of patients had 2 or more comorbidities and 26% had 5 or more comorbidities. See Table 4.

Table 4. Health Status

Readmission Risk Level		
0 – 1 (Low)	N = 24	9%
2 – 4 (Moderate)	N = 99	38%
> 4 (High)	N =138	52.8%
Comorbidities		
0 – 1:	N = 26	10%
2 – 4:	N = 166	63.6%
5 – 6:	N = 56	21.4%
7 – 8:	N = 13	5%

Program Utilization

Discharge resources utilized varied and included home health services (33%), skilled nursing facility (SNF)/long term acute care (LTAC)/ Acute Rehabilitation (29.5%), and Hospice/Palliative Care (18.4%).

Patients diagnosed with AMI or HF had Pharmacist Medication Reconciliation and counseling (N = 11, 21%), Cardiac Rehabilitation Education (N = 33, 60%), and follow up appointments scheduled (N = 18, 36%). See Table 5.

Table 5. Program Utilization

Cardiac Service Utilization (AMI and HF diagnoses; N = 53)		
Cardiac Rehabilitation Education	N = 33	60%
Follow up appointment scheduling	N = 18	36%
Pharmacist Medication Reconciliation	N =11	21%
Discharge Service Utilization (All diagnoses; N = 261)		
Home Health Services	N = 87	33%
SNF/LTAC/Acute Rehabilitation	N = 77	29.5%
Hospice	N = 48	18.4%

Impact on 30-Day Readmissions

Comparison data for patients who were not participants in the TCCP were obtained from the Centers for Medicare Hospital Readmissions Reduction Program database on this medical center's readmission rates for the top five diagnoses (Medicare.gov Hospital Compare, n.d.). Data on readmission within 30 days of discharge are available for July 1, 2011 through June 30, 2014, prior to program implementation and are calculated to be 15.5% on pooled categories (Table 6).

Table 6. Medical-Center-Specific Readmissions within 30 Days for Period July 1, 2011, through June 30, 2014 (Medicare.gov)

Diagnosis	Readmissions	Discharges
AMI	46	295
COPD	44	306
HF	77	417
Hip/knee	Data Not Available	Data Not Available
PNA	50	383
Total	217	1401
Rate	217/1401=	15.5%

AMI= acute myocardial infarction, COPD= chronic obstructive pulmonary disease, HF= heart failure, hip/knee= total hip or knee replacement, PNA= pneumonia

Discharge and readmission data for TCCP participants across the four medical conditions assessed (AMI, COPD, HF and PNA) are set out in Table 7. During the TCCP, the overall readmission rate decreased by 3%.

Table 7. Readmission Data for August 2014 to November 2014 (TCCP Program Data)

Diagnosis	Readmissions	Discharges
AMI	7	111
COPD	13	94
HF	19	119
Hip/knee	Data Not Available	Data Not Available
PNA	25	188
Total	64	512
Aug. to Nov. 2014 Rate	64/512=	12.5%

To assess the potential significance of this decrease, a 2 X 2 contingency table was constructed for pooled data and for each of the four assessed medical conditions separately as set out in Table 8. Rates of readmissions for program participants were compared to the pre-program implementation rates using a Chi-square test with Yates correction for each of the five (5) contingency tables generated (GraphPad Software, 2017).

Table 8: Contingency Table Parameters

Medical Condition Assessed		Readmitted within 30 Days of Discharge	
		Yes	No
Transitional Care Coach Program	Yes		
	No		

Chi-Square Test

Results of the Chi-square analyses are given in Tables 9 through 13.

Despite the decrease in the pooled readmission rates during the TCCP as compared to baseline data prior to program implementation, the pooled readmission reduction was not significant at (χ^2 = 2.440, p = 0.1183, 1 df) (Table 9). Although all categories showed a decrease in readmission rates, only the AMI readmission rates were statistically significant (χ^2 = 5.558, p = 0.0209) (Table 10).

Table 9. Chi-square (with Yates correction) for All Diagnoses Combined

All	Readmission	No Readmission	Row Total
Transitional Care	64	448	512
No Transitional Care	217	1184	1401
Column Total	281	1632	1913
	χ^2 = 2.440	Two-tailed p value = 0.1183	Not significant at $p < .05$

Table 10. Chi-square (with Yates correction) for AMI

AMI	Readmission	No Readmission	Row Total
Transitional Care	7	104	111
No Transitional Care	46	249	295
Column Total	53	353	406
	χ^2 = 5.338	Two-tailed p value = 0.0209	Significant at $p < .05$

Table 11. Chi-square (with Yates correction) for COPD

COPD	Readmission	No Readmission	Row Total
Transitional Care	13	81	94
No Transitional Care	44	262	306
Column Total	57	343	400
	χ^2 = 0.018	Two-tailed p value = 0.8940	Not significant at $p < .05$

Table 12. Chi-square (with Yates correction) for HF

HF	Readmission	No Readmission	Row Total
Transitional Care	19	100	119
No Transitional Care	77	340	417
Column Total	96	440	536
	$\chi^2 = 0.242$	Two-tailed p value = 0.6231	Not significant at $p < .05$

Table 13. Chi-square (with Yates correction) for PNA

PNA	Readmission	No Readmission	Row Total
Transitional Care	25	163	188
No Transitional Care	50	333	383
Total	75	496	571
	$\chi^2 = 0.231$	Two-tailed p value = 0.6305	Not significant at $p < .05$

Step 5. Justify Conclusions: Discussion

This program evaluation investigated the impact of a transitional care coach intervention on readmission rates. The challenges identified in the literature review align with challenges that are observed in the program evaluation. Patients with multiple comorbidities and frequent utilizers of the medical system prove to be high risk for hospital readmissions which was also observed in Kruse et al. (2013) development of a readmission predictive model.

Tremendous collaboration between disciplines (pharmacy, care coordination, palliative care, bedside nurse, hospital providers and community providers) must take place in order to provide a comprehensive approach to improve transitions of care and further reduce readmissions. The patients that utilized the TCCP intervention were mostly geriatric with multiple comorbidities. Challenges arose due to the unique needs that each patient required due to age and comorbidities. Cloonan, Wood, and Riley (2013) and Hung & Leidig (2015)

identified the challenges of patients with complex conditions and who were difficult to coach. The various needs of complex patients can be difficult to address as also noted in Joynt et al. (2014). Although, the majority of patients did have health insurance, this evaluation did not assess whether the patient was under-insured and if medical costs were over-burdensome. This financial uncertainty can further complicate the issues to address for successful transitions into the community. Patients that had difficulty affording medication were offered assistance for cost effective options.

A systematic review and meta-analysis performed by Leppin et al. (2014) found complex interventions that also promoted self-care were effective at reducing readmissions. This was also seen in the TCCP where each patient had unique social circumstances and health conditions that required a tailored plan of care and discharge interventions for support in the community.

Outcome of Program

The primary finding of this program evaluation is an overall numerical decrease in hospital readmission rate by 3% compared to the baseline data. Although the direction of change (a decrease) was in the desired direction, the degree of change was not statistically significant based on pooled data. A statistically significant decrease was observed only in the AMI category. However, any decrease in readmissions also decreases the financial burden to the organization as well as the medical expenses for the patient. Considering the cost of a readmission can range from $7,000 for a patient with COPD to $20,000 for a patient after an AMI (Rizzo, 2013), lowering the readmission rate has tremendous impact on our community.

AMI patients showed a statistically significant decrease in readmission rates and this category of patient was a focus for scheduling follow-up appointments. This correlation may indicate follow-up appointments as a key component in reducing readmission risk. Follow up

appointments were difficult to schedule due to patients' resistance to commit to a follow up day and time based frequently on uncertain transportation arrangements or a lack of insight as to the importance of this follow up. Although the focus for follow up appointments during this program was on cardiology appointments, consideration should be made for scheduling primary care provider follow up appointments for all patients. There continues to be a pattern of low adherence for follow up amongst current patients discharged from the hospital. Due to staffing and limited availability for weekend coverage, medication reconciliation by a pharmacist occurred for only approximately 20% of patients with HF and AMI.

Readmissions in patients with HF and COPD did decrease, however not statistically significantly. Readmissions for PNA showed no discernible change at all. Audits of readmission reports over a four year period reveal that a common theme amongst patients with these three diagnoses upon presentation at the emergency department is shortness of breath or difficulty breathing (personal observation). As mentioned above, scheduling a primary care provider appointment may also prove beneficial in these patients for symptom management, medication adjustment, and reduction of readmission needs. The systematic review of Verhaegh and colleagues (2014) found that a home care visit within three days of discharge was beneficial. In my experience, patients are often hesitant to allow someone into their home and they would rather be seen in their primary care provider's office. Yet, primary care offices may not have same week appointment availability for patients that are discharged from the hospital. These circumstances indicate the importance of communicating the necessity of the follow up appointment to the patient and also communicating the hospital plan of care with the primary care physician.

Strengths

This program and evaluation aim to improve patient outcomes and help the institution achieve its goal of a 20% reduction in 30-day readmissions through improved understanding of the patient population and current readmission risk factors. Patients assessed in this evaluation time period were drawn from both urban and rural populations. This geographical distribution is particularly important, as patients living in rural areas may have to travel great distances to obtain services and may represent a higher risk cohort as compared to patients living in urban areas. This evaluation provides detailed analysis of program utilization in order to determine areas of improvement. Patients would benefit from earlier contact and discussion regarding transitions of care in order to allow disciplines to identify and arrange services (e.g. increase utilization of home health and palliative care services for appropriate patients to best support positive outcomes and minimize readmission rates).

Weaknesses

These data are not generalizable to other institutions and are limited to retrospective data collection. Rather, these data are specifically meant to improve quality of care transitions within our hospital and surrounding community. The limited calendar timeframe may have skewed the patient sample in a seasonal way. We used a team of three Registered Nurses as Transitional Care Coaches and, inherently, there is variability between the Coaches that could impact effective communication to patients and resultant utilization of resources, which was not measured. However, such a pilot program is expected to suffer from these limitations. An increased timeframe to allow for a larger data sample would minimize the overall effect of variability between Transitional Care Coaches and any possible seasonal differences in patient populations under study.

Recommendations

Based upon the findings from the program evaluation and the limitations from the pre-TCCP data, the following recommendations are made.

- Create a standardized protocol for scheduling follow up appointments with primary care providers (Jackson, Trygstad, DeWalt, & DuBard, 2013)
- Transitional Care Coach to provide intensive interventions for patients at high risk for readmission. Balaban, et al. (2015) and Kwan, Morgan, Stewart, and Bell (2015) refer to a Patient Navigator that performs similarly to the Transitional Care Coach. Regardless of the title chosen, they each function to empower the patient, assist with navigating during transitions of care, and facilitate communication between the hospital and community providers.
- Transitional Care Clinical Practice Guideline implementation such as The National Transitions of Care Coalitions Hospital to Home Transition (Improving Transitions of Care: Hospital to Home, 2009). Using The Institute for Healthcare Improvement tool such as Plan, Do, Study, Act and an evidence-based framework will optimize the probability of a successful quality improvement project.
- Improve communication from the hospital to provide community providers with a clear understanding of the hospital course of treatment and recommended plan of care (Joynt et al., 2014).
- Involve a Pharmacist or Pharmacist Technician to increase accuracy of medication reconciliation at admission and discharge to decrease risk of adverse medication events (Phatak et al., 2015).

The TCCP appears to have had a positive impact. However, there can be some improvement with the set up of future interventions. It is recommended that a renewed TCCP be conducted to allow for (1) an increased timespan for data collection, (2) an increased number of medical categories assessed to allow for more non-parametric statistical analysis (e.g. adding categories of Total Joint and Sepsis), (3) tracking of number of days to readmittance to allow for improvement to be measured and analyzed beyond a single dichotomous category (i.e. readmitted within 30 days versus not readmitted within 30 days). Other recommendations and protocol improvements than mentioned above should not be ruled out. Improvement of TCCP protocol to reduce readmission will depend in part on designing an improved pilot test. Evidence-based recommendations have been made to continue and improve interventions that further reduce hospital readmissions.

6. Result Dissemination: Share Lessons Learned

Despite the cessation of the TCCP in 2014, this Medical Center has continued efforts to reduce readmissions. The Medical Center Foundation funded a Transitional Care Nurse (Licensed Practical Nurse) who works with patients having specific insurances beginning in the hospital and following up with home visits. Future employee(s) may benefit from this program evaluation and perhaps implement more intensive interventions.

There is a joint project involving the Mesa Fire Department to provide home visits within specific zip zones to patients discharged with a diagnosis of heart failure. Once the patient agrees to this service, a team of paramedics and a Nurse Practitioner visit the patient at home to provide a social assessment and medication review aimed at decreasing adverse events such as unanticipated medication interactions and hospital readmissions.

Finally, a Transitional Care Clinic was opened the beginning of 2017 with a Nurse Practitioner to serve patients who have no primary care provider or are unable to utilize their community provider. The NP will review medications and assist with establishing a community provider and other social supports if needed.

An executive summary and PowerPoint presentation with specific, evidence-based recommendations supported by the literature listed above will be prepared to disseminate the results of this program evaluation to the hospital leadership and stakeholders.

CONCLUSION

The Transitional Care Coach Program appears to have positively affected hospital readmission rates. However, the data collected were insufficient in their timeframe and number of categories to allow for other than cautious conclusions. Although all medical categories assessed during the TCCP that showed change, changed in the same (desired) direction, there were not enough categories for a statistical analysis of this directional trend by Wilcoxon Matched-Pairs Signed Rank Test (Kellar & Kelvin, 2013). Only AMI patients demonstrated a statically significant reduction in readmission rate based upon a chi-square analysis. Perhaps scheduling the follow-up appointment as occurred with AMI patients was an effective intervention. Also, a patient that experiences an AMI may be motivated to perform lifestyle changes that affect the 30 day readmission rate. Evidence supports the importance of follow-up appointments with communication of the hospital plan of care to the community providers as promoting continuity of care and decreasing hospital readmissions. Concerted efforts continue to reduce hospital readmissions and consideration for implementing evidence-based recommendation may complement these efforts.

APPENDIX A

LITERATURE EVALUATION TABLE

Author / Article	Qual: Concepts or phenomena Quan: Key Variables Hypothesis Research Question	Theoretical Framework	Design	Sample (N)	Data Collection (Instruments/tools)	Findings
Cloonan, P., Wood, J., & Riley, J. B. (2013). Reducing 30-day readmissions: health literacy strategies. *J Nurs Adm, 43*(7-8), 382-387. doi:10.1097/NNA.0b013e31829d6082 Level of Evidence: I	Strategies to improve health literacy		Systematic Review		Literature Review	Current challenges: limited resources, short length of stay, and complex comorbid conditions and treatment plans. EBP strategies to improve health literacy: Teach back, jargon-free, slow verbal communication, understandable written material, f/u phone call to ensure knowledge, and early discharge planning.
Cropley, S. (2012). The relationship-based care model: evaluation of the impact on patient satisfaction, length of stay, and readmission rates. *J Nurs Adm, 42*(6), 333-339. doi:10.1097/NNA.0b013e31825738ed	Evaluate impact of relationship-based care model on patient satisfaction,	Relationship-based care model endorsed by Jean Watson and the Studer Group.	Retrospective secondary analysis of aggregate patient satisfaction, LOS, & readmission rates	n=12 months	Press ganey patient satisfaction surveys, LOS, & readmission rates w/I 24 hrs.	Increased care delivery consistency. Perceived performance improvement. Mod. correlation

Level of Evidence: III	LOS, & readmission rates.					for significant relationship between model and 24 hr. readmission rate. Weak correlation between model and satisfaction and LOS. Limitations: Generalizability to larger populations. Did not account for cultural relevance.
Hung, D., & Leidig, R. (2015). Implementing a transitional care program to reduce hospital readmissions among older adults. *Journal of Nursing Care Quality, 30*(2), 121-129. Level of Evidence: V (Hocutt, 2015)	Qualitative Review of pilot program to assist high risk patients with transitions to prevent readmissions	PARIHS model for contextual factors, evidence, and facilitation techniques designed to improve care.	In-depth interviews lasting between 1 and 2 hours.	Seven participants using purposeful and snowball sampling techniques. N=7	Interviews covered program implementation, organizational culture and relationship with transitional care efforts, definition of program success, and lessons learned for implementation.	<u>Factors affecting implementation</u> Contextual factors: 1. Leadership and hospital culture did not support implementation. 2. Unforeseen circumstance (nurse strike) affected staff relationship. Evidence versus challenge: 1. Goals were established, but definition of success varied. 2. Patients that would benefit did not meet criteria

						based on readmission tool. Some that did were too ill to coach. 3. Some readmissions were inevitable. Facilitation techniques: 1. Difficulty with enrollment. 2. Communication was key. 3. Integration with quality improvement was key. 4. Staff focus on coaching was key.
Naylor, M., Aiken, L., Kurtzman, E., Olds, D., & Hirschman, K. (2011). The importance of transitional care in achieving health reform. *Health Affairs*, *30*(4), 746-754. doi:10.1377/hlthaff.2011.0041 Level of Evidence: V (Hocutt, 2015)	Systematic Review To identify transitional care interventions that has positive effects on reducing hospital readmissions.		Key search terms: transitional care, readmissions, and patient discharge. Databases: PubMed and CINAHL	N= 21 articles reviewed and compared.	Literature Review	Confirming evidence to support transitional care with 4 recommendations. 1. Interventions should include known effectiveness to improve goals and objectives. 2. Effective interventions should be promoted to form best practice. 3. Promote

						effective interventions as incentives under the Affordable Care Act. 4. Determine which interventions could be used in other vulnerable populations.
Joynt, K., Sarma, N., Episein, A., Jha, A., & Weissman, J. (2014). Challenges in reducing readmissions: lessons from leadership and frontline personnel at eight minority-serving hospitals. *The Joint Commission Journal on Quality and Patient Safety, 40*(10), 435-442. Level of Evidence: VI (Hocutt, 2015)	How are minority-serving hospitals responding to federal readmission policies and determine readmission challenges.	Organizational Change Theory of rational models. Miles and Huberman Method using multistep, iterative process for data quality and interpretation.	Qualitative Case Studies. Semistructured interviews for problem awareness, action identification, action implementation, and institutionalization.	Case Study sites: N=8 US Acute Care Hospitals: N=4,788	Semi-structured interview guide	1. Hospitals have some awareness of readmission rates and desire to reduce readmissions. 2. Federal policy impacts hospital efforts by forcing leadership to participate and do not address the specific needs of hospitals. 3. Similar strategies were found to reduce readmission: a. improving discharge. b. improving transitional care. 4. Readmission challenges: a. limited resources b. diverse pt. needs c. lack of control

						over community care d. skewed incentives
Jackson, C., Trygstad, T., DeWalt, D., & DuBard, C. (2013). Transitional Care Cut Hospital Readmissions For North Carolina Medicaid Patients With Complex Chronic Conditions. *Health Affairs*, *32*(8), 1407-1415. doi:10.1377/hlthaff.2013.0047 Levels of Evidence: III (Hocutt, 2015)	Evaluate effectiveness of transitional care as compared to usual care on readmission rates. Evaluate readmission rates for patients based on risk and conditions.	Clinical Risk Group methodology with eight risk stratum	Observational review of hospital readmission up to one year after hospitalization.	21,375 Medicaid recipients with chronic illnesses in 120 different hospitals across counties in North Carolina	North Carolina Medicaid eligibility and enrollment files. Categorized by disease burden and clinical risk group.	Transitional Care group had significantly longer time between discharge and readmission than the usual care group. Generalizability is limited due to the fact that the patients in this study all had access to medical care after discharge because of the enrollment in Medicaid with assignment of a Primary Care Provider.
Phatak, A., Prusi, R., Ward, B., Hansen, L. O., Williams, M. V., Vetter, E., . . . Postelnick, M. (2015). Impact of pharmacist involvement in the transitional care of high-risk patients through medication reconciliation, medication education, and postdischarge call-backs (IPITCH Study). *Journal of Hospital Medicine, 11*(1), 39-44. doi: 10.1022/jhm.2493	Evaluate the impact of pharmacist involvement with transitions of care by decreasing medication errors and adverse drug events.	None listed	Prospective, randomized, single-period (over 7 months) longitudinal study. Patients were randomized and blinded into control group and intervention group.	Intervention Group: n=137, Control group: n=141 Academic medical center in Chicago, Ill.	Intervention group received fact-to-face medication reconciliation and education on admission and discharge. Three phone calls were made at day 3, 14 & 30 postdischarge with continued education.	Study group had 380 (46.2%) medication discrepancies compared to 205 (19.9%) in control group ($P<0.0001$). Study group had decreased inpatient readmission and

Level of Evidence: II						ED visits as compared to control group.
Linden, A., & Butterworth, S. W. (2014). A comprehensive hospital-based intervention to reduce readmissions for chronically ill patients: A randomized controlled trial. *American Journal Of Managed Care*, *20*(10), 783-792. Level of Evidence: III (Hocutt, 2015)	Would a comprehensive hospital-based transitional care intervention reduce readmissions for patients with CHF and COPD?	None listed	Parallel-group, stratified, randomized clinical trial.	CHF cohort: 128 usual care, 129 to intervention. COPD cohort: 131 usual care, 124 to intervention. Setting: Community Based Acute Care facility	Primary outcome: 30 and 90 day all-cause readmission from EHR Secondary outcome: 30 and 90 day all-cause ED visits from EHR.	Primary: No statistical significant differences for 30 day or 90 day readmission rates (P=.36 and P= .66 respectively) Secondary: No significant difference for 30 day or 90 day for ED visit incidence (P=.50 and P=.41 respectively)
Arbaje, A., Maron, D., Yu, Q., Wendel, V., Tanner, E., Boult, C., & ... Durso, S. (2010). The Geriatric Floating Interdisciplinary Transition Team. *Journal Of The American Geriatrics Society*, *58*(2), 364-370. doi:10.1111/j.1532-5415.2009.02682.x Level of Evidence: II (Hocutt, 2015)	Evaluate pilot program effect on transition of care quality and patient satisfaction.	Geriatric Floating Interdisciplinary Transition Team (Geri-FITT) Model	Cohort Study	Experimental Group: 244 in the Geri-FITT Control Group:216 in usual medical services care.	Care Transitions Measure (CTM-3) using Likert scale and 5-point Likert scale for levels of satisfaction with care.	Multivariable linear regression model, Geri-FITT group was not significant for transitional care quality (P=.47) Satisfaction with care was not significant between groups (P=.21)
Takahashi, P., Pecina, J., Upatising, B., Chaudhry, R., Shah, N., Van Houten, H., & ... Hanson, G. (2012). A randomized controlled trial of telemonitoring in older adults with multiple health issues to prevent	Daily home telemonitoring compared to usual care in high-risk for readmission	None listed	Randomized Controlled Trial	Experimental Group: N=102 Telemonitoring including video-conferencing,	Primary Outcome: Number of hospitalizations and ED visits in a 12 month time period.	Primary Outcome: No statistical difference between the telemonitoring

hospitalizations and emergency department visits. *Archives Of Internal Medicine*, *172*(10), 773-779. Level of Evidence: II (Hocutt, 2015)	adult patients. Hypothesis: Telemonitoring would reduce readmissions and ED visit compared to usual care.			blood pressure monitor, glucometer, scales, pulse oximeter. Control Group: N=103 Usual care including access to primary and specialty care visits, ED visits, and phone nursing.	Secondary Outcome: Total hospital days and mortality rates.	group and the usual care group (P=.35) Secondary Outcome: No statistical difference between the telemonitoring group and the usual care group (P=.24)
Leppin, A., Gionfriddo, M., Kessler, M., Brito, J., Mair, F., Gallacher, K., . . . Montori, V. (2014). Preventing 30-day hospital readmissions. *JAMA Internal Medicine JAMA Intern Med, 174*(7), 1095-1107. doi:10.1001/jamainternmed.2014.1608 Level of Evidence: I (Hocutt, 2015)	Understand the underlying causes of hospital readmissions	Cumulative Complexity Model: balance between patient workload and capacity.	Systematic Review & Meta-analysis of RCT	42 world wide RCT performed	Studies included were all at low risk of bias. Comprehensive assessment of effect of discharge interventions.	Effective interventions: 1.Strengthen patient capacity for self-care (RR, 0.68 [95% CI, 0.53-0.86] when it was and RR, 0.88 [95% CI, 0.80-0.97] when it was not). 2. Intervention with 5 unique component activities (RR, 0.63 [95% CI, 0.53-0.76] when it did and RR, 0.91 [95% CI, 0.81-1.01] when it did not. 3. At least 2 individual

						involved in delivery of interventions (RR, 0.69 [95% CI, 0.57-0.84] when it did and 0.87 [95% CI 0.77-0.98] when it did not.
Verhaegh, K., MacNeil-Vroomen, J., Eslami, S., Geerlings, S., de Rooij, S., & Buurman, B. (2014). Transitional care interventions prevent hospital readmissions for adults with chronic illnesses. *Health Affairs*, *33*(9), 1531-1539. doi:10.1377/hlthaff.2014.0160 Level of Evidence: I (Hocutt, 2015)	Identify and evaluate effectiveness of transitional care interventions to reduce hospital readmissions short-term (30 days), intermediate-term (31-180 days), and long-term (181-365) days.	None listed	Systematic Review & Meta-analysis of RCT	26 RCT with 7,932 participants, in a variety of international health care systems.	All studies listed were included in the analysis as indicated by no change in pooled odds ratios, indicating publication bias was not present. Validity: Sufficient studies were included as a base of knowledge for statistical analysis. Studies included were analyzed for risk of bias.	Absolute risk reduction of 5% in intermediate-term readmissions (OR: 0.77; 95% CI: 0.62, 0.96) and 13% in long-term readmissions (OR: 0.58, 95% CI 0.46, 0.75) Not effective in reducing short-term readmissions (OR: 0.76; 95% CI: 0.52, 1.10) High-intensity interventions reduced short-term (OR: 0.59; 95% CI 0.38, 0.92), intermediate-term (OR: 0.69; 95% CI 0.51, 0.92) and long-term readmissions (OR: 0.57; 95%

						CI: 0.35, 0.92).
Burke, D., Link, N., Bails, D., Fang, Y., & Janjigian, M. P. (2016). A taxonomy of seven-day readmissions to an urban teaching hospital. *Journal Of Hospital Medicine*, *11*(1), 33-38. doi:10.1002/jhm.2481 Level of Evidence: IV	Identify causes of unplanned hospital readmissions within 7 days of discharge.	None listed	Retrospective Chart Review in an urban tertiary care hospital.	335 chart reviews.	Chart review of the EHR to determine events that caused readmission. Causes were placed into 1 of 5 categories.	1. Readmission not necessary: 6.6% 2. First discharge AMA: 11/6% 3. Discharge process deficiency: 16.7%. 4. Patient behavior: 18.8% 5. Unpredictable complication: 46.3% The most common cause for readmission was an unpredictable complication.

APPENDIX B

REPORT SHEET

Patient Room Risk	DX PMH	Physician HH:	F/U appt Contact # DCC:	Education: Cardiac Rehab: EF:	Medication: Pharmacy:	Core Measures: SNT/LTC: Hospice/PC:
Patient Room Risk	DX PMH	Physician HH:	F/U appt Contact # DCC:	Education: Cardiac Rehab: EF:	Medication: Pharmacy:	Core Measures: SNT/LTC: Hospice/PC:
Patient Room Risk	DX PMH	Physician HH:	F/U appt Contact # DCC:	Education: Cardiac Rehab: EF:	Medication: Pharmacy:	Core Measures: SNT/LTC: Hospice/PC:
Patient Room Risk	DX PMH	Physician HH:	F/U appt Contact # DCC:	Education: Cardiac Rehab: EF:	Medication: Pharmacy:	Core Measures: SNT/LTC: Hospice/PC:
Patient Room Risk	DX PMH	Physician HH:	F/U appt Contact # DCC:	Education: Cardiac Rehab: EF:	Medication: Pharmacy:	Core Measures: SNT/LTC: Hospice/PC:
Patient Room Risk	DX PMH	Physician HH:	F/U appt Contact # DCC:	Education: Cardiac Rehab: EF:	Medication: Pharmacy:	Core Measures: SNT/LTC: Hospice/PC:

APPENDIX C

MIDAS READMISSION DATA

2014	Aug-14	Sep-14	Oct-14	Nov-14	Total
Total Discharges	1324	1411	1455	1363	5553
AMI, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA	13.64%	3.13%	10.34%	0.00%	6.31%
AMI, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA (numerator)	3	1	3	0	7
AMI, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA (denominato	22	32	29	28	111
COPD, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA	11.76%	7.69%	16.67%	18.52%	13.83%
COPD, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA (numerator	2	2	4	5	13
COPD, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA (denomina	17	26	24	27	94
Heart Failure, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA	17.39%	22.58%	8.57%	16.67%	15.97%
Heart Failure, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA (nur	4	7	3	5	19
Heart Failure, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA (der	23	31	35	30	119
Pneumonia, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA	16.00%	14.75%	8.00%	15.38%	13.30%
Pneumonia, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA (num	4	9	4	8	25
Pneumonia, CMS Readm Rdctn - % Readmit within 30 Days, Same Facility, ACA (denc	25	61	50	52	188

		Readmits	DC		
	AMI	7	111		
	COPD	13	94		
	HF	19	119		
	PNA	25	188		
	TTL	64	512		
		12.50%			

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