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Implementing post-hospital interprofessional care team visits to improve transitions of care and decrease hospital readmission rates

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POST-HOSPITAL INTERPROFESSIONAL CARE TEAM VISITS

Implementing Post-Hospital Interprofessional Care Team Visits
to Improve Transitions of Care and Decrease Hospital Readmission Rates

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Abstract

Background: Today's healthcare climate is comprised of a population of patients who are more complex, presenting with multiple comorbidities, and requiring frequent hospitalizations. It is imperative for acute care and primary care landscapes to bridge silos and form collaborative relationships to ensure safe and effective transitions of care from hospital to home. An interprofessional, post hospital follow-up clinic is one approach that can be utilized to improve transitions of care and decrease preventable hospital readmissions.

Purpose: The purpose of the project's discharge clinic was to improve transitions of care and decrease thirty day hospital readmission rates. The primary objective of the clinic was to utilize an interprofessional care team (Nurse Practitioner, Clinical Pharmacist, Nurse Case Manager, and Social Worker) to improve transitions of care post-hospital, for complex care patients.

Methods: The project utilized an innovative, interprofessional care team to help improve transitions of care. The interprofessional care team consisted of a Certified Family Nurse Practitioner, Clinical Pharmacist, Nurse Case Manager, and Social Worker. Upon hospital discharge, patients were offered a post hospital appointment with the identified care team. Patients were encouraged to be seen within 72 hours after hospital discharge to assess clinical status and to identify any barriers to the treatment plan in a timely manner.

Results: A comparative analysis was performed between national benchmark thirty day hospital readmission rates and the project's readmission rates. 2013 national, hospital wide thirty day readmission rates were reported at 13.9% across all expected payers. National thirty day readmission rates were examined for Medicare and Private coverage payer plans; 2013 rates

were 17.3% and 8.6% respectively (Agency for Health Care Quality and Research, 2013).

Project participants achieved a thirty day readmission rate of 2.7%.

Conclusions: The findings of this project suggest that post hospital clinics staffed by interprofessional teams may play a significant role in improving transitions of care. The interprofessional clinic was effective in decreasing hospital readmissions and served as a cost effective model of care that can be replicated across other health systems.

POST-HOSPITAL INTERPROFESSIONAL CARE TEAM VISITS

Background and Significance

Improving transitions of care for hospitalized patients is a top priority among hospitals and health systems throughout the United States. New guidelines by the Centers for Medicare and Medicaid Services (CMS) reveal that, thirty-day readmission rates are now seen as a direct correlation and measurement of *quality* of care. It is estimated that hospital readmissions cost the United States' health system \$17.4 billion dollars annually (Cavanaugh et al., 2014). Hospitals are now at risk for substantial penalties for readmission rates above national benchmarks, and have been forced to develop innovative approaches aimed at improving transitions of care and decreasing re-hospitalization (Gerhardt et al., 2013). Currently, CMS measures thirty day unplanned, hospital-wide readmission rates as well as unplanned readmission rates for the following core diagnoses: Congestive Heart Failure (CHF), Acute Myocardial Infarction (AMI), Pneumonia (PNA), Chronic Obstructive Pulmonary Disease (COPD), and Cerebral Vascular Accident (Stroke) (CMS, 2015).

A recent study demonstrated the effectiveness of post hospital interprofessional care team visits in reducing hospital readmission rates. The *Post-Hospital Follow-up Program* within an Internal Medicine clinic at the University of North Carolina Hospital, utilized practitioners, clinical pharmacists, and social workers to ensure successful transitions from hospital to home and reduce the risk of hospital readmission (Cavanaugh et al., 2014). The need for similar post-hospital follow-up clinics was recognized as a top priority among this project's medical group. This project examined the effects of an interprofessional care team at the group's post hospital transitional care clinic; The Discharge Clinic. The interprofessional care team included a Certified Family Nurse Practitioner, Clinical Pharmacist, Case Manager, and Social Worker, that conducted post hospital appointments for recently hospitalized medical group patients. The

project aligned with the medical group's strategic plans for reducing thirty-day hospital readmissions as well as the standards of care set forth by the Centers for Medicare and Medicaid Services. The aim of the post hospital appointment was to provide additional education to patients regarding their recent hospitalization and disease processes and to allow patients to be better informed about their health during the critical transition from hospital to home.

Problem Statement

Hospital readmissions have significant negative effects on patients, caregivers, and health systems. Hospital readmissions not only cause increased stress and financial implications for patients and their families, but hospitals are forced to invest substantial time and resources into improving transitions of care. With the passing of the Affordable Care Act's *Hospital Readmission Reduction Program*, hospitals are at risk for reduced financial payments by CMS, causing financial hardships for acute care agencies. This necessitates rapid development of new and innovative approaches in transitions of care. Significant opportunities exist for improving transitions of care from hospital to home and between acute care and primary care settings.

Objectives and Aims

The purpose of this project was to identify the effects of interprofessional care teams in the post hospital setting. The primary objective was to examine the effects of an interprofessional post hospital appointment on thirty-day unplanned, hospital-wide and core measure readmissions. A secondary objective was to improve transitions of care by offering any of the medical group's patients a complementary, post-hospital appointment with the identified care team. Finally, cost savings related to prevented readmissions, using national statistics reported by the *Healthcare Cost and Utilization Project (HCUP)*, were calculated.

Review of Literature

A literature review highlighted the growing importance of interprofessional practice in healthcare today. In 2010, the *World Health Organization (WHO)* released a landmark document titled *The Framework for Action on Interprofessional Education and Collaborative Practice*. The importance of collaborative practice was outlined and defined as, healthcare professions working together collectively to provide high quality and cost effective care to populations including patients, families, caregivers, and communities (World Health Organization, 2010). After the *WHO* report was released, six professional organizations came together and formed the *Interprofessional Education Collaborative (IPEC)* in support of the recommendations and to bridge a national forum. The six professional organizations included the Association of American Medical Colleges, the American Association of Colleges of Osteopathic Medicine, the American Association of Colleges of Nursing, the American Association of Colleges of Pharmacy, the Association of Schools and Programs of Public Health, and the American Dental Education Association (Milstead, 2015). In conjunction with *IPEC*, the *Institute of Medicine (IOM)* recognized the necessity for different healthcare professions to bridge silos and practice collaboratively. In the IOM's *Health Professions Education: A Bridge to Quality* report, five competencies were named essential among all healthcare disciplines. The five competencies include: patient centered care, interprofessional teams, utilization of evidence based practice, quality improvement, and utilization of informatics (Eklund & Kenner, 2013).

In today's healthcare environment, patients are more complex, presenting with multiple chronic conditions. In order to optimize patient outcomes, it is essential for healthcare professionals to come together collectively, fostering a level of respect for each profession's

domain of expertise. When used effectively, interprofessional practice has been shown to have significant impacts including decreasing medical errors, improving quality of care, and enhancing patient centered-care/shared decision making (Hurlock-Chorostecki, Forchuk, Orchard, Soeren, & Reeves, 2014). Furthermore, when engaged in interprofessional practice, healthcare professionals have reported improved communication, increased participation in clinical decision making, increased respect among other colleagues/disciplines, and increased retention (Oelke, Thurston, & Arthur, 2013).

To improve outcomes for patients as well as healthcare professionals, the growing need for interprofessional practice has been widely identified by hospitals, ambulatory clinics, and professional organizations. *The Cochrane Collaboration* and the *United States Preventive Services Task Force* are two examples of organizations embodying different professions including researchers, practitioners, and policy makers, coming together to collectively improve public health and healthcare research (Green & Johnson, 2015). On a smaller scale, ambulatory clinics across the nation have begun to recognize the impact of interprofessional practice on improving transitions of care and quality of care among chronic disease populations. A recent study examined the effects of an interprofessional practice model that was implemented at a diabetes clinic within the *Cooper University Hospital Urban Health Institute*. The clinic's interprofessional practice model included an Endocrinologist, Clinical Pharmacist, Advanced Practice Nurse, Licensed Practical Nurse, Medical Assistant, and Behaviorist. The study found that the interprofessional practice model led to enhanced shared decision making, improvements in patient goal setting and treatment plans, and increased understanding and respect for other professions' roles and responsibilities (Irlich, Kaufman, & Ganetsky, 2015). A similar interprofessional practice model was recently implemented at a primary care clinic in Quebec

that specialized in cardiovascular disease prevention. The interprofessional team consisted of a Physician, Nurse, Pharmacist, Nutritionist, and Psychologist. Seven-hundred-fifty-nine ($n = 759$) patients were enrolled in the study and were identified to be at moderate to high risk for developing cardiovascular disease in conjunction with two other chronic conditions. The implementation of the interprofessional care team resulted in significant outcomes including clearly defined patient goals, development of integrative treatment plans, routine sharing of evidence based research/guidelines, increased trust among other professions/team members, enhanced role clarity, and development of relationships with healthcare workers throughout the community (Hudon et al., 2015).

Interprofessional practice is one approach that has been shown to improve transitions of care for patients from hospital to home, and between healthcare professionals in acute care and ambulatory care environments. One study found the most essential components for improving transitions of care and decreasing hospital readmissions included the implementation of interprofessional collaboration, care management across transitions of care, and enhanced access to care (Cavanaugh et al., 2014).

A study conducted at the University of North Carolina's post hospital follow-up clinic, demonstrated significant improvements in readmission rates and transitions of care by implementing an interprofessional care team model. The interprofessional team consisted of a Physician, Pharmacist, and Social Worker who collaboratively reduced readmission rates by approximately two-thirds (Embree, Tsai, & Miller, 2014). Additionally, a report in the *New England Journal of Medicine* found that only fifty-percent of hospitalized Medicare patients received outpatient follow-up within thirty days of discharge, highlighting the need for

interprofessional care teams to bridge this essential gap in healthcare (Jencks, Williams, Coleman, 2009). With increasing demands for health care professionals to more effectively care for communities and populations across all continuums, interprofessional practice is one approach that can be utilized to optimize outcomes, improve care management, and enhance role clarity and respect across disciplines (Bohnenkamp, Pelton, Rishel, & Kurtin, 2014).

Project Design

This project took place from February 2016 to September 2016 at the medical group's Discharge Clinic. IRB approval was obtained from James Madison University effective September 1, 2015 and from MemorialCare Health System effective October 29, 2015.

To best meet the needs of its patients, the medical group's Discharge Clinic developed an interprofessional care team model, specifically for post-acute populations. The team was comprised of a Certified Family Nurse Practitioner, Clinical Pharmacist (PharmD), Nurse Case Manager, and Social Worker. Patients were seen at the clinic up to fourteen days after hospital discharge, however were encouraged to be seen within seventy-two hours of hospital discharge to quickly identify any clinical or psychosocial needs.

A prospective cohort design was utilized to evaluate the effectiveness of the post-hospital appointment by the interprofessional care team on thirty-day unplanned, hospital-wide and core measure readmission rates. Discharge Clinic patients were identified by the medical group's inpatient Case Managers and Hospitalist team. Any medical group patient with an inpatient status was eligible to be seen by the Discharge Clinic team. The project aimed to have Discharge Clinic appointments scheduled prior to a patient's hospital discharge. The medical group's inpatient Case Manager and/or Hospitalist were responsible for providing a detailed overview of

the Discharge Clinic, to both the patient and their family, prior to discharge. Patients were advised that the appointment would last approximately one to two hours and were given a Discharge Clinic brochure that further explained the clinic's services. The brochure included the appointment date and time, contact information, and a detailed map with directions to the clinic.

Prior to any patient encounter, the interprofessional care team huddled to discuss the patient's recent hospitalization and develop an individualized care plan for the visit. Once the patient arrived to clinic, the team's Medical Assistant roomed the patient, obtained vital signs, and performed any necessary point of care testing (blood glucose or INR). The Nurse Practitioner, or designated team member, explained the project and obtained informed consent. The Nurse Practitioner then completed a thorough review of the hospitalization with the patient and their family. This included a detailed review of laboratory and imaging results and discussion about the treatment plan. The Nurse Practitioner performed a complete review of systems and physical examination. Orders for durable medical equipment, physical therapy, occupational therapy, and/or speech therapy were placed.

Next, the Nurse Case Manager met with the patient and coordinated any referral needs or post-hospital appointments with the patient's primary care and specialist providers. The goal was to ensure scheduling of referrals and follow-up appointments prior to the completion of the visit. The Clinical Pharmacist evaluated and assessed the patient's understanding of their medications. The Clinical Pharmacist reviewed every medication, explaining its indication, proper dosing schedule, and mechanism of action. Extensive education was provided for newly started medications during hospitalization. Medication reconciliation was performed and any identified discrepancies were corrected with the patient's primary care provider notified, including any

modifications made. Lastly, the Social Worker performed a psychosocial assessment and depression screening. If behavioral health issues were identified, the patient was connected with the appropriate resources. The Social Worker provided resources on care giver support, long term placement, financial assistance, transportation services, and food/meal assistance as needed.

After all four disciplines conducted their portion of the appointment, the Nurse Practitioner and Clinical Pharmacist provided an after visit summary and an updated medication list to the patient. The after visit summary listed all future appointments, pertinent patient education, and patient instructions. A patient friendly medication list was provided which detailed the brand and generic names for all medications, correct dosage, frequency of administration, indication, and any special instructions or warnings (See Appendix A). Each patient was also given a “Discharge Clinic Contact List” with the direct telephone numbers of every team member. Patients and their caregivers were strongly encouraged to contact the team with any questions or concerns. Lastly, if the team determined a patient to have ongoing, complex care needs, establishment of case management services was initiated.

Evaluation

A prospective cohort design was utilized to evaluate the effectiveness of the medical group’s Discharge Clinic on thirty-day hospital wide readmission rates. For patients enrolled in the project, thirty day readmission status was obtained by completing a chart review of the patient’s electronic health record (EHR) thirty days after hospital discharge. To evaluate the distribution of outcomes among project participants, the following demographic data was obtained through the EHR: age, gender, insurance coverage, and primary diagnosis at discharge. Project data was entered in Microsoft Excel and readmission rates were calculated utilizing

formulas created by the medical group's analytics team. The Discharge Clinic's thirty day readmission rates were compared to national benchmarks. National thirty day readmission statistics were obtained through the *Healthcare Cost and Utilization Project (HCUP)* database. This resource is the nation's most comprehensive database for hospital readmissions data. A complete cost analysis was performed to evaluate the financial impact of the medical group's Discharge Clinic. The project calculated total cost of readmissions to the medical group and estimated cost savings based on number of readmissions averted. Total operating expenditures for the Discharge Clinic were calculated to further evaluate cost effectiveness.

Findings

A comparative analysis was performed between national benchmark thirty day hospital readmission rates and the medical group's Discharge Clinic readmission rates. 2013 national, hospital wide thirty day readmission rates were reported at 13.9% across all expected payers. National thirty day readmission rates were examined for Medicare and Private coverage payer plans; 2013 rates were 17.3% and 8.6% respectively (Agency for Health Care Quality and Research, 2013). From February 2016 to September 2016, Discharge Clinic project participants achieved a thirty day readmission rate of 2.7%. The Discharge Clinic enrolled 87 patients in the project and 75 patients met inclusion criteria (n = 75). The thirty day readmission rate achieved by the medical group's Discharge Clinic represented a significant decrease compared to national benchmark data. A total of two patients enrolled in the project were readmitted within thirty days of hospital discharge (See Figure 1). Of all patients enrolled, 20% (n = 15) had a core measure primary diagnoses at hospital discharge (CHF, AMI, PNA, COPD, Stroke). None of these patients were readmitted within thirty days of hospital discharge.

A cost analysis was performed utilizing AHRQ's *Readmission Reduction Impact and Financial Analysis Tool* (See Appendix B) (Agency for Healthcare Research and Quality, 2014). For fiscal year 2015, the medical group's estimated cost of readmissions were \$7,156,800 and 30 day all cause readmission rates were 12.3%. This equated to the Discharge Clinic's estimated impact in reducing readmissions at 9.63% and an estimated savings of \$689,199.84. The Discharge Clinic estimated its operating costs at \$354,000 which gave a total estimated net savings of \$335,199.84. The cost analysis showed the Discharge Clinic to be a cost effective model of care.

Barriers

The project identified some barriers and limitations. Home visits were not performed and patients who were bedbound or lacked transportation to the clinic were excluded. These patients are likely at increased risk for readmission. Moreover, Discharge Clinic readmission rates were not compared to a control group. Rather, Discharge Clinic readmission rates were compared to national benchmarks and differences among patient groups and demographics could have existed. Lastly, the project utilized inpatient staff to schedule Discharge Clinic appointments. Lack of resources, especially on weekend and off shifts, limited the project's ability to track patients who declined the Discharge Clinic appointment or cancelled by calling the medical group's outsourced call center.

Implications

Timely post hospital follow-up is essential in improving quality of care and enhancing transitions of care (Cavanaugh et al., 2014). The findings of this project suggest that post hospital clinics staffed by interprofessional teams may play a significant role in improving transitions of

care. The Discharge Clinic was effective in decreasing hospital readmissions and served as a cost effective model of care that can be replicated among other health systems. Although 20% of patients had a primary core measure diagnosis at discharge, a significant percentage of patients had clinical risk factors that placed them at high risk for readmission; uncontrolled diabetes, hypertension, and hyperlipidaemia. Future transitional care models would benefit from examining other high risk disease states. Furthermore, the project found it challenging to quantify a patient's risk for readmission as factors are often subjective. The implementation of a readmission risk tool, such as the *LACE Index*, in the post hospital setting could be useful in guiding interventions for high risk populations (Van Walraven et al., 2010). Initial data indicated a higher patient satisfaction rate with interprofessional team visits. Future research should measure the satisfaction of patients and healthcare professionals working within interprofessional care teams.

As the landscape of healthcare continues to evolve at a rapid pace, it is essential that health systems bridge silos between acute and primary care settings. The rising complexity of patients, and shorter length of hospital stays, make seamless handoff between hospital providers and primary care providers, essential. With the current state of healthcare reform, and the evolution of patient centred medical homes, the role of post hospital clinics should be considered a viable option in optimizing post-discharge outcomes.

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Appendix A

Sample Discharge Clinic Patient Medication List

MY MEDICATION RECORD							
Name :						Birth date:	
Primary Care Physician:						Today's date:	
Pharmacist:							
Allergies / Intolerance							
Metformin - dizziness							
Drug Name	Dose	Early AM	Before break-fast	Noon	Before dinner	Take for...	Special Instructions
Phenytoin (Dilantin) 200mg	1 tab				X	Seizures	
Levetiracetam (Keppra) 100mg/ml (15ml)	1500mg		X		X	Seizures	
Isosorbide dinitrate (Isordil) 20mg	1 tab		X			Blood pressure	
Lisinopril 40mg	1 tab		X			Blood pressure	hold if SBP<110
Metoprolol (Lopressor) 50mg	1 tab		X		X	Blood pressure	hold if SBP<110 or HR<60
Amlodipine (Norvasc) 5mg	1 tab		X		X	Blood pressure	
Hydralazine (Apresoline) 50mg	1 tab		X	X	X	Blood pressure	hold if SBP<110
Clonidine patch 0.3mg/24h	1 patch	every 7 days				Blood pressure	
Levothyroxine (Synthroid) 50mg	1 tab	X				Low thyroid	
Glipizide 5mg	1 tab		X		X	Diabetes	Needs to be taken before meals
Sitagliptin (Januvia) 100mg	1 tab		X			Diabetes	7/13/16 HgbA1c=6.9 (goal<7.5)
Famotidine (Pepcid) 20mg	1 tab		X			Acid reflux	
Docusate 100mg	1 cap		X		X	Constipation, stool softener	
Milk of magnesia	30ml	daily as needed				Constipation, stool softener	
Potassium 20meq	1 tab		X			Low potassium	Please ask your PCP to check potassium level.
Multivitamin	1 tab		X			Supplement	
Special Notes							
For any questions regarding your medications, please call our pharmacist at (XXX) XXX - XXXX							

Appendix B**Readmission Reduction Impact and Financial Analysis Tool**

	BASIC DATA	Total
A	Number of (non-OB, adult) discharges, past year	
B	Number of (non-OB, adult) readmissions, past year	
C	(non-OB, adult) readmission rate (calculation)	
D	Average cost (reimbursement) per (non-OB, adult) admission	
E	Total Cost of readmissions	
	IMPACT OF READMISSION REDUCTION STRATEGIES	
F	Number of admissions	
G	Readmission rate among target population (%)	
H	Readmissions among target population	
I	Estimated impact in reducing readmissions (%)	
J	Number of readmissions averted	
K	Estimated savings	

Figure 1

2013 National Hospital Wide 30 Day Readmission Rates by Expected Payer			Discharge Clinic 30 Day Readmission Rates
All Expected Payers	Medicare Payer	Private Payer	Discharge Clinic Project
13.9%	17.3%	8.6%	2.7%
Discharge Clinic Patients Readmitted Within 30 days of Hospital Discharge, n = 2.			
	Indication for Initial Admission	Indication for 30 day Readmission	
Readmission #1	Pancreatitis after endoscopic retrograde cholangiopancreatography (ERCP).	Abdominal pain. Recurrent pancreatitis.	
Readmission #2	Chest pain. Cardiac workup unremarkable.	Left hip fracture secondary to mechanical fall.	