

REDUCING HOSPITAL READMISSIONS
USING A MULTIMODAL EVIDENCE-BASED APPROACH

A SCHOLARLY INQUIRY PROJECT SUBMITTED TO THE OFFICE OF GRADUATE
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Abstract

Background: Readmissions can be a quality issue and a financial burden. The Center for Medicare and Medicaid (CMS) has imposed hospital penalties for high readmission rates. The objective of this project was to reduce potentially preventable readmissions at Pali Momi Medical Center (PMMC) to a rate of 0.9 using the 3M Potentially Preventable Readmission methodology by December 2013.

Methods: A literature search demonstrated implementing several interventions can reduce readmissions. The six interventions included the use of transitional care programs, home visits, discharge planning, medication reconciliation, post discharge phone calls, and follow-up appointments. These six interventions were implemented at PMMC using the Iowa model as a guide for implementing evidence-based practice changes. The predictive model, LACE (Length of stay, Acuity on admission, Comorbidities, and Emergency department visits), was used to assess patients at high risk for readmissions. .

Outcomes: Readmission rates dropped from 1.11 to 1.05 during the first 11 months of the 12-month project using the six interventions. One of the planned interventions, using a health navigator to provide home support, was not initiated until the ninth month. Additional time is needed to see the full effects of this intervention.

Conclusion: The reduction in readmission rate, although not yet at goal, did lead to a noteworthy financial benefit. PMMC experience a 38% reduction in penalties from CMS and improved reimbursement by 25% using a pay-for-performance measure from a private insurer. More work is needed to involve the community in meeting the challenges of access to care.

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Chapter 1

Healthcare spending in the United States (US) outpaces healthcare spending from all other nations. Total healthcare expenditure in 2010 neared 2.6 trillion dollars, ten times more than in 1980 (Kaiser Family Foundation, 2012). New technologies, drug costs, and an increase in chronic diseases are all reasons cited for the reported increase. The cost of healthcare is predominantly covered by the employers in the US, private insurers, and the Center for Medicare and Medicaid Services (CMS). Medicare is the principle source of coverage for the elderly and the disabled. The rising numbers of baby boomers increases the number of people relying on Medicare.

Medicaid is the primary source of healthcare coverage for low income families. The US experienced a recession beginning in 2008 which led to an increase in the number of Americans relying on Medicaid. Since 2002, employer-sponsored health coverage for family premiums increased by 97% and 51% of healthcare costs are for hospital care and physician/clinical services (Kaiser Family Foundation, 2012). The Patient Protection and Affordable Care Act of 2010, (ACA), has pay-for-performance measures in place to improve quality of care and reduce the cost of health care. Reducing readmission is one of the initiatives aimed at reducing costs and improving quality.

CMS policy primarily focuses on reducing hospital readmission rates. CMS defines a readmission when a patient is re-hospitalized within 30 days of being discharged from any hospital. Eighteen to twenty percent of patients discharged experience readmission to a hospital. Providers are reimbursed for care provided to Medicare beneficiaries by CMS using a Diagnosis Related Group (DRG) formula. This payment methodology includes a process to bill for additional payments for each

admission which may discourage providers from working on strategies to reduce readmissions as they used to receive additional payments for each admission and maximize payments on shorter length of stays. As of October 2012, CMS implemented a policy which penalizes hospitals with a high readmission rate. This is intended to be a cost savings driver for CMS with an added quality benefit to the beneficiaries. The goal is to reduce hospital readmissions. Most patients experiencing hospital readmission need management of chronic illnesses. Readmission is inconvenient and stressful for the patient and creates a financial burden for the patient, CMS, and the US healthcare system.

The ACA added section 1886(q) to the Social Security Act of 1964 which establishes the Hospital Readmission Reduction Program, requiring CMS to reduce payments to inpatient perspective payment system (IPPS) hospitals with excess readmissions, effective for discharges beginning on October 1, 2012 (CMS, 2013). This is based on an assumption that many readmissions are avoidable. This assumption was identified by the Medicare Payment Advisory Committee (MEDpac). This group found the 7-day rate for potentially preventable readmissions was 5.2%, the 15-day rate was 8.8%, and the 30-day rate was 13.3%. Accordingly, 84% of 7-day readmissions, 78% of 15-day readmissions, and 76% of 30-day readmissions were flagged as potentially preventable. In addition to the percentage of potentially preventable readmissions, this group further quantified the financial impact for potentially preventable readmissions to be \$5 billion for cases readmitted within 7 days, \$8 billion for cases readmitted within 15 days, and \$12 billion for cases readmitted within 30 days (MEDpac 2007). The penalty cap for readmissions is 1% of Medicare reimbursement for 2013, 2% for 2014, and 3% for 2015. Of importance, this penalty is based on preventable readmissions rather than all

readmissions. This standardized method identifies readmissions resulting from the process of care and treatment or lack of post admission follow-up rather than unrelated events (Hawai'i Health Information Corporation, 2014).

This national concern is noted in Hawai'i as well. Information found on Medicare Hospital Compare website allows the public to make quality comparisons of hospitals (Medicare.gov/Hospitalcompare, 2013). A search of Hawai'i hospital data demonstrates readmission rates are not available. Instead hospitals in Hawai'i use information found in the Hawai'i Healthcare Information Corporation (HHIC) database for readmission rates. HHIC compares the expected rate of potentially preventable readmission to the actual rate per hospital.

The HHIC is a private, not-for-profit healthcare information organization established in 1994. Per their website, HHIC's mission is to collect, analyze, and disseminate statewide health information to support efforts to continuously improve quality and cost-efficiency. Their services include reporting, consulting, training, and fostering collaboration (Hawai'i Health Information Corporation, 2014). Data can be retrieved from their website in public folders which are accessible to anyone and some data are also available to members only. An example of information found in the public folder is patient satisfaction rating. Readmission data is only retrievable by members.

The readmission information can be compared to other facilities locally as well as nationally. The benefit is the same methodology of identifying whether a readmission is potentially preventable exists statewide in Hawai'i. In a systematic review of measuring and preventing potentially avoidable readmissions, most hospitals have a clinician review whether a readmission is deemed possibly preventable (Yam et al. 2010). It was not

unusual for two independent reviewers to be used along with a third reviewer if there was no consensus between the two initial reviewers. Information on the HHIC website states all readmission reports are based on 3M's Potentially Preventable Readmissions (PPRs) methodology. The 3M PPR methodology provides for consistency in identifying potentially preventable readmissions across all hospitals in Hawai'i. A limitation to using this information is the lag time for information to become available. Because HHIC uses data from coded claims, the information takes four to six months to be posted on their website.

Problem

Pali Momi Medical Center (PMMC) is a 128-bed not-for-profit hospital located in West Oahu. It has one of the highest readmission rates in the state of Hawai'i, and West Oahu is the region with the highest readmission rate per data from Mountain Pacific Quality Health (MPQH). Per their website, MPQH is a physician sponsored organization dedicated at improving the quality of healthcare and assuring the most appropriate utilization of healthcare services (Mountain Pacific Quality Health, 2013) and support Montana, Wyoming, Hawai'i, and Alaska. As part of their contract with CMS, MPQH supports healthcare efforts to make good care even better by encouraging providers, empowering patients, and encouraging collaboration (Mountain Pacific Quality Health, 2013).

PMMC is part of Hawai'i Pacific Health, a large four-hospital system, on Oahu and Kauai. The majority of physicians practicing at PMMC are in private practice. Hawai'i Pacific Health utilizes Epic as its electronic medical record system. Therefore, data from records of patients who are discharged from PMMC and readmitted to any

Hawai'i Pacific Health hospital can be captured to provide a monthly raw readmission rate. PMMC can therefore look at both the raw readmission rate as well as the potentially preventable readmission rate found in HHIC. The raw readmission rate counts all readmissions to Hawai'i Pacific Health and does not include readmitted patients outside of the Hawai'i Pacific Health system. This is a limitation and is consistent with limitations found in the literature reviewed, as most states do not have an information system like HHIC. The HHIC data is, therefore, seen as more accurate and the raw rate is used for trending only.

HHIC reports readmissions for all hospitals in Hawai'i (with the exception of Tripler Army Medical Center) using a formula comparing actual rates to expected rates. A formula used to calculate the risk for readmissions using readmission chains and rates are risk adjusted. This methodology allows comparison across all facilities by using an expected readmission rate of 1.0 and comparing it to the facilities actual rate. The overall potentially preventable readmission rate in Hawai'i, from all readmissions regardless of payer, is 0.89 which is better than the expected rate of 1.0. Per HHIC data PMMC has one of the highest readmission rates in the state of Hawai'i. During 2012 the expected rate for PMMC was 8.37% with an actual rate of 9.27%. This equates to a ratio of 1.11 compared to an expected rate of 1.0. Table 1, obtained from HHIC, represents HHIC data comparing the six large hospitals in Hawai'i and their readmission rates from January 2012 to December 2012. It is worth noting HHIC uses this methodology for all readmissions whereas CMS breaks down readmissions rates by DRG. CMS calculates readmission rates for diabetes, heart failure, pneumonia, chronic obstructive pulmonary

disease, acute myocardial infarction, and chronic renal failure only and compares the rate to the overall national average.

Table 1.

2012 Readmission Rates for Six Largest Hawai'i Hospitals

Hospital	All Discharges	Eligible DC's At Risk (for Readmission)	Readmission Chains (Actual)	Readmission Rate (Actual)	Readmission Chains (Expected)	Readmission Rate (Expected)	Actual to Expected Ratio (Goal =<1)	Readmission Days (Excluding Initial Admission)	Readmission Charges (Excluding Initial Admission)
Castle Medical Center	8,518	6,136	432	7.04	486	7.93	0.89	3,021	\$14,487,340
Kuakini Medical Center	6,295	4,929	419	8.5	416	8.44	1.01	3,462	\$16,437,867
Pali Momi Medical Center	6,483	5,116	474	9.27	428	8.37	1.11	4,424	\$24,355,006
Straub Hospital	7,596	6,118	474	7.75	521	8.52	0.91	3,653	\$21,250,874
The Queens Medical Center	26,201	19,415	1,357	6.99	1410	7.26	0.96	11,389	\$55,247,402
Wahiawa General Hospital	3,082	2,294	284	12.38	228	9.96	1.24	2,938	\$12,096,902
Overall:	58,175	44,008	3,440	7.82			0.99	28,887	\$143,875,391

Therefore, the goal of this project was to reduce potentially preventable readmissions at PMMC to a rate of 0.9 using the 3M Potentially Preventable Rate (PPR) methodology by December 2013.

Chapter 2

Theoretical and Conceptual Framework

The Iowa Model is an organizational excellence model (Titler et al. 2001). This model was chosen to help guide this evidence-based practice change at PMMC with the goal of reducing readmissions below national benchmarks. Per Wilkinson, Kent, Hutchinson and Harrison 2010, an organizational excellence model focuses on the entire organization and encourages attention to context in which evidence-based practice will be used. It requires a clear vision, a clear strategic plan, and the commitment of all leaders at every level. The Iowa Model has seven steps.

1. Problem and Knowledge Focused Triggers
2. Form a team
3. Assemble Relevant Research and Related Literature
4. Critique and Synthesize Research for Use in Practice
5. Pilot the Evidence-Based Practice Change
6. Implement the Evidence-Based Practice Change
7. Monitor and Analyze Structure, Process, and Outcome Data

Knowledge and Problem-Focused Triggers

A four month chart review of readmissions identified by HHIC as potentially preventable was conducted to gain a better understanding of the readmissions at PMMC. This was completed using HHIC data and the electronic medical record system used at PMMC. The two Oahu hospitals with the highest readmission rates are located in West Oahu; the goal was to identify possible reasons for the highest readmission rates. The

review was conducted to see if patients living in care homes have a higher risk of readmissions.

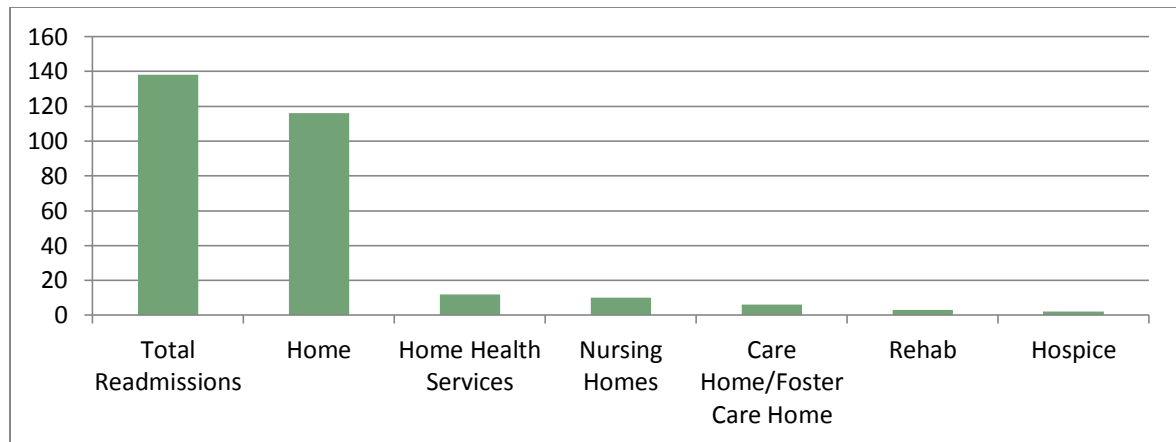
Data from MPQH shows a higher readmission rate for West Oahu patients with a higher concentration noted in the geographic locations with an increase number of care homes. Hawai'i has an aging population and few long-term care beds but there are many care homes located across the state. Care homes are privately-owned homes adapted to accommodate elderly people needing assistance with activities of daily living. The owners or care home employees typically have a minimum of nursing assistant training and are the primary caregivers. Foster care homes are approved by the State of Hawaii and have licensed practical nurses or registered nurses (RNs) providing care for patients with advanced healthcare needs such as feeding via feeding tube.

The four month chart review conducted at PMMC included data from the months of September, October, November, and December 2012. These months were chosen as they were the last available data from HHIC and represented potentially preventable readmissions from PMMC discharges regardless of where they were readmitted. There were a total of 138 PMMC patients readmitted from September to December, 2012, most of which (116) had been discharged home. Only 12 patients received home health services. A total of 10 patients were discharged to a nursing home for either long term care or short term rehabilitation. Six patients were discharged to a care home or foster care home, three to the rehabilitation facility, and two to hospice. The expectation was readmissions would be higher for those patients discharged to care homes or foster care homes. Instead, the data showed the majority of readmitted patients were initially

discharged home and very few received home care services. Figure 1 demonstrates the PMMC readmissions by discharge disposition.

Figure 1.

PMMC Readmissions Based on Discharge Disposition



Based on these findings, the plan needed to include stronger consideration for assistance from home health agencies or health navigators. Home health services would likely not be covered for most patients as patients must be home bound to receive these services. Another alternative are healthcare navigators who can assist patients become more knowledgeable about their disease and more independent with their own care needs. Based on this information, PMMC contracted with an agency and paid for these services to see if this would decrease readmissions. Approval was received from PMMC's legal counsel and compliance officer. This was needed to assure PMMC remained in compliance with regulations as governmental agencies will provide home health services for home bound patients only and many patients included in the review were not home bound.

Another finding of the chart review revealed many patients had emergency department visits post discharge but prior to their readmission. The exact number is not known as some patients did not return to PMMC for their readmissions and it should be assumed some patients also went to the emergency department at a different facility. The predictive model LACE (Length of stay, Acuity on admission, Comorbidities, Emergency department visits) includes emergency department visits as a predictor to readmissions. Based on this chart review, using such a tool could capture patients at high risk for readmissions.

During the four months under review, PMMC only had one Transitional Care Coordinator. Based on the chart review only 43 patients were seen by the Transitional Care Coordinator yet most were noted to be at high risk for readmission. This number does not represent the numerous patients seen by the Transitional Care Coordinator who were not readmitted. Of interest 85 of the 138 patients in this review had a follow-up appointment with their primary care provider, and 60 of these 85 patients had their appointment within seven days of discharge. This indicates only 44% of the 138 readmitted patients had follow-up appointments prior to or shortly after their discharge from the hospital. The goal is for 90% of hospitalized patients to have either an appointment within seven days post discharge or a note in the medical record indicating the provider only takes walk-in appointments

Form a Team

The original team included the Vice President of Patient Services (also Chief Nurse Executive), Chief Medical Quality Officer, Director of Quality, Director of Case Management, Pharmacy Director, Pharmacy Manager, and a data analyst. The team

reviewed data and additional members were included as the interventions were selected. A community effort focusing on reducing hospital readmissions, the West Oahu Community Collaborative included representatives from hospitals, pharmacies, long term care facilities, rehabilitation facilities, hospice, and home health agencies in West Oahu. There were also representatives from insurance companies and Mountain Pacific Quality Health. This team formed a year ago and met once per month with the goal of improving communication and decreasing readmissions in West Oahu.

Assemble Relevant Research and Related Literature

An electronic search was completed using PubMed, CINAHL, OVID, and Cochrane. Search terms included the word “readmission” along with “transitional care”, “heart failure”, “hospitalist”, “reduction”, “risk”, “discharge planning”, “home care”, “home visit”, “medication reconciliation”, and “case management”. A total of 82 articles were reviewed and 16 were synthesized for the purpose of this review. The publications were published between 1999 to 2013. The critiquing tools used were the Mosby’s Research Tool and Titler’s Research Quality and Outcome Tool for systematic reviews. Mosby was used to grade the level of evidence and internal validity. The Mosby Research Critique Tool (2004) has eight levels of evidence as represented in Figure 2. The 16 synthesized articles are ranked using the Mosby Research Critique Tool in Figure 2 (Melnyk, and Fineout-Overholt, 2005).

Figure 2.

Mosby Research Tool and Synthesized Articles

Level of Evidence	Description	Readmission Articles
I	Meta-analysis	4
II	Experimental design/Randomized Control Trial	4
III	Quasi-experimental design	
IV	Case controlled, cohort studies, longitudinal studies	1
V	Correlation studies	
VI	Descriptive studies including surveys, cross sectional design, developmental design, and qualitative studies	3
VII	Authority opinion or expert committee reports	
Other	Performance improvement, review of literature	4

Critique and Synthesize Research for Use in Practice

All the articles included in this literature review focused on patients at risk for readmissions, but the population characteristics were often poorly defined with a total of six articles with no specified characteristics. Seven articles included multi-ethnicity and socioeconomic information. The rest used age as a defining factor with three using age ranges between greater than 50 years to greater than 75 years. Three other articles used mean ages from 55 to 80 years. Studies were performed in a multitude of locations (one in Alabama, three in Pennsylvania, one in southeast US, one in Los Angeles, and one in Hong Kong). A systematic review looked at studies conducted in a total of eight countries and five articles did not include where the study was located.

Different interventions were included in the studies (see Figure 3). For example, it may be that medication review may be completed as part of discharge planning, but if it was not clearly stated it was not being included in the chart. Of note discharge planning was often poorly defined and at times listed as usual care at discharge. In these 16

articles, 10 reported a reduced readmission rate, 5 reported no change and 1 did not report a readmission rate.

Figure 3.

Readmission Interventions and Results

Level of Evidence	TCP APN	Home Visits	DC Plan	Med Rec	DC Call	MD F/U Appt	Effect on Readmission
I	*	*	*	*	*	*	Reduced
I	*	*	*	*	*	*	no change
I		X	X				Reduced
I		X	X		X	X	Reduced
II		X	X				no change
II	X	X	X		X		Reduced
II	X	X	X	X	X		no change
II	X				X		Reduced
IV	X		X	X	X	X	Reduced
VI	X	T	X	X	X	X	Reduced
VI	X	X	X				not reported
VI		X		X	X	X	Reduced
Other	X	HC		X		X	no change
Other	X	HC	X		X	X	Reduced
Other			X		X	X	
Other	xx	xx	X		X		Reduced

Note. TCPAPN = Transitional Care Programs using Advanced Practice Nurse; DC Plan = Discharge Plan; Med Rec = Medication Reconciliation; DC Call = Post Discharge Phone Calls; MD F/U Appt = Physician Follow-Up Appointment; * = No single intervention implemented alone was regularly associated with reduced risk for 30 day readmissions; X = intervention mentioned in article; T = home telemetry monitoring; HC = article written from perspective of home care agency; xx = only some of the articles synthesized in this document mentioned this intervention.

The strengths, quality, quantity, and consistency of the literature are important to consider. There were consistencies found in the literature review regarding interventions used to reduce readmissions. While not all researchers focused on the same interventions as found in Figure 3, these were the most frequently mentioned. Of the 16 articles included in the review of the literature there were a total of eight with a level of evidence of Mosby Research Tool Level I or II. The systematic reviews included a large number of

participants and numerous articles, and included research conducted in a total of 10 countries.

There were gaps, weaknesses, and limitations noted as well. The number of interventions made it difficult to know what impact each intervention had and where the focus should be when implementing a program. Readmissions were reported in the studies when the patient returned to the original hospital but there were no mechanisms in place to capture patients who were readmitted to a different hospital during the same 30-day time frame. Community resources and access to care may also play important roles in readmissions, yet these were not examined in the literature. It may be difficult to do so when studies are conducted locally. A multistate study is needed using the same interventions to demonstrate significant differences.

Literature reviewed also focused on obtaining ideas to build and evaluate transitional care programs. Transitional care programs are intended to assist patients as they move through the continuum of care. Bradway et al (2012) wrote “Transitional care is a successful model of care (MOC) that encompasses a broad range of services, is focused on preparing and implementing safe and timely passage from one environment to another, and is typically delivered by nurses or APNs” (p.395). Per the literature synthesized, evidence-based programs using advanced practice nurses (APNs) were effective at decreasing readmissions but comparison studies using RNs and the same interventions were not conducted.

Additionally eight articles were reviewed to assess the availability of predictive models. Four of these articles were systematic reviews. There are several predictive models to choose from and all have limitations. Most rely on comorbidities but lack the

social or behavioral influences impacting health outcomes and hospital readmissions. The patient education level can also be a factor not addressed in predictive models, especially when the patient and family members are not able to fully understand the discharge instructions. When using a predictive model, access to care is another factor influencing readmissions that is not considered.

Predictive models assess the risk of readmissions but not the patient's needs. The risk assessment does not guide the needed interventions by caregivers. The advantage to using a predictive model however is it alerts caregivers to patients who are at higher risk of readmissions. Having this information readily available allows the caregivers to target the patients who need additional resources to prevent readmissions. The LACE tool was found to have the closest comparison with past readmissions at PMMC. LACE is an acronym for length of stay, acuity on admission, comorbidities, and emergency visits. Gruneir et al. (2011) identified the components of the LACE index which are shown in Figure 4.

Figure 4.

Components of the LACE Index

L	Length of hospital stay	Number of days between admission to and discharge from acute care hospital for the index hospitalization
A	Acuity on admission	Rating of need for care at time of index admission: emergent (acute) or urgent (non-acute)
C	Comorbidity	Number of co-existing medical conditions at the time of index hospitalization as measured by Charlson score with updated disease category weights
E	Emergency department visits	Number of unique emergency department visits made in the six months before the index hospitalization

Summary of Literature Review

There are numerous interventions aimed at reducing readmissions noted in the literature. The synthesized articles demonstrated six interventions provided the greatest opportunity to reduce readmissions. The six interventions are transitional care programs, home visits, discharge planning, medication reconciliation, post discharge phone calls, and follow-up appointments. Predictive models are useful to assess the risk for readmission but not the needs of the patient. The models rely heavily on comorbidities and lack the patient's social and behavioral influences. These models are limited as they do not take into consideration the patient's educational level, cultural differences, health literacy of patients or caregivers, or access of care challenges.

Chapter 3

Six interventions noted in the literature were adopted at PMMC with the goal to reduce readmissions. Ideally when using the Iowa Model, an evaluation follows the pilot prior to establishing the implementation. Due to the delay of four to six months before available data from HHIC, the pilot was not done before the implementation. This calculated risk was based on the urgency to reduce readmissions.

Definitions

CMS defines readmissions as an admission which occurs within 30 days of a hospital discharge. At this time CMS lists only six DRGs considered for readmissions. These are heart failure, acute myocardial infarct, pneumonia, diabetes, COPD, and renal failure. The goal of this project is to reduce all readmissions at PMMC using the 3M's Potentially Preventable Readmissions methodology regardless of DRG. This method identifies readmissions possibly resulting from the process of care and treatment or lack of post admission follow-up rather than unrelated events (Hawai'i Health Information Corporation, 2014).

Setting and Sample

PMMC is located in West Oahu and hospitals in West Oahu are experiencing a higher rate of readmissions. In 2013, there were 6,581 admissions to PMMC and 61,400 emergency department visits. There were a total of 6,804 surgeries performed at PMMC but the patient admissions are predominantly for medical rather than surgical reasons. Common DRGs are heart failure, pneumonia, and sepsis. There are also many patients admitted with diabetes and renal failure as comorbidities. The majority of the hospitals on Oahu are located in Honolulu where the majority of primary care providers are also

located. Access to care for the population to the far west of Oahu is limited as few providers are located in this area.

PMMC has just over 1200 employees and 410 physicians. Nurse practitioners are employed in the cardiology and the emergency departments. All inpatients are assigned a RN case manager to assist with care management and discharge planning.

Data Collection Instrument

HHIC inputs information from coded claims into a computer program to calculate readmissions based on the 3M Potentially Preventable Readmissions methodology. This methodology is complex and details are non-transparent. Information about DRGs can be obtained from HHIC and all information is presented in numbers only. It is not reported by patient information therefore difficult to analyze. A benefit of HHIC information analysis is it counts patient readmissions regardless of originating hospital.

Limitations

There is a lack of literature on the cultural aspect of readmissions. Hawai'i has a blended culture where extended families live and care for each other. This, at times, leaves young adults with the responsibility of caring for young and old and can include caring for numerous family members. This was not found in the literature. Community resources and access to care may also play important roles in readmissions yet this was not examined in the literature. It may be difficult to do so when studies are conducted locally which indicates the need for multistate studies using the same interventions to see if there are differences.

Another limitation noted for this project is the delay in the reported data. This makes it difficult to assess the timely progress of the project. Necessary changes are delayed when interventions are not working.

Pilot/Implement the Evidence-Based Practice Change

All patients were assessed for their risk for readmissions and interventions were implemented based on this assessment. The literature review supports several actions needed to reduce readmissions and this project incorporated multiple interventions to meet the objectives. Additional members were introduced to the team to assist with the interventions. There were three members of the Information Technology Department involved in creating tools for LACE, discharge phone calls, and the use of RxHub (a software tool which provides information to hospital staff about medications the patient purchased). Pharmacy technicians were also added to the team to assist with medication reconciliation. Admission/Discharge Nurses joined the team to assist with the flow of follow-up calls and post discharge calls. Staff from Ho'okele assisted with the health navigation plans. The original team continued to work on reducing readmissions and the additional members were involved in their focused areas.

The objective was to reduce potentially preventable readmissions at PMMC to a rate of 0.9 using the 3M Potentially Preventable Rate (PPR) methodology by December 2013. The 3M PPR methodology compares the number of actual readmissions to the number of expected readmissions. This PPR found on HHIC is a comparison of all of Hawai'i's readmission rates. There were six evidence-based interventions conducted as part of this project to meet the objective of reducing readmissions.

- Making changes to the transitional care program

- Implementing a medication reconciliation improvement program
- Scheduling follow-up physician appointment at time of discharge or soon after for week-end and after-hour discharges
- Implementation of teach back method for patient education
- Discharge phone calls
- Patient post-discharge support using healthcare navigators

Changes to the transitional care program

The transitional care program at PMMC is a part of the Case Management Department. Initially the program had only one RN whose focus was to work with patients who were admitted with heart failure. This RN's primary function was to meet with patients diagnosed with heart failure during their hospitalization and to provide them with additional education on how to best live with heart failure. This nurse was also responsible to make a follow up phone call to these patients post discharge. Review of the readmission data showed this transitional care program alone had little effect on the readmission rate at PMMC even when looking specifically at patient with heart failure.

The first change made to this program was the identification of assessment questions in the Epic medical record in an attempt to identify patients who were at high risk for readmission. The triggers in the assessment tool were developed using information gained from what was known about readmitted patients which was largely DRG related. Nurses responsible for the admission assessment were responsible for assessing for risk for readmission and based on this assessment a consult was sent electronically to the transitional care coordinator. The large amount of patients assessed at risk for readmissions led to the need to hire a second transitional care coordinator.

Additional changes to the transitional care program were to add a second RN and change the work flow from seeing only heart failure patients to seeing all patients identified as being at risk for readmission. The final change included building a tool in Epic to encourage consistency of activities and communication between the two coordinators. The tool in Epic also provides a reporting mechanism to see if high risk patients are receiving the support of the transitional care coordinators.

Improve medication reconciliation process

An accurate list of medications on discharge is necessary for a safe transition home. The literature suggests hiring pharmacy technicians to improve the accuracy of the medication list on admission and discharge. The nurse created the medication list on admission and the pharmacy technicians validated the accuracy or made changes based on information found in RxHub, patient or caregiver interviews, and calls made to the primary care providers. RxHub is a software database of insured patients who picked up medications using their insurance as the primary payer for that prescription.

Unfortunately some pharmacies, like some online pharmacies, do not participate in this system, so it is not always possible to get accurate information. Also some patients pay-out-of-pocket for their medications. Still other times, patients pick up their prescriptions as they should, but then take a reduced dose in an attempt to save money. The benefit of RxHub is it provides medication information to caregivers including what medications were picked up and when they were picked up. RxHub does not replace the need for a good patient history. Having an accurate list of prescriptions upon admission continues to be important to ensure the patient receives the correct medications during their hospitalization and this type of effort increases the chances of an accurate list on

discharge. The transitional care coordinators use the list in Epic when making the post discharge phone calls. Reports can also be produced to monitor the medication reconciliation process.

Follow-up appointments

This intervention also involved the implementation of post discharge follow-up appointments made by hospital staff prior to discharge from the hospital, or soon after discharge for those patients discharged during the week-end or after office hours. Most hospital inpatients were managed by hospitalists who required patients to follow-up with their primary care providers post discharge. Making the appointment prior to discharge helped the patient get an earlier appointment. Busy primary care provider office staff members sometimes offer patients a follow-up appointment two or three weeks post discharge. Hospital staff members are able to facilitate a more timely appointment with the goal of follow-up appointment within one week post discharge.

This process is not without problems because there are quite a few providers who only allow walk-in appointments and there are many discharges which occur after office hours. Hospital staff at times had to make the appointment on the following business day and call the patient with their appointment date and time. Consideration was also needed for other appointments, such as dialysis appointments, to make sure the patient was not scheduled for two different appointments during the same time frame. Appointments were documented in Epic and a report was run to monitor compliance.

Education using teach back

Patient and caregiver understanding were validated using an approach called teach back, asking the patient to repeat back what he/she understood from the education

provided. Nurses then filled in any knowledge gaps after patient statements. The National Quality Forum (NQF) identified teach back as one of 50 essential “safe practices” to improve health care. Patients who are asked to teach back may have better recall and understanding of procedures and may follow treatment plans more carefully (Infocus, 2006).

The patient’s ability to restate or teach back may be limited to a short period of time and its effectiveness long-term was not measured. The method to teach back was taught to the RNs involved in discharges as well as the transitional care coordinators. Documenting this method in Epic provided an avenue for monitoring the compliance of the use of teach back.

Post discharge phone calls

Post discharge phone calls were made by RNs for all discharged patients and follow-up calls were then made by the transitional care coordinators for patients at high risk for readmissions. During these calls the RN checked to make sure the patient understood their discharge instruction once they transitioned to home. The RN also checked to confirm the patient was taking their prescribed medications and the patient was following up with their primary care provider as planned. Patients who were identified by the RN as being at high risk for readmission during the follow-up phone call subsequently received a post discharge follow-up phone call from the transitional care coordinator.

Health navigation

To assist patients become more independent and have a successful transition to their home setting, PMMC contracted with Ho’okele to provide health navigation

services to patients at high risk for readmission. On their website, Ho'okele defines the role of a health navigator as "someone independent and unbiased who understands your lifestyle and health needs and who can help guide you and manage the details" (Ho'okele Health Navigators, 2013). The contract included health navigation for 30 days post discharge for patients at high risk for readmissions. PMMC paid for the first 30 days and patients who chose to continue the service longer could do so at their own cost. To assure regulatory compliance, the approval was received from the Hawai'i Pacific Health legal representative.

The details of the program took time to define. In September 2013, a pilot was conducted with five patients to assure the steps in the process would work. The transitional care coordinators began referring patients to Ho'okele starting in October 2013 and referrals were fewer than expected. The attending physician introduced the program to the patient and the case manager involved the primary care provider if the patient agreed to participate. An RN on the Ho'okele staff made contact with the patient and attended the first follow-up visit post discharge. The nurse was also responsible for verifying the patient was taking the correct medications and appropriate home support existed. The nurse navigator is least successful with patients who have substance abuse or have unresolved mental health issues so patients with unresolved mental health issues or substance abuse were not referred to Ho'okele.

Chapter 4

Monitor and Analyze Structure, Process, and Outcome Data

Each intervention was monitored for process and outcome. The overall goal of reducing readmissions was also monitored using both raw data and HHIC data. All patients were assessed by the admitting nurse and a case manager for risk of readmission. The LACE tool provided a numerical representation of risk for readmission. A number greater than ten meant the patient was at risk of being readmitted. Case managers assessed for necessary support at home, self-care abilities, and needed resources. Some of the patients at greatest risk of readmissions were elderly patients living on their own, patients with chronic illnesses who were admitted due to poor management of their illness, and patients who lacked the resources to take care of themselves.

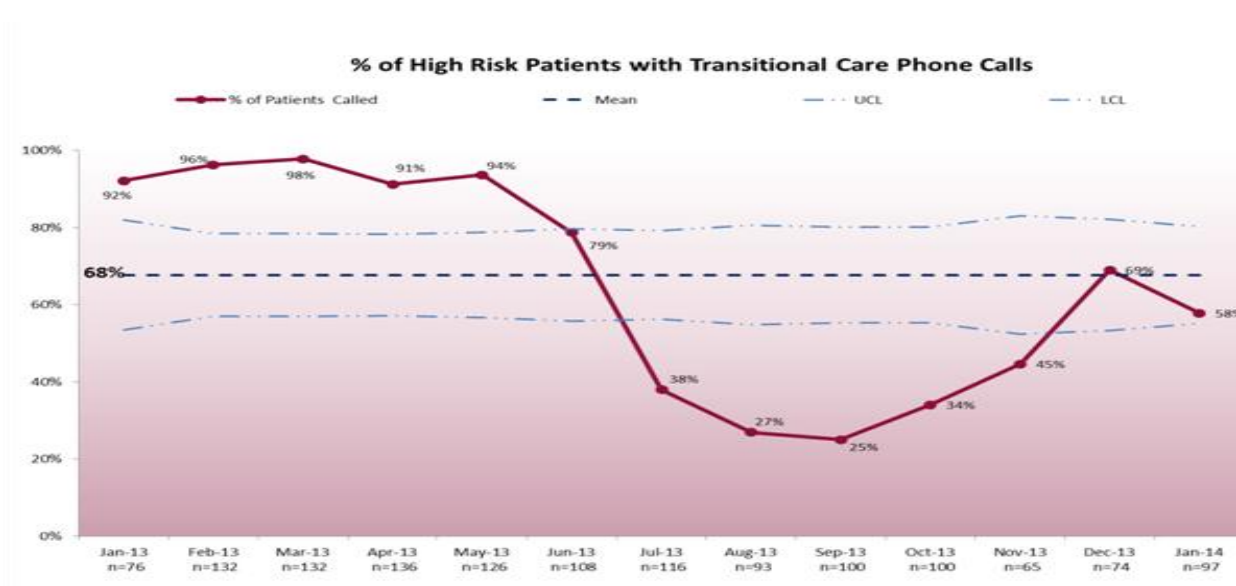
Transitional care program

The transitional care coordination program appeared to be working well with a high percentage of patients being followed by the two transitional care coordinators until the LACE tool was introduced (Figure 5). The LACE tool identified many more patients at risk of admissions. Prior to using the LACE tool, nurses identified patients at risk of readmission based on assessment questions. The questions focused on whether the patient was being admitted with certain DRGs and whether the nurse felt the patient was managing their care prior to admission. The LACE tool provides additional information about previous emergency department visits and length of stay. It took the transitional care coordinators several months to accommodate the increased number of patients. Prior to January 2013, the transitional care coordination program had only one coordinator. The addition of the second coordinator was done to accommodate the number of patients

that were at high risk for readmissions. More patients were noted to be at risk for readmissions post implementation of the LACE tool. The two transitional care coordinators were not able to work with all high risk patients due to time limitations.

Figure 5.

Percentage of High Risk Patients with Transitional Care Phone Calls



Medication reconciliation

Good progress was made with the new medication reconciliation process implemented in January 2013 and continues today. During the project the list of medications was documented by the admitting nurse 100% of the time and the pharmacy technicians' review and revision were completed 100% of the time. A pharmacist oversight was completed 90% of the time before the patient was discharged. About 10% of the patients were discharged before the pharmacist has had a chance to review the record. These reviews by the pharmacist were then completed post discharge.

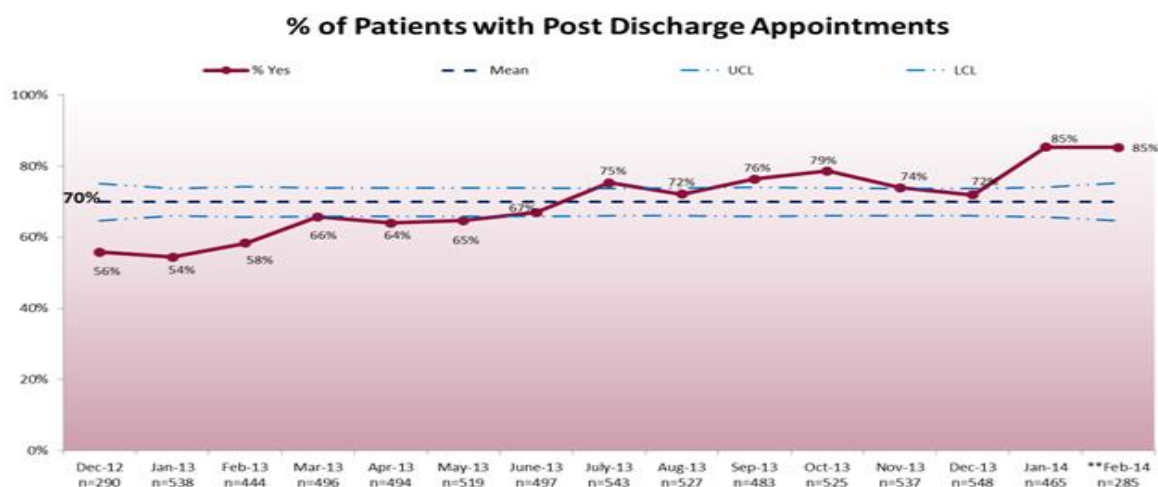
Follow-up appointments

Not all patients agreed to have their follow-up physician appointment made for them, so increasing compliance with this intervention to 80% may improve the readmission reduction rate. Some patients who relied on family members for transportation wanted to include family in that decision. There were also several physicians in West Oahu who did not take appointments; the patient was expected to go to the office and wait until the doctor could see them.

This intervention proved to be most challenging for patients being discharged after office hours. Even when the appointment was made it was sometimes difficult to reach the patient post discharge to notify them of their appointments. (see Figure 6). Compliance started in the low 50% range and reached the mid 80% range by January 2014.

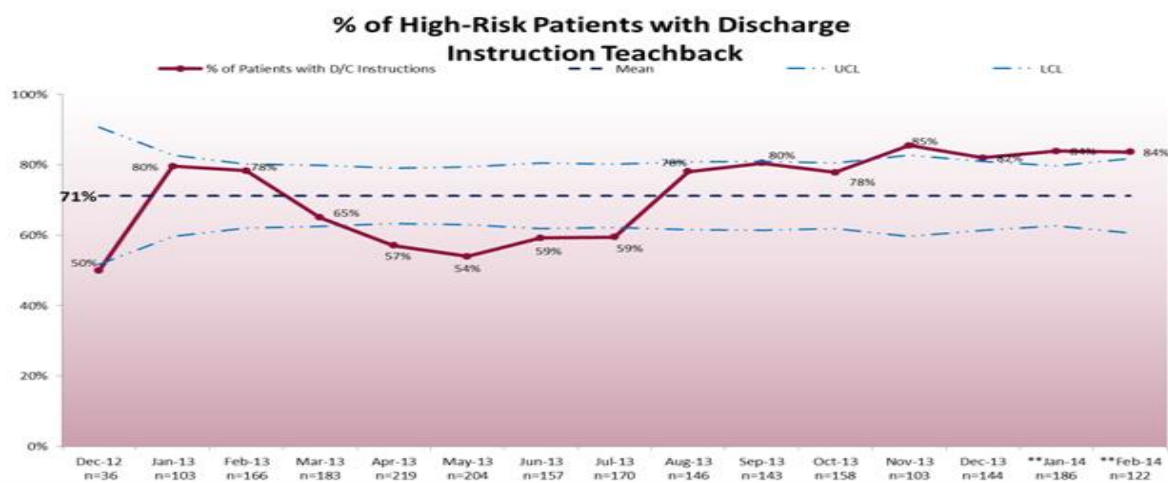
The area with the most challenge reaching compliance was the overflow area where patients were admitted and discharged from the emergency department. Although these patients were cared for by inpatient nurses, the numbers overall were small and follow-up appointments were not routinely scheduled. There were a total of 272 discharges from this area compared to 5,722 discharges from the units. Only 105 of those discharges had follow-up appointments made prior to discharge. This could be because the unit secretaries assist with follow-up appointments and there is no unit secretary in the overflow area.

Figure 6.

Percentage of Patients with Post Discharge Appointments**Education using teach back**

The teach back method was taught to all 400 inpatient nurses. Documentation of the method was done in Epic. While educational content was well documented in Epic, the documentation of the use of teach-back still needs some work. Interviews with nursing staff indicated the documentation flow sheet did not allow for documenting teach back to patients being discharged to a lower level of care. Nurses felt they were providing more of a handoff to staff at facilities rather than educating and expecting the staff to teach back and therefore checked “no” when asked if teach back was done. Improvement was noted in August 2013 once the flow sheet was adjusted. Further interviews with nurses also indicated the flow sheet did not provide for a clear way to document teach back to caregivers of patients with altered mental status. Another adjustment was made to the flow sheet and compliance was 84% in February, 2014. See Figure 7 for details.

Figure 7.

Percentage of High Risk Patients with Discharge Instruction Teach Back**Post discharge phone calls**

Post discharge phone calls were implemented at PMMC approximately five years ago. Most months show 100% compliance with attempted calls with an average of 95% for the year. The goal is to make calls within three days of discharge. After the third day, the information is no longer on the database and staff cannot see the call was not attempted.

Following this intervention, the annual average for completed calls was 85% for all discharges and 100% for high risk discharges. High risk patients are those identified with DRGs who are at a high risk for readmission (pneumonia, heart failure, myocardial infarct, diabetes, renal failure, and COPD). During these calls staff asked the patients if they had any questions about their discharge instructions, their medications, and if they had a follow up appointment with their primary care provider.

Health navigation

The analysis of the nurse navigation program with Ho'okele is still in its infancy stage. It was more challenging to implement this program as it required a thorough legal department review. The compliance department was also asked to review this initiative as PMMC is paying for this program and needed to make sure it was not violating Medicare rules.

A pilot was done in September of 2013 with five patients who had the same primary care provider. Patients in the pilot were at high risk for readmission. The pilot was conducted to assure the process worked well before involving many physicians. The process included referral from the transitional care coordinator to the Ho'okele nurse navigator, ability of the nurse navigator to access Epic for patient information, follow up appointment to the primary care provider by the nurse navigator with the patient, and follow up visits and/or phone calls from the nurse navigator to the patient. The pilot successfully tested the process but all five patients were readmitted. Some of these patients in the pilot did not allow the nurse navigator to visit them at home or to attend their follow-up appointment.

Since PMMC is paying for this service, it made sense to refer patients who are at high risk for readmission and could benefit from this additional support. During the following three months (October, November, and December, 2013), of the 27 patients who agreed to contract with Ho'okele, only one patient was readmitted and referrals by the transitional care coordinators were fewer than expected.

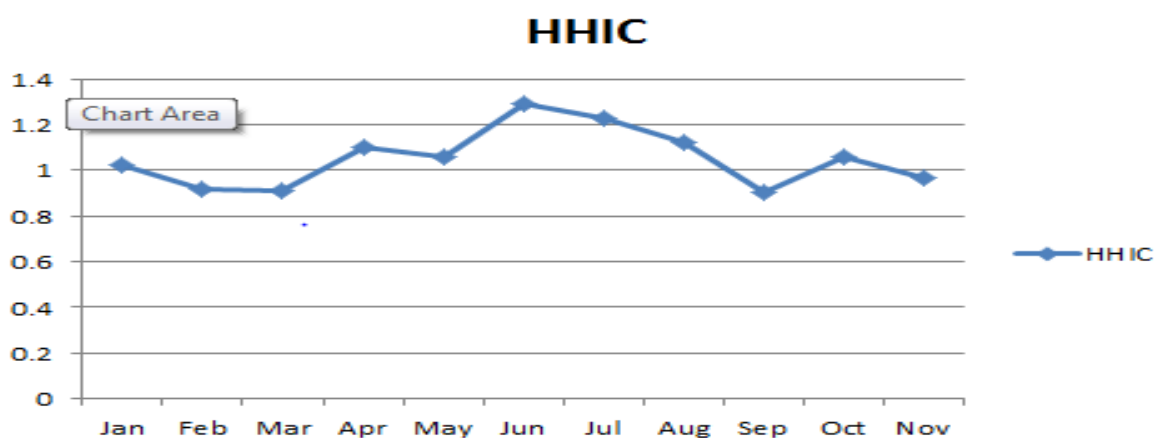
A meeting was held between the nurse navigator and the transitional care coordinators to identify any issues and address concerns. The transitional care

coordinators revealed they were conservative about referring patients because they knew PMMC was paying for the service. Criteria for referral were reviewed and reinforced which resulted in increased referrals but the short timeframe limits the data for this aspect of analysis to be conclusive.

Overall readmissions rates decreased from 1.11 to 1.05 as measured in November 2013, but not yet at goal of 0.9. There were a total of three months at goal but this rate change did not include the use of nurse navigation starting in September 2013. See Figure 8 for details.

Figure 8.

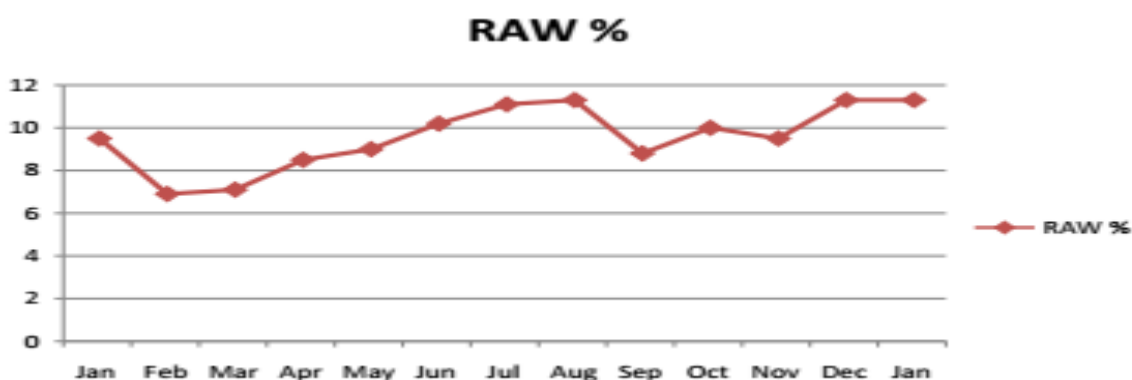
PMMC Readmission Rate Using HHIC Data January 2013 through November 2013



Raw readmission data was also followed closely to measure readmission rate. The raw readmission rate includes only patients who returned to one of the Hawai'i Pacific Health facilities and does not incorporate the 3M methodology to identify whether the readmission was potentially preventable. During this same period of January 2013 to January 2014, the raw readmission rate increased, but this data does not correlate well with HHIC readmission rates. See Figure 9 for the raw readmission data.

Figure 9.

PMMC Raw Readmission Rate January 2013 through January 2014



Return on investment

There is also a noteworthy financial implication for PMMC. Based on 2013 readmission data, the CMS maximum penalty for PMMC in 2014 was \$782,900. The actual penalty amount for PMMC for 2014 was \$137,000, or 17% of total penalty dollars at risk. Although PMMC would prefer not to have any CMS penalty, this is an improvement from the previous year where the maximum CMS penalty for PMMC was \$391,500 and the actual penalty was \$215,300, or 55% of total penalty dollars at risk. The pay-for-performance amount at risk from the largest private insurer represented 5 points of the incentive or \$1,103,800 for years 2012 and 2013. In 2012, PMMC received 2.5 points or \$551,900. In 2013, PMMC received 3.75 points or \$827,850. This is an improvement of 1.25 points or a positive impact of \$275,950 when compared to the previous year. The contract time for the private insurer is October to September and the data used is from HHIC.

Chapter 5

Discussion

The purpose of the project was to reduce readmissions at PMMC. A reduction would demonstrate improved quality of care and a reduction in costs. Reducing readmissions is a complex healthcare challenge with many facets. Hospital administrators are strongly encouraged to find ways to improve the quality of care and reduce the financial burden of readmissions. Yet, access to care, community support, social support systems, and patient's attitude towards their own responsibility for healthcare all affect the patient's ability to transition back to the community after a hospitalization. Advances in medicine also led to more Americans living longer with chronic illnesses.

Using the LACE tool highlighted the large number of patients admitted to PMMC who are at risk for readmission. Doubling the number of transitional care coordinators was based on the knowledge there were more patients who needed this support than one coordinator could provide. Adding the LACE tool assessment to the discharge processes, demonstrated a need for a third transitional care coordinator and PMMC is actively recruiting for this position. Referrals to Ho'okele were initially low yet the impact of this program resulted in only one patient readmission of 27 patients using this service in the combined months of October, November, and December 2013. More data are needed to see if this will lead to a decrease in overall readmissions.

The pharmacy technicians play an important role in creating an accurate list of medications on admissions for use upon discharge. This list is now easier for patients to understand as discontinued medications are not listed on the after visit summary. Further work is underway to assure the discharge medication list matches the discharge summary which is then forwarded to the primary care provider. This handoff between physicians is

important for communicating an accurate list of the patient's medications. The nurse navigator also reviews the medications with the patient and on occasion finds the patient adds medications they were taking prior to their admission.

The use of teach back is an improvement to the discharge teaching. The PMMC leadership team is now using new evidence-based practice published in American Journal of Nursing in July 2013 about re-engineering the discharge process, or referred in this literature as Project RED (Markley et al. 2013). Staff nurses and members of the multi-disciplinary team were educated on this new process. Starting April 1st, 2014, an educational folder was placed at each patient's bedside and education begins at admission. Written information is added and reviewed with the patient daily. At discharge the RN can review all information in the folder using teach back to assess, reinforce, and assure the patient's understanding of this important information.

Implications

This project highlighted implications for health administrators, clinicians, and educators. Hospital leaders must think beyond acute care setting and partner with others who offer patient care services with the goal of developing a true patient centered care environment. The silos in health care are not beneficial for patients with complex health needs. Clinicians must use innovative approaches to educate patients and their caregivers. Patients need information and tools provided at an appropriate educational level as they need to take greater responsibility for their health. Educators must reinforce the continuum of care and how it is interrelated. There is also a greater need for RNs in the non-acute care setting as more patients will require care outside of hospitals.

There are also implications for research and health policy. Research is needed to better understand the cultural and social implications that influence healthy behaviors. This research could be used to decrease the number of Americans with chronic illnesses. Access to care and community resources affect hospital readmissions and research is needed to better understand the resources needed for a smoother transition back to the community following a hospital discharge.

Federal policy provided the incentive to improve care by imposing penalties on hospitals with high readmission rates. More work is needed to include the role of primary care providers and hospital physicians in this initiative. There is a compelling need to add resources to underserved populations and policy could assist by providing financial resources in this area. A model of reimbursing for home visits whether by home care agencies or health navigators would provide additional support to high risk patients and reduce readmissions.

Conclusion

The leadership at Hawai'i Pacific Health and PMMC believe quality is top priority and therefore set improvement goals to reflect high quality. Reducing readmissions is a quality goal aimed at reducing the inconvenience and stress placed on patients. The six evidenced-based interventions aimed at reducing readmissions were successful but the goal of 0.9 may have been too ambitious given the short timeline used to implement and evaluate this multifaceted project. The initial readmission rate which was 1.11 in 2012 was reduced to 1.05 in 11 months. The intervention for health navigation was initiated in month nine of this twelve month project, so effects of this

intervention are not available. Additional time is needed to determine if health navigation will make a difference in the readmission rates at PMMC.

PMMC may be limited in this ongoing quest to reduce readmissions as more work needs to be done to include the community in this very important endeavor. West Oahu continues to have challenges with access to care and this project was not designed to address access issues. The work of the West Oahu Community Collaborative, while not initially part of this project, is important to bring the healthcare community together and to face the challenge of readmissions as a team. This group targeted process improvements for patients transferring to a lower level of care. This is important work but readmissions continue to be more prominent for patients who are discharged home rather than to lower level of care facilities or agencies. This group continues to work with community partners to reduce all readmissions

Financially PMMC benefitted from this effort by reducing penalties from CMS and capitalizing on additional dollars from their largest private insurer. As a not-for-profit organization, PMMC is able to use the additional funds to continue to support services beneficial to the community. The most important impact however is the benefit to the patient and their families. The improvement is seen with patients who can transition from acute care to their community setting knowing PMMC is actively working to decrease their risks for readmission to an acute care setting.

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