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Effect of Primary Care Follow Up on Hospital Readmissions

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EFFECT OF PRIMARY CARE FOLLOW UP ON HOSPITAL READMISSIONS

by

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Abstract

Hospital readmission rates are costly; nearly 1 in 5 hospital patients covered by Medicare are readmitted to the hospital within 30 days of discharge, accounting for $15 billion a year in health care spending (Jencks et al., 2009). The emergency department (ED) is the biggest cost driver for hospital readmissions. The research conducted implemented new protocols with an ED-based research study team that came in at the time of the patient discharge and assist with the transition of care for the patient, scheduling next day follow-ups with their Primary Care Provider. Analysis of this data will include readmission rates for patients demographic variables, comparison of patients with scheduled follow-up versus no follow-up, and barriers to follow up care. The goal of this thesis is to evaluate hospital readmissions and identify potential interventions to reduce them.

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Introduction

Hospital readmission rates are costly (Jencks, Williams, & Coleman, 2009). Nearly 1 in 5 hospital patients are readmitted to the hospital within 30 days of discharge (Jencks et al., 2009). At Eastern Maine Medical Center (EMMC) by preventing hospital readmissions there is a potential to save $336,000 (See Appendix A). Higher readmission rates are also associated with lower patient satisfaction (Boulding, Glickman, Manary, Schulman & Staelin, 2011). This thesis seeks to address how primary care follow up effects hospital readmission rates and explore the barriers to primary care follow up. The barriers to primary care follow up discussed in this paper are access to primary care appointments, socioeconomic barriers such as payer type, and transportation to appointments.

A group of seven research interns worked in the EMMC Emergency Department (ED), scheduling and collecting data on patient follow-ups. Other collaborators on this project included six other EMMC Primary Care Practices (PCP) as well as Penobscot Community Health Care (PCHC) PCP offices. Interns worked together with both ED physicians and patients to schedule a next day follow up if possible with their PCP.

EMMC is located in Bangor, Maine. The city of Bangor contains roughly 32,000 residents, making it the third largest city in Maine (U.S. Census Bureau QuickFacts: Bangor city, Maine, n.d). Twenty-five percent of the population of Bangor, Maine is living in poverty and approximately 14.5% are without health insurance (U.S. Census Bureau QuickFacts: Bangor city, Maine, n.d). The United States Census counts 57.7% of Penobscot County residents as living in rural areas, which is lower than the state average

(Kahn-Troster et al., 2016). Penobscot country has the third highest percentage of residents who do not have a personal doctor or health care provider in Maine (Kahn-Troster et al., 2016). The Maine Health Access Foundation (MeHAF), whose mission is to "to promote access to quality health care, especially for those who are uninsured and underserved, and improve the health of everyone in Maine", has found that more than half of Maine's low-income uninsured adults (54%) do not have a regular provider they can see for health care services, a rate more than double that of those with health insurance (Ziller, Burgess, & Leonard, 2018).

Literature Review

Healthcare Policy

Healthcare reform in the United States is a complex and multifaceted issue that has captured the attention of policy makers. The Patient Protection and Affordable Care Act (ACA) was signed into law on March 30, 2010 (Rosenbaum, 2011). It is sometimes known as Obamacare. The first and central goal of the law was to address the issue that a sizable portion of the population does not have health insurance (Patient Protection and Affordable Care Act, 2010).

The law required all citizens in the United States to have health insurance (Patient Protection and Affordable Care Act, 2010). It also expanded the Medicaid benefits to include all individuals who make less than 133% of federal poverty level. Additional goals of the law include improving affordability of health insurance coverage, improve health care quality, reduce wasteful spending, and strengthen primary care access (Rosenbaum, 2011). The ACA attempts to reduce health care costs through access to preventive services, including health screenings and vaccinations. Additionally, the ACA helped to establish a grant program to reduce health disparities in rural areas by promoting community-based prevention aimed at reducing chronic disease rates (The Henry J. Kaiser Family Foundation [KFF], 2013).

Another part of the ACA is the Hospital Readmissions Reductions Program (HRRP) (Patient Protection and Affordable Care Act, 2010). This legislation imposes penalties on hospitals when patients are readmitted to the same hospital or another acute care hospital within 30 days of discharge (Patient Protection and Affordable Care Act,

2010). The goal is that it will incentivize hospitals to make their transitions of care more effective and work better with patients on post-discharge planning. The HRRP was implemented on October 1, 2012. Hospital penalties are calculated by the Centers for Medicare and Medicaid Services (CMS) using a formula that projects an acceptable baseline readmission rate; hospitals that are found to exceed this baseline readmission rate are penalized (Patient Protection and Affordable Care Act, 2010).

Healthcare Costs

Hospital readmissions are costly. Readmissions for Medicare patients alone cost 26 billion dollars annually (Jencks et al., 2009). However, it is reported by the Medicare Payment Advisory Commission (MedPAC) that about 75% of such readmissions are avoidable if patients had received the right care. In year one of the HRRP (based on data 2008-2011) approximately two-thirds (or 2,213) of United States hospitals were penalized a total of $280 million for excessive readmission rates (McIlvennan, Eapen, & Allen, 2016). The penalty is a percentage of total Medicare payments to the hospital. The maximum penalty has been set at 1% for 2013, this penalty increased to 2% for the 2014 program year and was fully phased-in at 3% for 2015 (KFF, 2013). Therefore, looking to identify potential solutions to reduce readmissions represents an area of great interest to hospitals all over the United States.

Role of the Emergency Department in Readmissions

Not only are hospital readmissions costly but they also result in a system that is bogged down and is unable to provide high quality care for patients. Prolonged wait times in the emergency department (ED) result in increased morbidity and mortality and lower patient satisfaction (Shen & Lee, 2018). A portion of readmissions are

appropriately planned and deemed necessary as defined by the HRRP. The HRRP defined a planned readmission as "an intentional readmission within 30 days of discharge from acute care hospital that is a scheduled part of the patient's plan of care" (Horwitz et al., 2011). However, research has shown that a large number of hospital readmissions may be avoidable (Walraven, Bennett, Jennings, Austin, & Forster, 2011)

The ED has often been overlooked in studies regarding hospital however, it is estimated that a total of 56 percent of all ED visits are avoidable (Weinick, 2003). There are currently patients who utilize the ED who would benefit if instead outpatient care was utilized, for example patients with exacerbations of chronic diseases (e.g, chronic obstructive pulmonary disease). These types of non-urgent conditions could be treated and or managed by a primary care provider. ED visits over the past decade increased roughly 23% from 1997 to 2007 (Tang, Stein, Hsia, Maselli, & Gonzales 2010). According to one study that examined ED use in Illinois, average monthly ED visit volume increased by 14,080 visits, a 5.7% increase, after ACA implementation (Dresden, et al., 2016). With so many patients utilizing the ED, the role of the ED in readmissions of recently discharged patients is key to solving the problem of hospital readmissions. Patients often present to the ED because they have not received follow up care or because they have no PCP to manage their outpatient needs (Carrier, Yee, & Holzwart, 2011).

Role of Primary Care in Hospital Readmissions

Primary care is an important part of improving overall health, since it can help patients treat and manage their chronic conditions (Sharma, Kuo, Freeman, Zhang, & Goodwin, 2010). Hospitalizations for conditions such as asthma, diabetes, congestive heart failure and COPD are characterized as potentially avoidable (Walraven et al., 2011).

In many cases, these conditions could be managed through utilization of timely and effective primary care services. Researchers found that Medicare Advantage patients who had one or more outpatient visits with primary care clinicians within seven days of being discharged from the hospital to their homes were 12 to 24 percent less likely to experience hospital readmission than those who did not have an outpatient visit (Mittman, 2016).

Barriers to Reducing Readmissions

There are multiple barriers when it comes to reducing readmissions. The barriers to readmissions discussed in this paper, are access to primary care appointments, cost, and transportation to appointments.

Access to primary care. There are three factors contributing to an increase in the use of primary care; an aging population, increase in the prevalence of disease, and health insurance expansion. Due to these factors the United States is projected to face a shortage of between 40,800 and 104,900 physicians by 2030 (Mann, 2017). In addition, rural counties tend to have fewer health care providers (Bodenheimer & Pham, 2010). Even though 21 percent of the United States population lives in rural areas, only 10 percent of physicians practice in those areas (Bodenheimer & Pham, 2010). This shortage of providers may lead to the inability to access primary care services. With not enough providers patients find it more difficult to obtain timely appointments, after hour's medical care, or even speak with a physician over the phone (Bodenheimer & Pham, 2010). Access is defined by the Institute of Medicine as "the timely use of personal health services to achieve the best possible health outcomes" (Millman, 1993). This may lead to

unmet health care needs and poor health outcomes because primary care is at the foundation of health.

Cost. People without any type of health insurance fare far worse when compared to the insured. Medicaid patients are generally low-income patients who pay very little or no parts of their coverage. Medicaid programs vary state-by-state. In Maine the program is called Mainecare. In 2015, 23% of people in Maine were covered by Medicaid/Child Health Insurance Program (The Henry Kaiser Family Foundation [KFF], 2017). Maine was one of the 19 states that failed to expand the Medicaid program through the ACA (KFF, 2017). The number of people enrolled in Mainecare continued to decrease from 242,028 in 2011 down to 175,883 in 2017 (KFF, 2017). If more people are left uninsured, readmissions will continue to rise. This is because the uninsured are less likely to receive preventive care services for chronic disease and therefore are more likely to be hospitalized for an avoidable readmission (KFF, 2017). When looking at readmission rates it's important to take the socioeconomic data and dig down deeper in order to find the root causes of readmission.

Transportation. Given the geography of rural Maine, transportation has been identified as one barrier to follow-up (Leon, 2016). More than 1 in 5 Bangor residents have 3 or more chronic conditions, requiring regular PCP visits to adequately and appropriately manage their care. This percentage is 55% in the elderly, age 65 and older demographic (Leon 2016). Despite Bangor's relatively high population density, most patients attending primary care practices live outside Bangor and report difficulty finding means of transportation (Leon 2016). In a survey given to Center of Family Medicine Patients, 25 out of 28 patients reported missing or cancelling an appointment due to the

inability to find transportation (Leon, 2016). Overall, the ability to practice preventive medicine is dependent on patients attending follow up appointments.

Current Interventions to Reduce Hospital Readmissions

In the interest of providing high quality, patient-centered care to patients a number of strategies have been implemented to reduce hospital readmissions. These intervention strategies include patient education, patient-centered discharge instructions, and post discharge follow up care (Kripalani, Theobald, Anctil, & Vasilevskis, 2014).

Transitional Care Intervention

Transitional care is defined as the continuity of health care from one health care setting to another (Naylor, Aiken, Kurtzman, Olds, & Hirschman, 2011). It encompasses a broad range of services designed to bridge the gap between providers and settings (Naylor et al., 2011). These services are often based on the resources of the hospital. While it would be ideal to have all patients receive transitional care intervention, it is both time and resource intensive. The ability to proactively intervene in the discharge process by directly scheduling primary care appointments at the time of discharge could potentially prove effective. The option to schedule rapid primary care follow-ups allows providers a safe alternative rather than admitting patients with chronic conditions to the hospital (Sinha, Seirup & Carmel, 2017). This is because low-acuity patients that are admitted may not benefit from an inpatient stay. In fact an admission can lead to over testing, conflicting care plans, and less-effective preventive care due to lack of communication between outpatient and the hospital (Carmel et al., 2017). In a review study, approximately two-thirds of studies utilizing outpatient follow up have shown to be effective reducing repeated ED utilization. Since the majority of patients are admitted

through the emergency department, this could potentially reduce readmissions (Tang et al., 2010).

Post Discharge Follow Up Care

Data has shown that post discharge follow-up care can help reduce readmissions (Carmel et al., 2017). However, over half of the patients who were readmitted to the hospital, did not have a follow-up with a provider (Jencks et al., 2009). This provides a large cohort of patients who could receive preventive care in order to reduce hospital readmissions. In many cases the readmission is due to chronic conditions that could potentially be managed by a PCP. A follow-up within 7 days, is associated with substantially lower readmission rates among patients with highest clinical complexity and highest underlying risk of readmission (Jencks et al., 2009).

Patient Education

Better communication and understanding of discharge instructions between patients and providers has been shown as a potential solution to reduce hospital readmissions. Hospital discharge diagnosis along with medication instructions can be confusing and unclear. Many patients may find it overwhelming and difficult to speak up when they do not understand something. Providers who explain clearly when to follow-up and answer patient questions on discharge paperwork see a 30 percent reduction in readmission rates (Agency for Healthcare Research and Quality [AHRQ], 2009).

Patient centered discharge instructions. Discharge instructions contain important information so that patients can manage their own care. Presenting information to patients in a way which each individual can understand, is critical to better satisfaction and compliance. Approximately 44 million Americans are functionally illiterate and

another 50 million have marginal literacy skills (Kirsch,1993). The purpose of discharge paperwork is so patients can review it after discharge. If the discharge paperwork is written at a reading level above what the patient can understand, they may have trouble recalling what was instructed at time of discharge. A study has shown that pictures can help improve patient understanding and comprehension (Zeng-Treitler, Kim & Hunter, 2008). The recommended reading level for patient education materials, is at a 5th grade reading level or below (Stossel, Segar, Gliatto, Fallar, & Karani 2012).

Characteristics of High Risk Population

In order to focus resources and have the greatest effect on readmissions, tools have been created to help identify patients that are at a greater risk of readmission. The LACE score is a tool used to predict patients at a high risk of readmission (Walraven et al., 2010). The score combines data on length of stay, emergency admissions, comorbidity, and previous emergency department visits (Walraven et al., 2010). In addition, the following factors have been identified as characteristics of high readmission risk: payer type, socio-economic data, and age (Nagasako, Reidhead, Waterman, & Dunagan, 2014).

Payer Type

Payer type has also been shown to be a predictor of readmissions (Silverstein et al., 2008). According to the Healthcare Cost and Utilization project uninsured patients rose by 8.9 percent, from 10.2 to 11.1 per 100 admissions (Barrett, Wier, Jiang, & Steiner, 2015). Specifically, patients who have Medicare or Medicaid are more likely to be readmitted. Two studies found that Medicaid expansion was associated with declines in

hospital length-of-stay for Medicaid patients (Antonisse, Garfield, Rudowitz, & Artiga 2018).

Socioeconomic Data

Studies found that identifying SES data helps target quality improvement efforts to support hospital efforts around caring for vulnerable populations (Nagasako et al., 2015). It is known that poverty and lower education level are linked to overall lower levels of health (Centers for Disease Control and Prevention [CDC], 2018). However, the readmission standard currently is the same across all hospitals in the United States and does not take into consideration the sociodemographic factors of community that a hospital serves. Social determinants of health (SDOH) is defined as "conditions in the environments in which people live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks" (CDC, 2018). Five key areas are economic stability, education level, social and community context, health care, and neighborhood environment (CDC,2018). All of these areas have been associated with higher readmission risk.

Age

A number of studies have shown that age increases the risk of readmission (Corrigan & Martin, 1992). The state of Maine has a greater population of patients 65 years and older compared to the national average, according to the Maine CDC in 2016.

Comorbidities

The role of comorbidities in readmissions is complicated. One study found that the top five primary diagnoses of avoidable readmissions were usually complications of an underlying comorbidity (Donze, Lipsitz, Bates, & Schnipper, 2013). Most of these

underlying comorbidities are chronic and therefore could potentially be addressed in the outpatient setting. As a result, one strategy of readmissions, is to directly identify patients with COPD in the ED to and connect them to outpatient resources. Certain risk factors for patients with COPD increase the likelihood of readmission such as outpatient albuterol. This risk factor could be mitigated using primary care to address medication adherence patterns (Rezaee et al., 2018).

Length of Hospital Stay

Length of hospital stay has been reported as a risk factor in readmissions. A study done reported that longer length of stay was reported with higher 30-day hospital readmissions (Chopra, Wilkins, & Sambamoorthi, 2015). Using this as a predictor of readmissions could be beneficial in helping organize appropriate follow up.

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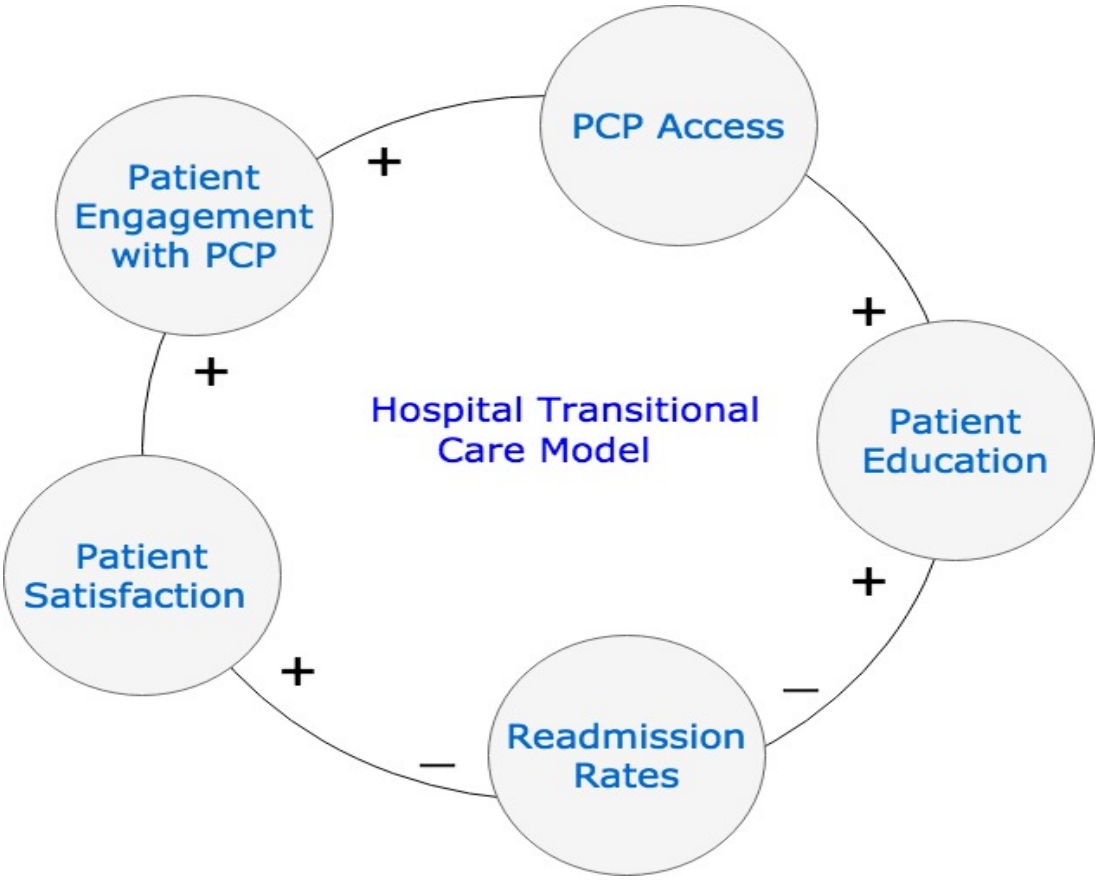

Figure 1: Hospital Transitional Care Model. Adapted from "Quality grant Proposal," by H. Larson, 2017.

Methods

Setting

The location of this study takes place in Bangor, Maine. Geographically this area is considered a metropolitan area; however; more than half of the county's residents live in a rural area. This is important to consider because it serves a population of 500,000 people in the northern two thirds of the state of Maine. The emergency department (ED) at EMMC sees roughly 35,000 visits per year, with a number of those patients considered high acuity (EMMC - Emergency Department, n.d). High acuity patients often have complex health problems and unpredictable needs. According to the Maine Rural Health Profile, health challenges include a higher overall mortality rate than the state average and higher rates of hospitalization for ambulatory care sensitive conditions, COPD, heart failure, hypertension, and diabetes (Kahn-Troster et al., 2016). The purpose of this thesis is to investigate the effect of how intervention of scheduling primary care follow-ups for all patients discharged from the emergency department effects readmissions.

Study Design

This thesis was adapted from an initial Harvard Pilgrim grant proposal (See Appendix A). Dr. Heidi Larson was the recipient of the grant as well as the primary investigator (PI). A team was then coordinated and trained that consisted of seven research interns who were undergraduate students who were interested in public health or business fields. Training consisted of teaching interns how to use each of the six different Eastern Maine Medical Center primary care practices appointment scheduling books.

Once trained research interns were available to directly schedule follow-up appointments with patients seven days a week between the hours of 8:00 AM- midnight from within the ED. The goal of this grant was to reduce hospital readmissions by 30 patients and save an estimated 336,000 dollars (See Appendix A).

Study preparation. Prior to data collection, the primary investigator (PI) and advisor, Dr. Heidi Larson, coordinated appointment scheduling protocols with both the emergency department physicians and the Eastern Maine Medical Center (EMMC) and Penobscot Community Health (PCHC) primary care office schedule managers. The procedure and goals of the study were discussed, the dates of the project were determined, and the methods to promote the study were implemented. A space in the emergency department was created in order to allow the research interns to be in visible sight of the providers. This is important because it helped provide a collaborative and accessible environment between research interns and providers. A flyer was created and hung in the providers' stations in the ED to remind providers of the objectives. The PI was available by phone or email to answer any questions or concerns regarding the study.

Study procedure. When asked by a provider to schedule a follow up appointment for a patient, a research intern would approach and enter the patient's room and ask them to confirm their name and date of birth (DOB). Once their name and DOB was confirmed, the research intern would then ask patients if they would like to schedule a follow up appointment. If the patient agreed, then the intern would then work with the patient to find an appropriate date and time for an appointment. If the patient was an EMMC primary care patient, research interns could directly schedule into their appointment book. When the appointment was confirmed in the appointment scheduling book, the interns

then handed out an appointment slip reminder to patients confirming the time and date of the appointment. Below the date and time was a reminder to patients that if they could not make their appointments they should call and reschedule.

However, if the patient was a Penobscot County Health Center (PCHC) patient, research interns did not have direct access to appointment scheduling books. Instead, interns directly called the patient's PCP office and spoke with a scheduler. If an appointment was scheduled, interns would hand out an appointment reminder slip confirming date and time of appointment. If the patient was being discharged from the emergency department outside normal office hours, the research interns would speak with the patient and inform them that they needed to have a follow up appointment with their primary care physician. Interns then obtained the patient's name, DOB, and phone number, and told the patients that a practice manager from PCHC would be reaching out to them the next business day to schedule a primary care appointment. The manager would attempt three phones calls to schedule follow-up. If they were unable to contact the patient a follow-up letter was sent to the patient's address. The practice manager communicated the appointments scheduled and attendance with the research interns.

If the patient did not have a primary care provider, the intern would inform the patient that they needed a follow-up with a primary care physician. They then asked the patient if they would like to be referred to a primary care office. If the patient agreed, research interns would collect the patient's name, DOB, medical record number, and discharging diagnosis and leave a message at 3-3300. This 3-3300 line was a contact line for primary care offices within EMMC. The messages left on this line were then followed

up by the primary care office managers and they contacted patients to make follow-up appointments.

Data Collection

Patient records were de-identified and the following information was then recorded in a group excel document in order to track the patients: current date and time, patient's medical record numbers, phone number, diagnosis/complaint, provider, provider location, appointment time and appointment date. As patients began to attend appointments, appointment attendance was also tracked. Research interns could identify follow up for attendance for EMMC patients by looking appointment scheduling book. If patients did not attend an appointment, the practice schedulers would mark the appointment as no-show. Additionally, interns could track the reason for missed appointments through documented care- manager notes and phone-call notes in Centricity (which is the practice electronic medical record).

Exclusion Criteria

Only patients 18 years and older who were scheduled for a follow up appointment with an intern were included in this study. In addition, only patients who had or were referred to primary care providers in the Eastern Maine Healthcare System and Penobscot Community Healthcare System were included.

Data source. Data collection from October 31st-January 1st was analyzed in this thesis. This data included all patients who were discharged from EMMC ED.

Analysis

Patients who followed up verses patients who never received follow up were identified. These patients were further analyzed by patient payer type, primary diagnosis, and barriers to follow up such as transportation, and diagnosis.

Results

The study sample included 192 appointments were tracked and analyzed in this thesis. Figure 2 shows the whether or not the scheduled appointments were attended. It showed that follow up appointments that were scheduled were attended 61% of the time. The majority of patients were compliant in scheduling a follow up appointment, only 3 patients refused an appointment. There were 27 PCHC patients that were unable to contact to schedule a follow up appointment due to being discharged from the ED after business hours. Patients did not attend 23% of appointments that were scheduled for them. Interns referred 26 patients who did not have a primary care provider to a 3-3330 contact line. The 3-3330 contact line was a line to EMMC PCP offices that would then contact the patients directly to schedule a follow up. Of these 26 patients without a PCP, 12 scheduled appointments. These appointments had an attendance rate of 75%. Ten of these patients without a primary care providers were unable to be contacted by the practice manager in order to schedule a follow up appointment. Lastly, 3 of these patients without a PCP refused to schedule an appointment.

In table 1 the data was comparing whether or not attending a PCP follow up had an effect on readmission. Both groups attend/readmission and attend/no readmission had roughly same demographic characteristics with the mean age around 52.5. However, more patients who had Medicaid/Medicare coverage that did not attend a follow up appointment more than commercial payer types.

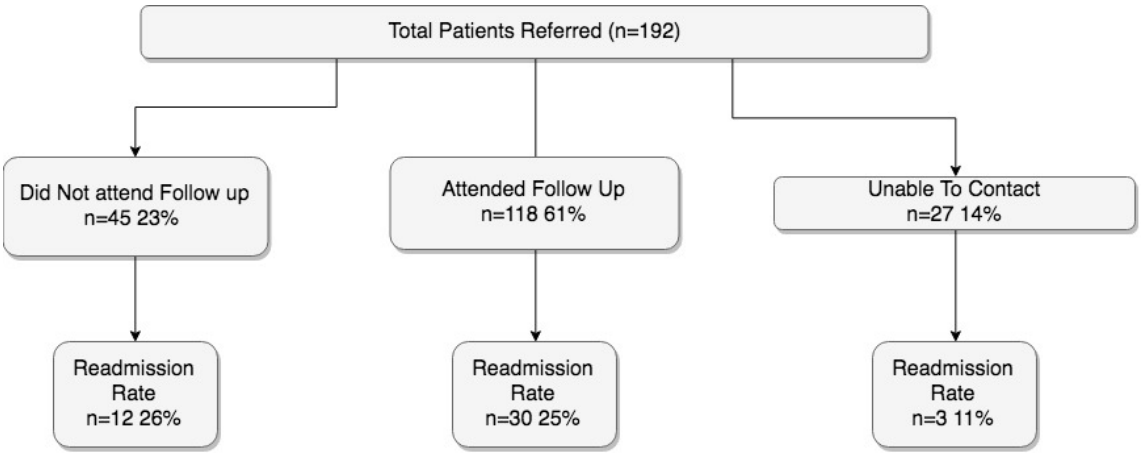

Figure 2: Comparison of readmission rates of whether or not appointment was attended.

Table 1: Demographic characteristics of follow up versus no follow up readmission rates

	Attend Appointment and were Readmitted n=30	Did not attend appointment were readmitted n=13
Demographic Characteristics		
Age (years), median (IQR)	53, (29-66)	52 (37-66)
Insurance		
Commercial	12	1
Medicare/Medicaid	17	11
Self Pay	1	1
Patient has previously Established PCP		
Yes	28	12
No	2	1
Barriers to Follow Up		
Yes	2	3
Unable to determine	28	9
Diagnosis		
COPD	5	4
CHF	3	0
MI	0	1
Altered Mental Status	4	1

Table 2: Demographic characteristics of follow up versus no follow up no readmission

	Attend Appointment No Readmission=88	Did not attend appointment No Readmission n=32
Demographic Characteristics		
Age (years), median (IQR)	53, (37-68)	50, (35-66)
Insurance		
Commercial	59	10
Medicare/Medicaid	43	19
Self Pay	10	3
Patient has previously Established PCP		
Yes	80	40
No	8	1
Barriers to Follow Up		
Yes	0	9
Unable to determine	88	32
Diagnosis		
CHF	5	1
COPD	3	4
MI	1	0
Altered Mental Status	1	0

Table 3: Did not attend Follow up Comparison Readmission versus No Readmission

	Did not attend appointment were readmitted n=13	Did not attend appointment No Readmission n=32
Demographic Characteristics		
Age (years), median (IQR)	52 (37-66)	50, (35-66)
Insurance		
Commercial	1	10
Medicare/Medicaid	11	19
Self Pay	1	3
Barriers to Follow Up		
Yes	3	9
Unable to determine	10	23

Discussion

This study revealed that having a follow up appointment with a primary care provider had a minimal effect on hospital readmissions. Findings suggest that in order to have an effect on hospital readmissions, patients who are being discharged from the emergency room should meet with a care manager in order to insure there are no barriers to follow up care such as finances or transportation. In particular, patients being discharged who have Medicaid or Medicare coverage are non-compliant with follow up for various reasons. More emphasis on the importance of these follow ups should be communicated through both the ED physician and the primary care office. Interventions such as follow up phone calls and simple patient education may be alternatives for patients without proper transportation to appointments. Better education on the availability of transportation needs could be communicated as many patients are unaware of alternative transportation available (Leon, 2016). A study that analyzed patients who missed appointment showed that the vast majority of patients 25/28 acknowledged missing an appointment due to lack of transportation (Leon, 2016). Consideration of initiating a voucher system when patients are discharged from the ER could act as a potential solution. Our study did note that when cancellations were documented in the care management or phone call notes it was due to lack of transportation.

Limitations

There are a number of limitations in this study. While we were able to collect data on follow-up, hospitalizations, and ED revisits at Eastern Maine Healthcare system and Penobscot Community Health Center institutions, we were not able to include data on

hospitalization, ED visits, or outpatient follow-up at other institutions. Since patients were referred to interns on a provider by provider basis we were unable to the validity or reproducibility of this assessment scale. There was a transition period of adjusting the culture of the ED to utilizing interns as well as a transitional period of primary care practices ensuring their scheduling processes and procedures were met. During this transitional time patients were discharged without follow up from a research intern. On the primary care side, patient appointments were scheduled by interns and deleted by practice managers due to incorrectly scheduled appointments. The primary care offices would then have to reschedule patients follow up. Patients did not always receive follow up in a timely manner due to lack of availability of the patient's primary care provider. A timely follow up is defined as follow up within 7-14 days. While this did not have a significant effect on the data presented in this thesis, the literature states that timely follow up is a factor in reducing hospital readmissions. The average age of the patients included in this study was around 52 years old. Statistically, older patients are at greater risk of readmissions (Hao et al., 2015). Not every patient who was discharged from the Emergency Department received a follow up appointment. This study was only conducted at one institution in Central Maine. The data might be altered if other institutions in Maine were included.

Future Directions

In the future, I believe additional data should be acquired such as the acuity level when going through the Emergency Department. Additionally, tracking the missed appointments could be beneficial. If research interns called and ask to reschedule cancelled appointments, patients might result in more patients attending following up

appointments within a 30 day window. Furthermore, expanding the study to include all patients discharged from the emergency department and working with outside providers such as St. Joseph PCP offices and PCHC to directly schedule appointments even after hours. Another way to measure the success of this study would be to send out patient satisfaction questionnaires asking if having a follow-up appointment scheduled in the Emergency Department was beneficial for the patient in regards to their transition of care.

Conclusions

Based on the findings more data will need to be analyzed in order to identify is access to primary care follow up has an effect on hospital readmission. The potential is there because having access to primary care appointments does provide providers safe discharge alternatives. It is dependent on patient compliance. With only 61% attendance to primary care follow-ups this may not be a solution to the complex topic of readmissions. Payer type should be paid close attention to when discharging patients and making sure the patients have both access to transportation as well as understand the importance of follow up (Barrett et al., 2015). Comorbidities did not have a significant effect in the data analyzed in this thesis however, addressing this issue has been shown to be an effective measure of lowering readmissions high-risk patients. Lowering hospital readmissions is attainable however, the system as a whole, all of the providers will need to continue to work together.

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Appendices

Appendix A

Original Grant Proposal

Please email completed Quality Grant Proposal and any attachments to:
HPHC_NMM@harvardpilgrim.org

Note: *please return in Word Format as some areas are used to populate other documents*
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1. Group name: Eastern Maine Medical Center LCU (if applicable)

2. Project title: Reducing Hospital Readmission Rates for Ambulatory Care Sensitive Conditions

3. Topic addressed in proposal (Please refer to program description): Care Transitions

4. Please give a brief description of your project – this may be used for posting to HPHC Website

Hospital readmission rates represent a critically important health policy issue. Readmissions place patients at greater risk of complications and healthcare-associated infections. And, they are costly; nearly one in five of all hospital patients covered by Medicare are readmitted within 30 days, accounting for $15 billion a year in health care spending. (1,2) At Eastern Maine Medical Center, we are committed to developing a multidisciplinary approach to reducing our rates of hospital readmissions specifically for ambulatory care sensitive conditions.

In 2016, 430 initial medical and/or surgical admissions were followed by one or more potentially preventable readmissions. Of these initial admissions, approximately 20% were themselves potentially avoidable, that is, had an ambulatory sensitive condition as a primary diagnosis. Our 2016 all-cause all payer readmission rate for patients >18 years of age attributed to our five EMMC primary care practices was 430/3137, or 13.7%. (3) Our goal is to reduce our readmissions by 30, or 2.5 patients per month, in 2017, in order to achieve a readmission rate of 12.8%. Achieving this modest reduction in admissions will result in a savings of approximately $336,000. In addition to achieving an initial cost savings, addressing the entire admission-readmission chain will help free up hospital bed capacity to meet other demand. It is fully anticipated that we can exceed these goals during the course of the study year.

The emergency department is the biggest cost driver for hospital readmissions. Patients attributed to our EMMC practices are admitted 33% of the time they present to the

ED. Our proposal involves a system redesign that allows for the implementation of protocols that have been developed by the physicians in our emergency department for the treatment and stabilization of three of our most common causes of 30-day readmission, namely CHF, COPD, and pneumonia. (Exhibit A) Once the patient is determined to be stable for discharge, we will have an ED-based research study team take over with the transition of care for the patient.

Appendix B

General Scheduling Protocol

1) Confirm PCP, office; VERIFY PATIENT HAS NOT BEEN DISCHARGED FROM PRACTICE
2) Consult w/patient
    a. Introduce yourself
    b. Confirm patient name
    c. Confirm phone number and DOB
3) Refer to schedule instructions for each practice
    a. Gather 3 appt. options for patient
    b. Confirm appt. choice
4) Finalize appt.
    a. Be sure to put the reason (ED follow up AND diagnosis)
    b. Select "no" for reminder phone call/text
    c. DON'T FORGET TO HIT CONFIRM
5) Once appointment is scheduled:
    a. Email practice contact
    b. CC Heidi
    c. Include:
        i. Patient name
        ii. MRN
        iii. Appt. date/time
        iv. Office
        v. Provider
        vi. Diagnosis
        vii. Patient phone number
    d. Fill out Data Tracking Excel Sheet with above information
        i. BE SURE TO SAVE after every entry

Author's Bibliography

Meredith Roderka grew up in Dexter, Maine. She attended the University of Maine with a major in Biology. Throughout her time at the University of Maine she was volunteered and worked at Eastern Maine Medical Center. She is passionate about primary health care. She hopes to obtain a Doctor of Osteopathic Medicine degree and return to the state of Maine to practice medicine.