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Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

Reducing Early Hospital Readmission Rates After Bariatric Surgery

Payal Sharma, MSN, RN, FNP-BC, CBN

Submitted to the Faculty
Yale University School of Nursing

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Nursing Practice

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Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

This DNP Project is accepted in partial fulfillment of the requirements for the degree Doctor of Nursing Practice



Signed: Joan Kearney PhD APRN FAAN

Date: 3/11/21

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Abstract

The prevalence of 30-day readmission after bariatric surgery is 0.6% to 11.3%, with a single hospital readmission nearly tripling the average 180-day cost of the surgery. Given that nearly 50% of early readmissions are preventable, close postoperative follow-up may allow for early identification of high-risk patients and preventative interventions.

This 7-month quality improvement project augmented clinical follow up post-bariatric surgery by incorporating a 7-10 day post-discharge call by an RD following a routine 1-3 day post-discharge call by an APP. Impact on readmission rate was examined. 166 participants included men and women ≥ 18 years of age, status post primary bariatric surgery only.

The proportion of patients experiencing a post-surgery hospital readmission or ED visit was evaluated across the sample, and stratified by procedure type and number of calls answered. Post-project readmission and ED visits were compared to those from the NYP Semi-Annual Report (SAR) using 2-sample test of proportions. A clear downward trend was noted in the overall readmission rate for project participants (6.5% (SAR) vs. 4.8% (Project)). Readmission rate was related to procedure type: 9.2% (SAR) vs. 7.1% (Project) for post Roux-en-Y gastric bypass, and 5.4% (SAR) vs. 4% (Project), for sleeve gastrectomy. Patients who only connected on the 7-10 day post-discharge call had 0 readmission and post-operation ED visits.

Findings here are promising. Additional projects should be conducted on a larger scale and include factors that may place patients in a 'higher risk' category for readmission e.g., obstructive sleep apnea, diabetes, depression/anxiety, and history of DVT/PE.

Keywords: bariatric surgery, readmission, hospital readmission, sleeve gastrectomy, Roux-en-Y gastric bypass, readmission rates, readmissions, abdominal pain, nausea, vomiting, dehydration, complications

Table of Contents

Abstract 6

Chapter 1..... 9

 Introduction and Significance..... 9

 Problem Statement..... 11

Chapter 2..... 12

 Literature Review 12

 Project Model 20

 Organizational Scan 21

 Overall Goal and Project Aims..... 23

Chapter 3..... 25

 Introduction 25

 Participants 25

 Human Subjects 25

 Aim 1 25

 Aim 2 26

 Aim 3 28

 Aim 4 29

 Evaluation/Analytic Plan..... 29

Chapter 4..... 31

 Results 31

 Discussion 36

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

| | |
|------------------|----|
| References | 40 |
| Appendices | 45 |
| Appendix A | 45 |
| Appendix B | 46 |
| Appendix C | 47 |

Chapter 1

SIGNIFICANCE OF THE ISSUE AND PROBLEM STATEMENT

Introduction and Significance

The obesity epidemic is a major public health concern globally. Since 1980, the prevalence of obesity worldwide has doubled to 30% in the adult population (Chen, Stem, Schweitzer, Magnuson, & Lidor, 2015). The prevalence of clinically severe obesity (body mass index [BMI] >40 kg/m²) (see Appendix A), in adults however, has increased at an even faster rate, quadrupling from 1986 through 2000 to 4.8% (Chen et al., 2015). Bariatric surgery (see Appendix A) remains the most effective treatment option for individuals who have clinically severe obesity. It is also one of the most frequently performed operations in North America. However, early readmission (i.e., 30-day readmission) (see Appendix A) after bariatric surgery remains a prevalent problem (Berger et al., 2018; Chen et al., 2015) with rates ranging from 0.6% to 11.3% (Berger et al., 2018). Nearly 50% of early readmissions are preventable (Dorman et al., 2012) causing economic burden on patients, hospitals, and payers. A single hospital readmission nearly triples the average 180-day cost of a bariatric operation (Dorman et al., 2012). Though readmissions are a prevalent problem, there is a dearth of studies that have evaluated national readmission rates for primary bariatric surgery (Berger et al., 2018).

Bariatric surgery involves alteration of the stomach and/or intestine to produce weight loss. There are four types of bariatric surgeries including sleeve gastrectomy, Roux-en-Y gastric bypass, adjustable gastric band, and biliopancreatic diversion with duodenal switch (see Appendix A). Patients who have a BMI ≥ 40 kg/m² or BMI ≥ 35 kg/m² and have at least one or more obesity-related co-morbidities such as type 2 diabetes, cardiovascular disease, and

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
obstructive sleep apnea are considered potential candidates for bariatric surgery (National Institute of Diabetes and Digestive and Kidney Diseases [NIDDK], 2016; see Appendix A).

As part of the work-up for bariatric surgery, patients are required to meet with several healthcare providers such as a dietitian, a psychologist or psychiatrist, an internist, and a bariatric surgeon (NIDDK, 2016). A detailed medical history and thorough physical examination are conducted during the initial bariatric consult, which also dictates additional clearances that may be required before the surgery. Patients have several blood tests drawn to identify pre-existing vitamin deficiencies or conditions that may be contributing to weight issues. Some bariatric programs also require patients to attend a support group or information session before the procedure. The insurance companies typically require 4 to 6 months of consecutive follow-up with a licensed and approved healthcare professional before the bariatric operation is covered for reimbursement. While all health insurances encourage these appointments to be conducted by a physician, some health insurances allow these visits to be done by a Registered Dietitian (RD), Nurse Practitioner (NP), or Physician Assistant (PA).

Once patients complete mandatory preoperative requirements for bariatric surgery, they go through the final preoperative process. The preoperative requirements include mandatory work-up set forth by both the insurance companies and surgeon. The process varies from center to center, but typically involves a detailed discussion about self-care. Patients are educated about preoperative and postoperative diet, postoperative supplementations, medication adjustments, and physical activity restrictions (American Society for Metabolic and Bariatric Surgery [ASMBS], 2019). Patients are also informed about signs and symptoms to monitor and/or report and when to follow-up with the office post-discharge (ASMBS, 2019). Patients are strongly

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
encouraged to follow postoperative instructions to avoid complications or unnecessary
emergency department (ED) visits or readmissions.

Problem Statement

Bariatric surgery is a well-established means of treating obesity, however, early readmission is a prevalent problem with rates ranging from 0.6% to 11.3% (Berger et al., 2018). Studies consistently demonstrate that Roux-en-Y gastric bypass is associated with the greatest readmission rates, followed by sleeve gastrectomy, and then adjustable gastric banding (Abraham et al., 2015; Aman, Stem, Schweitzer, Magnuson, & Lidor, 2016; Berger et al., 2018; Telem et al., 2016). A hospital readmission nearly triples the average 180-day cost of a bariatric operation (Dorman et al., 2012). Nausea, vomiting, dehydration and abdominal pain are the most common, but often preventable causes of readmission after bariatric surgery (Aman et al., 2016; Berger et al., 2018; Dorman et al., 2012; Doumouras, Saleh, & Hong, 2016; Petrick et al., 2018; Telem et al., 2016). Understanding the underlying reasons for patients' readmission, associated factors, and exploring current or future interventions may enable healthcare providers to target their efforts to reduce avoidable early readmission rates (Berger et al., 2018). Given that nearly half of early readmissions are due to preventable causes, close postoperative follow-up may allow for early identification of high-risk patients. Consequently, healthcare providers can deliver timely interventions, potentially reducing avoidable readmissions. Many of the identified risk factors, while complex, multifactorial, and often non-modifiable, provide an impetus to follow patients at high risk for readmission more proactively following discharge (Dorman et al., 2012).

Chapter 2

BACKGROUND

Literature Review

A literature search was conducted using the following databases: CINAHL, OvidMedline, Web of Science, and ProQuest Social Science. Search terms, incorporating appropriate database subject headings, included: ‘postoperative follow-up,’ ‘readmission rates,’ and ‘bariatric surgery.’ Synonymous terms were used for each to ensure thoroughness. Additionally, the ASMBS website was used as a tool to identify clinical practice guidelines and protocols.

ASMBS (2019) is the largest national society for Bariatrics. The mission is to continually improve the quality and safety of care and treatment of people with obesity and related diseases by: advancing the science and understanding of metabolic and bariatric surgery; fostering communication between health professionals on obesity and related conditions; being the recognized authority and resource on metabolic and bariatric surgery; advocating for the health care policy that ensures patient access to high quality prevention and treatment of obesity; and serving the educational and professional needs of the members (ASMBS, 2019). The American College of Surgeons and ASMBS (2017) combined their respective national bariatric surgery accreditation programs into a single unified program to achieve one national accreditation standard, the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP).

Economic Burden Related to Readmissions

Readmissions are identified as an important quality metric for MBSAQIP. While MBSAQIP does have mechanisms in place to minimize under-reporting of readmissions, not

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
every institution participates. In addition, not every insurer captures these data (Telem et al., 2018). Centers for Medicare and Medicaid Services tie reimbursement to readmissions through their Hospital Readmissions Reduction program, yet, there is a paucity of strategies to prevent readmission (Berger et al., 2018; Doumouras et al., 2016). In 2011, 3.3 million adults were readmitted within 30 days, at a cost of \$41.3 billion for all-cause hospital readmission (Chopra, Wilkins, & Sambamoorthi, 2015). Medicare expenditures for potentially preventable readmissions are approximately \$12 billion yearly (Constantino, Frey, Hall, & Painter, 2013). It is estimated that one in 10 primary bariatric operations will result in an ED visit (Telem et al., 2016). Telem et al. (2016) found that 17.5% of patients had more than one ED visit within 30 days with a range of up to seven visits in the 30-day period. Given these data, it is clear that preventable readmissions are an economic burden on patients, healthcare organizations, and payers.

Factors Associated with Early Readmission

The likelihood of a patient being admitted or re-admitted following ED evaluation differs based on whether the patient presented to an index (the hospital where the patient had bariatric surgery) versus non-index hospital (a hospital other than where the patient had bariatric surgery). Telem et al. (2016) found that patients were more likely to be admitted if they presented to their index hospital versus non-index hospital. One may postulate that a surgeon may be more sensitive to his or her own complications, and therefore, more likely to admit. Additionally, in the absence of a life-threatening illness, emergency physicians at non-index hospitals may be more likely to discharge or transfer the patient to his or her primary surgeon (Telem et al., 2016). Other possible reasons may include presentation to a tertiary care versus community facility, presence of a bariatric program at the hospital, and individual physician preferences (Telem et

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
al., 2016). However, the accuracy of reported readmission rates are uncertain as the majority of studies center on single-institution experiences and do not capture patient admissions to non-index hospitals (Telem et al., 2016).

The type of bariatric surgery selected is considered a risk factor for readmission. Studies consistently demonstrate that Roux-en-Y gastric bypass is associated with the greatest readmission rate, followed by sleeve gastrectomy, and then adjustable gastric banding (Abraham et al., 2015; Aman et al., 2016; Berger et al., 2018; Telem et al., 2016).

In addition to the type of bariatric procedure, patients' sociodemographic characteristics are associated with readmission; for example, African Americans are readmitted at higher rates than other racial or ethnic groups (Aman et al., 2016; Dorman et al., 2012; Telem et al., 2016). Female gender is significantly associated with unplanned readmission (Abraham et al., 2015). This finding may be related to the fact that greater than 70% of patients who undergo bariatric surgery are women (Welbourn et al., 2018). Younger age is also a risk factor for readmission (Berger et al., 2018) indicating the possibility of better coordination of care for older patients who may have established relationships with their primary care providers (Berger et al., 2018). Therefore, it is suggested that healthcare providers should more closely monitor the younger patient population by providing closer postoperative follow-up.

Postoperative complications are also considered risk factors for readmission: having a complication during the initial hospital admission increases risk for readmission (Aman et al., 2016; Berger et al., 2018; Doumouras et al., 2016), again possibly indicating need for more vigilant postoperative monitoring. Bleeding (Abraham et al., 2015; Daigle et al., 2018; Garg et al., 2016; Hong et al., 2012), infections (Abraham et al., 2015; Daigle et al., 2018; Garg et al., 2016; Hong et al., 2012), venous thromboembolism (Abraham et al., 2015; Daigle et al., 2018;

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

Garg et al., 2016), leak (Daigle et al., 2018; Garg et al., 2016; Hong et al., 2012), and obstruction (Garg et al., 2016; Hong et al., 2012) are identified as additional reasons for readmission.

Intervention strategies to mitigate these complications and lower readmission rates are needed.

Postoperative follow-up with primary care providers may play a role in readmission. For example, patients who do not have timely post-surgery follow-up with their primary care providers have readmission rates 10 times higher than those who do (Hudali, Robinson, & Bhattarai, 2017). These findings indicate that healthcare providers should encourage their patients to follow-up with their primary care providers after their bariatric operation.

Hospital accreditation status also plays a role in readmission. Hong et al. (2012) found that patients undergoing bariatric surgery at Centers of Excellence were readmitted within 30 days of their procedure 3.4 to 7.6% of the time during the 4 years of the study compared with the non-accredited program's readmission rates of 8.3 to 16.5% annually.

There are also conflicting views on whether factors such as prolonged length of stay, (Berger et al., 2018; Dourmouras et al., 2016; Garg et al., 2016), high BMI class (Abraham et al., 2015; Berger et al., 2018; Dorman et al., 2012), high American Society for Anesthesiologists (ASA) class (Abraham et al., 2015; Berger et al., 2018), and insurance type (Hong et al., 2012; Petrick et al., 2018; Telem et al., 2016) are risk factors for readmission. The study conducted by Berger et al. (2018) was the first to use MBSAQIP data registry and specifically report on "related" readmissions, therefore, making it a more robust study. Findings revealed that there was no association between BMI class, ASA class (assessment of patient's preoperative risk), length of stay, and readmission rates. Insurance type was not considered, and may or may not be a significant factor. For example, Hong et al. (2012) found patients who have publicly funded insurance were at higher risk for readmission while Petrick et al. (2018) concluded that payor

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
status was not associated with increased risk. Therefore, it is still unclear as to which factors may be robust predictors of readmission.

Current Interventions to Reduce Early Readmission Rates

There are mixed findings on whether interventions to reduce early readmission rates are associated with follow-up time frame. Many studies highlight the importance of closer postoperative follow-up, but the actual recommendations for close follow-up vary across studies (Aman et al., 2016; Berger et al., 2018; Dorman et al., 2012; Doumouras et al., 2016; Petrick et al., 2018; Telem et al., 2016). A few studies determined that timely post-discharge telephone follow-up to supplement standard care effectively reduces early readmissions, and thus, provides a means of reducing costs (Harrison, Hara, Pope, Young, & Rula, 2011; Hudali et al., 2017). Several studies also suggest that timely outpatient follow-up contributes to reduced readmission (Hudali et al., 2017). However, the optimal frequency of post-discharge follow-up also remains unknown. To date, healthcare providers are advised to take multiple factors into account when considering follow-up frequency, including bariatric operation performed and severity of comorbidities (Mechanick et al., 2013).

Creating an outpatient infusion clinic has been shown to be an effective intervention to reduce early readmission rates related to nausea, vomiting, and dehydration (Aman et al., 2016; Dorman et al., 2012; Petrick et al., 2018; Telem et al., 2016). Increased access to outpatient and after-hours resources to ensure proper evaluation and mandated office-based hydration capability may limit the cost burden (Telem et al., 2016). Furthermore, validating and increasing postoperative surveillance in identified high-risk patient subsets could drastically reduce unplanned healthcare utilization (Telem et al., 2016).

Multi-component interventions are likely to reduce readmission rates significantly

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

(Kripalani, Theobald, Anctil, & Vasilevskis, 2013). For example, Stanford University's 2008 pilot project on reducing readmissions evolved into the nationwide Decreasing Readmission through Opportunity Provided (D.R.O.P.) program, which involved bundled processes aimed to reduce 30-day readmission rates nationwide by 20%. This project led Stanford's bariatric program to reduce its readmission rates from 8% to 2.5% in 4 years (Freeman, 2016). The D.R.O.P. project focused on multi-components including patient education, discharge planning, and postoperative coordination of care (Aman et al., 2016; Berger et al., 2018; Macht, Cassidy, Cabral, Kazis, & Ghaferi, 2017). Diet-related readmissions were significantly reduced after implementation of physician-dietitian follow up after bariatric surgery (Morton, n.d.).

Additionally, high risk patients were identified in the preoperative phase and coordination of care was escalated postoperatively (Morton, n.d.). Hospital case managers were employed early and consideration of discharge to short-term nursing unit was made (Morton, n.d.). While all patients received a call from a nurse or APP the day after discharge, an additional call was made on the Friday of patient's surgery if considered high risk (Morton, n.d.). Hong et al. (2012) support collaboration with social workers to coordinate the care of patients who have publicly funded insurance, are unemployed, or disabled in an effort to reduce readmission rates.

Implementation of Enhanced Recovery After Surgery (ERAS) protocols has been effective to reduce complication rates in many disciplines including colorectal, gastric, pancreatic, as well as non-gastrointestinal specialties (Pedziwiatr et al., 2018). The ERAS protocol focuses on multiple components including goal-directed patient education, pre- and postoperative multi-modal medication regimen, early ambulation, and early oral intake (Lam et al., 2018). Lam et al. (2018) conducted a single center-based study implementing the ERAS protocol which did not influence 30-day readmission rates for bariatric patients. It should be

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
noted that this study was conducted in a single institution. A larger multi-institutional study is needed to determine if ERAS protocol has an impact on complication rates and/or early readmission rates for bariatric surgery patients.

Patient coaching programs have been shown to be effective in reducing early readmission after bariatric surgery. Jalilvand et al. (2016) created a care coaching program for bariatric patients to provide improved and more consistent communication with patients from the time of their initial hospital stay and discharge, through to their first postoperative visit. Patients received a phone call at 1, 3, and 7 days post-discharge by the care coach team. A specialized nursing team mitigated preventable causes of early postoperative readmissions, clinic phone calls, and prolonged length of stay. Patients who received care coaching had reduced rates of intractable nausea and vomiting (Jalilvand et al., 2016). Although a causal relationship between this program and decreased postoperative nausea or vomiting cannot be drawn due to its retrospective design, the results demonstrated the role of care coaches in providing consistent information to patients about controlling their symptoms through timely use of anti-emetic medication and measured oral intake (Jalilvand et al., 2016). In contrast to this study, Macht et al. (2017) found that bariatric coaching programs did not significantly reduce readmissions. Quality of patient education and strategies used to implement practices may be critical in the success of these types of interventions. Future efforts should focus on evaluating the patient's understanding of educational practices (Macht et al., 2017).

Studies showed the potential utility of telehealth to follow-up on patients after bariatric surgery (Kripalani et al., 2013) in order to reduce readmission. A study of telehealth in a large urban academic medical center found that the 30-day readmission rate was very low following initiation of this intervention (Nandra et al., 2018). Additionally, it was found that telehealth

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

visits improved access to care at high convenience and led to potential cost savings for surgical patients (Nandra et al., 2018).

Databases and Tools to Track Readmissions

There are several databases and tools that can be helpful in tracking readmissions and postoperative complications after bariatric surgery. For instance, New York State Department of Health, Statewide Planning and Research Cooperative System (SPARCS) is a database to capture unplanned ED visits and readmissions as it tracks data across all participating New York hospitals and facilities (Telem et al., 2016). Patients expected to be at high risk based on the American College of Surgeons (ACS) National Surgical Quality Improvement Program (NSQIP) MORBPROB (estimated probability of morbidity) tool had a significantly higher rate of readmission. It may be a useful tool to identify and target patients at risk for readmission (Abraham et al., 2015). Bariatric Outcomes Longitudinal Database (BOLD) is the largest prospective database of bariatric patient outcomes worldwide; it can help identify predictors of serious postoperative complications requiring hospital readmission within 30 days of discharge (Dorman et al., 2012). The database also captures surgeries performed by either a participant in the ASMBS designed Bariatric Surgery Centers of Excellence or by a fellow of the ASMBS. Healthcare professionals should familiarize themselves with the tools and databases that are available to them.

There is a dearth of studies that have evaluated national readmission rates for primary bariatric surgery with national, bariatric-specific data (Berger et al., 2018). Using the MBSAQIP database provides the benefit of a large sample size with heterogeneity of practice type and volume, thus, offering perhaps the best representation of bariatric surgery on a national level (Chaar et al., 2018). However, the MBSAQIP data registry measures 30 day-outcomes from the

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

operative date rather than discharge date, thus the definition of outcomes may differ from that used by Medicare. Additionally, identifying the causes of readmission is often challenging. Its multifactorial nature makes it difficult to isolate a single reason for readmission. If readmissions happen at a hospital other than a MBSAQIP center in which the index procedure was done, it is difficult to capture those readmissions. Data abstractors attempt to capture readmissions to any hospital; however, it may be more difficult to accurately identify readmissions to hospitals other than their own compared to payer-based databases (Berger et al., 2018).

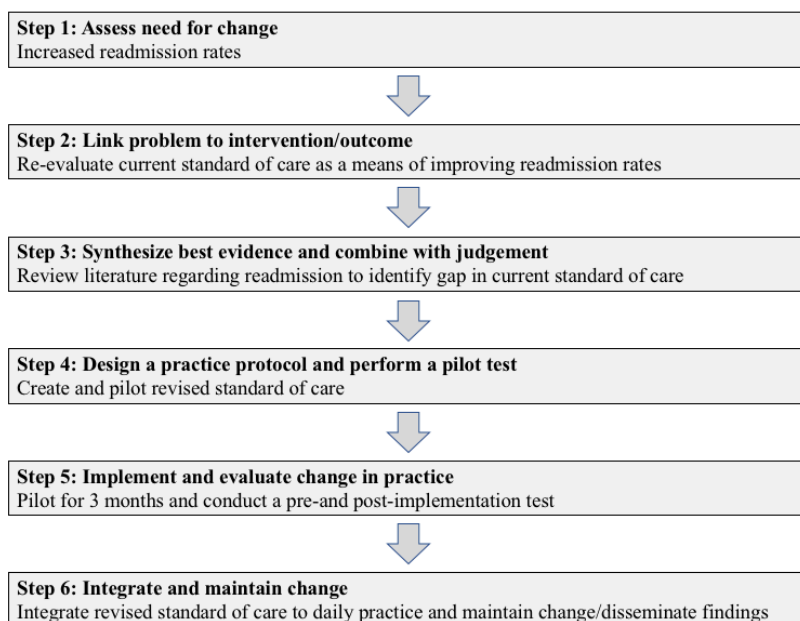
Project Model

Rosswurm and Larrabee's (1999) Change Model for Evidence-Based Practice (EBP) served as the change/management model for this project because it guided the implementation and translation of EBP change. Rosswurm and Larrabee's model includes six steps for change in EBP: (1) assess the need for change by comparing internal data such as quality indicators with data from outside the organization; (2) link problem to interventions and outcomes; (3) synthesize best evidence and combine with clinical judgment; (4) design a practice protocol or change and perform a pilot test to examine effects on outcomes; (5) implement and evaluate change in practice; and then (6) integrate and maintain the change (Gawlinski & Rutledge, 2008).

This comprehensive model served as a guide throughout the development and integration of the EBP change. See Figure 1 for a depiction of the model steps as applied to this project.

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

Figure 1 - Reducing Early Readmissions using Rosswurm and Larrabee's Change Model



*Pilot ran for 7 months instead of the originally planned duration of 3 months

Organizational Scan

NewYork-Presbyterian (NYP) is a large academic hospital located in the Upper East Side of Manhattan in New York City. In collaboration with two renowned medical schools, Weill Cornell Medicine (WCM) and Columbia University College of Physicians and Surgeons, NYP is consistently recognized as a leader in medical education, ground-breaking research, and innovative, patient-centered care (NewYork-Presbyterian, 2019). NYP is one of the nation's largest and most comprehensive hospitals. The hospital has approximately 2,600 beds. There are more than 6,500 affiliated physicians and 20,000 employees (New York-Presbyterian, 2019). NYP has more than 2 million visits annually, including greater than 310,000 ED visits (NewYork-Presbyterian, 2019). It is ranked #1 in the New York metropolitan area by U.S. News and World Report and repeatedly named to the Honor Roll of "America's Best Hospitals" (NewYork-Presbyterian, 2019). NYP/WCM is 1 of 7 campuses.

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

WCM's Section of Gastrointestinal (GI) Metabolic and Bariatric Surgery consists of two surgeon-led teams. Each surgeon-led team consists of either a NP or PA and a medical secretary. There are three call center representatives who help triage calls to each surgeon-led team. Patients who enroll into the bariatric program are assigned to one of the three dietitians within the group who work closely with them during the preoperative phase to provide clearance for bariatric surgery and lifelong follow-up after surgery. The individual surgeon-led teams and call center representatives are overseen by a Practice Administrator. The Chief of Bariatrics is responsible for enforcing policies and procedures related to bariatrics as well as ensuring that the center maintains its accreditation. The bariatric program is accredited through the MBSAQIP and is recognized as a Center of Excellence.

The intervention involved revising the existing standard of care at WCM's Section of GI Metabolic and Bariatric Surgery. The existing care comprised of the APPs calling patients within 1-3 days post-discharge and then evaluating the patient in the office at 3 weeks post-op. The project intervention involved the dietitians making additional calls to all post-op bariatric patients within 7-10 days post-discharge as a means of providing more consistent care in the immediate postoperative period.

Time and cost constraints involved in providing additional follow-up was a factor to consider. Each of the three dietitians had different schedules and varying number of patients per clinic day. It was challenging to gain their support to engage in an additional task during the workdays. All dietitians shared the same information with patients, but there were variations in their ideas, preferences, and teaching styles. Additionally, because of their varied schedules, the dietitians conducted phone calls to patients who were not their own which was challenging for them. There were costs associated with using the hospital phone for additional calls.

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

Furthermore, whenever there was a concern or issue, the dietitians routed the encounter to the appropriate APP to follow up. This required the APP to follow up and intervene accordingly, which was time consuming at times. Each surgeon performed roughly 120 primary bariatric surgeries per year. This DNP project was conducted across both groups.

There are several committees that support quality improvement initiatives, research, and innovation at NYP/WCM. Monthly staff meetings are conducted where all of the aforementioned individuals discuss ways to improve the current standard of care or protocols. The Department of Surgery Metabolic and Bariatric Surgery (MBS) Committee meets 3 to 4 times yearly. The committee consists of bariatric surgeons, anesthesiologists, patient care directors, and hospital quality specialists involved in the care of bariatric patients; members discuss MBSAQIP requirements and quality improvement projects. Additionally, a Department of Surgery meeting occurs monthly and includes the chiefs of all the surgical departments. During these meetings, there is discussion about all bariatric and non-bariatric cases where a patient had a complication or experienced harm. These discussions help identify gaps in protocols and procedures and help improve patient care and system processes.

Overall Goal and Project Aims

Developing innovative programs targeting high-risk patients can result in significant and achievable healthcare cost reduction (Telem et al., 2016). Knowledge of well-known risk factors, interventions and databases/tools that have been used to address readmission rates allow healthcare providers to identify high-risk patients early, provide opportunities for prompt and appropriate interventions, and in turn improve quality of patient care.

The purpose of this DNP project was to reduce early (<30 day) readmission rates following bariatric surgery through improved post-op follow-up. Closer postoperative follow-up

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

allow healthcare providers to identify high-risk patients early, thereby providing opportunities for prompt and appropriate interventions, in turn improving quality of patient care and outcomes.

Project Aims

This project addressed whether improved clinical follow up within a brief postoperative period of time was effective in reducing early bariatric readmission rates in a large urban hospital that is a Bariatric Center of Excellence. There were 4 specific aims which are outlined below:

1. To develop a revised protocol for postoperative follow up of bariatric surgery patients
2. To pilot the revised protocol
3. To evaluate trends in 30-day readmission rate pre- and post-implementation of protocol
4. To develop recommendations based on pilot findings for revision of the existing postoperative follow up protocol and provide preliminary recommendations regarding care of post-op bariatric patients for dissemination to American Metabolic and Bariatric Surgery (ASMBS) as well as ASMBS' Certified Bariatric Nurse (CBN) Certification Committee

Chapter 3

METHODS

This QI project was conducted at NYP/WCM's Section of GI Metabolic and Bariatric Surgery.

Participants

Inclusion and exclusion criteria for this project were as follows; inclusion criteria included men and women ≥ 18 years of age and status post primary bariatric surgery at WCM's Section of GI Metabolic and Bariatric Surgery. Exclusions included revisional bariatric surgery or below 18 years of age.

Human Subjects

This project was reviewed according to the guidelines set forth by the Yale IRB and was deemed a QI project. The WCM IRB also concluded that this was a QI project.

Aims

This project addressed whether improved clinical follow up within a brief postoperative period of time was effective in reducing early bariatric readmission rates in a large urban hospital that is a Bariatric Center of Excellence. There were 4 specific aims which are outlined below along with their accompanying methods.

Aim 1: To develop a revised protocol for postoperative follow up of bariatric surgery patients

The first step was to review the problem of increased readmission rates at a monthly staff meeting. The Program Coordinator (who is the head RD) added this issue to the meeting agenda. Meetings were comprised of the Chief of Bariatrics, second surgeon, secretaries, call center representatives, APPs, and RDs. The Program Coordinator leads these meetings in conjunction with the Chief. At this meeting, protocol revision was presented along with supporting data e.g.,

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
increased readmission rates post-bariatric surgery at NYP/WCM. Literature evidence of trends and median readmission rates post-bariatric surgery were also presented.

The pre-project protocol required that patients receive a phone call 1-3 days post-discharge by the APPs. This initial call is referred to as the first post-discharge call. Given that median bariatric readmissions occur at 11 days postoperatively (Aman et al., 2016), the improved protocol included an additional phone call within 7-10 days post-discharge by one of the three RDs in the group. This additional call is referred to as the second post-discharge call. The Program Coordinator works closely with the Chief of Bariatrics to oversee fulfillment of ongoing requirements to maintain distinction as a Center of Excellence. This meeting initiated the start of the project and concluded with a plan to schedule a separate meeting with the APPs and RDs to discuss further logistics.

The APPs and RDs were then informed and coached on the improved protocol and documentation expectations. Protocol instructions and a script (see Appendix B) for phone call follow ups were created for the RDs and reviewed with Chief of Bariatrics for approval. A smart-phrase template was created in the Epic EHR system, once the Chief of Bariatrics granted approval. The template was then shared with the RDs so that they could insert it into a telephone encounter when calling the patients. All post-bariatric surgery patients received an additional call within 7-10 days post-discharge by one of the three RDs.

Each RD's schedule dictated which day she was responsible for calling patients (i.e. the two fulltime RD's called 2 days per week; meanwhile, the part-time RD was only responsible for calling patients once a week). If one of the dietitians was out, she coordinated with the others to ensure that there was consistent follow up. The dietitians had access to all the surgeon's schedules and were enlisted in the weekly operating room schedule e-mails.

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

Aim 2: To pilot the revised protocol

Post-op phase: As per the original protocol, APPs called patients for initial post-op follow up. If there was a non-urgent clinical problem, the APP routed the telephone encounter to the surgeon. If it was a dietary or nutritional issue, it was routed to the RD. If it was a high acuity problem, the APP evaluated and reached out to the surgeon directly. Patients were advised to come into the office for further evaluation or instructed to go to ED if indicated. All communication was documented in Epic.

As part of the improved protocol implemented in the project, an additional telephone call was conducted by one of the RDs within 7-10 days post-discharge. The calls were approximately 3-5 minutes in duration depending on each patient's needs and situation. RDs referred to the previous encounter documented by the APP as needed. An interpreter assisted with translation for non-English-speaking patients.

The additional telephone call addressed the following: supplements/vitamins, compliance with proton pump inhibitor, compliance with thromboprophylaxis (if applicable), compliance with fluid requirements, issues with bowel function, pain management, warning signs/symptoms, follow up with PCP for medication adjustments (if applicable), and any patient concerns (see Appendix B). All RDs utilized the same template to navigate the calls (see Appendix B). RDs routed any concerns they may have to the designated APP as a form of triage. Concerns included nausea, acid reflux, pain, fever/chills, shortness of breath, palpitations, any worsening symptoms from time of discharge, or new symptoms since discharge. The routed telephone encounter appeared in the respective APP's in-basket as a *Patient Call*. Hence, an indication that a follow up action was required was clear to the APP. The encounter appeared as a *Patient Call* and

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
included documentation of the conversation between the RD and patient and the reason for concern. The RD also marked the encounter as high alert.

If the RD was unable to reach the patient for the additional 7-10 day post-discharge call during first attempt, she called once more to try to reach patient. All communication and attempts to reach patient were documented in Epic as a telephone encounter.

Aim 3: To evaluate trends in 30-day readmission rate pre- and post-implementation of protocol

The APPs continued to identify readmissions to NYP/WCM or other hospitals during their 30-day follow up calls. The data was also retrieved from the Quality Specialist who tracks 30-day readmission rates. The Quality Specialist ensured that the two bariatric teams either contacted or evaluated all patients 30 days after surgery to follow up on their recovery and to determine if they have been to an ED or readmitted for some reason. The Quality Specialist routinely maintains an Excel record with the following variables for tracking purposes: medical record number, date of surgery, surgeon, type of surgery, and if readmitted/had ED visit or not. Once the project was implemented, the Quality Specialist incorporated additional columns which indicated reason for ED visit/readmission and tracked the 1-3 day post-discharge call (first post-discharge call) and the 7-10 day post-discharge call (second post-discharge call). Additionally, indication of whether a patient was reached or not during these attempts was incorporated for tracking. The findings from this project were compared with historic data from July 2018 to June 2019 (containing data on 1-3-day post-discharge calls) to see if an additional call 7-10 day post-discharge (improved protocol) had an impact on early readmission rates. With the assistance of the agency's biostatistician, a 2-sample test of proportions was used to determine if there was significant reduction in readmission rates following implementation of the new protocol.

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

Monthly meetings were scheduled with RDs and APPs to obtain feedback regarding the intervention. A short staff questionnaire was created (see Appendix C) to identify weaknesses and strengths of the intervention and its implementation. The goal of this questionnaire was to identify, document, and implement minor changes to the improved protocol in real-time, however, the actual questionnaire was only completed at the end of the project duration. There was informal conversation regarding any concerns related to the intervention as it was not always feasible for everyone to meet at the scheduled times.

Aim 4: To develop recommendations based on pilot findings for revision of protocol and provide preliminary recommendations regarding care of post-op bariatric patient for dissemination to American Metabolic and Bariatric Surgery (ASMBS) as well as ASMBS' Certified Bariatric Nurse (CBN) Certification Committee

Based on the findings of this project, preliminary recommendations were identified regarding the value and possible adaptation of this protocol for other bariatric centers across the country. ASMBS is the largest national organization dedicated to metabolic and bariatric surgery, and obesity-related diseases and conditions. An abstract for a poster presentation was submitted in January 2021 for the May 2021 conference during ObesityWeek, a national obesity meeting, to disseminate the recommended protocol and to share outcomes. Preliminary recommendations were also shared with ASMBS' CBN Certification Committee during a scheduled monthly meeting. This committee is currently undergoing an accreditation process and serves to actively make practice recommendations regarding care of bariatric surgery patients from a nursing standpoint. The findings from this project contributed to those recommendations.

Evaluation/Analytic Plan

This section discusses evaluation of each aim.

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

Aim 1: To develop a revised protocol for postoperative follow up of bariatric surgery patients

This aim was evaluated by determining if the improved protocol was supported and informed by evidence-based literature. Additionally, adherence to the preparatory steps taken including meetings, informational activities, and preparation of staff as outlined were reviewed.

Aim 2: To pilot the revised protocol

This aim was evaluated by determining if the APPs call to patients 1-3 days post-discharge was followed up by the RD's call during the 7-10 day post-discharge window. The Quality Specialist tracked the timing of calls but was unable to provide 3-month interval reports as planned; the pilot ran for 7 months instead of the originally planned duration of 3 months, allowing for more data collection and greater sample size. The Quality Specialist tracked the RD's second attempts to call patients if they were unsuccessful initially. Additionally, she tracked if the RD's calls were routed appropriately.

Aim 3: To evaluate trends in 30-day readmission rate pre- and post-implementation of protocol

Pre and post-protocol implementation readmission rates were compared for this aim. A 2-sample test of proportions was used to determine if there was a significant decrease in the 30-day readmission rate post-implementation when compared with a combined pre-implementation readmission rate from July 2018 to June 2019.

Aim 4: To develop recommendations based on pilot findings for revision of the existing post-operative follow up protocol and provide preliminary recommendations regarding care of post-op bariatric patients for dissemination to American Metabolic and Bariatric

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
**Surgery (ASMBS) as well as ASMBS' Certified Bariatric Nurse (CBN) Certification
Committee**

This aim was evaluated as successful via presentation of practice recommendations during one of the scheduled CBN Certification Committee meetings. The Dissemination activities included submission of an abstract for a poster presentation for the ObesityWeek conference in 2021.

Chapter 4

RESULTS

Approach: The author worked with the agency statistician to determine and conduct the statistical analyses. Data were summarized using the median (inter-quartile range) and frequency (percent) for continuous and categorical variables, respectively. The proportion of patients recorded as having a hospital readmission or an ED visit post-operation was evaluated among the whole sample, as well as stratified by procedure type, and by the number of post-discharge calls the patient answered. Ninety-five percent confidence intervals for proportions were calculated using the Clopper-Pearson method. The readmission proportion and ED visit proportion were compared to the same measures from the NYP Semi-Annual Report (SAR) using 2-sample test of proportions with a two-sided alternative hypothesis. All analyses were conducted using R Version 4.0.1 (2020).

Data was collected on 166 patients who underwent Gastric Bypass ($n = 42$) and Sleeve Gastrectomy ($n = 124$) between 1 July 2019 and 25 February 2020. The median age was 42 years. Thirty percent ($n = 49$) of the patients were African American, 29% ($n = 48$) were Caucasian, and 28% ($n = 47$) were Hispanic or Latino. Sixty-nine percent ($n = 115$) of patients completed both the first and second post-discharge calls, 12% ($n = 20$) completed only the first

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

post-discharge call, 15% (n = 25) completed only the second post-discharge call, and 3.6% (n = 6) didn't complete any of the post-discharge calls (see Table 1).

Table. 1: Patient Characteristics

| Characteristic | N = 166^l |
|-------------------------------|----------------------------|
| Age (yrs) | 42 (34, 52) |
| Self-reported Race | |
| African American | 49 (30%) |
| Caucasian | 48 (29%) |
| Declined | 17 (10%) |
| Hispanic/Latino/Spanish | 47 (28%) |
| Other | 5 (3.0%) |
| Procedure | |
| Gastric Bypass | 42 (25%) |
| Sleeve Gastrectomy | 124 (75%) |
| Post-discharge call | |
| Connected on both calls | 115 (69%) |
| Never connected | 6 (3.6%) |
| Only connected on first call | 20 (12%) |
| Only connected on second call | 25 (15%) |

Characteristic **N = 166^l**

^l Statistics presented: Median (IQR); n (%)

Among all patients included in this project, 4.8% (95% CI: 2.1 to 9.3) were recorded as having a hospital readmission. Comparatively, among the SAR cohort, 6.5% (95% CI: 4.0 to 9.8; P = 0.47) were recorded as having a hospital readmission. Among the patients who answered both post-discharge calls implemented in this project, 6.1% (95% CI: 2.5 to 12.1) had a hospital readmission; among those who only answered the first post-discharge call, 5% (95% CI: 0.1 to 24.9) had a readmission; and, among those who only answered the second post-discharge call, 0% (95% CI: 0 to 13.7) had a readmission. The greatest readmission proportion was among patients who underwent Gastric Bypass (7.1%, 95% CI: 1.5 to 19.5). Among the SAR cohort, 9.2% (95% CI: 4.1 to 17.3; P = 0.70) were reported as having a readmission. Four percent (95% CI: 1.3 to 9.2) of project patients who underwent Sleeve Gastrectomy were reported as having a readmission; in comparison, 5.4% of patients in the SAR cohort (95% CI: 2.8 to 9.2; P = 0.58) were reported as having a readmission (see Table 2).

Table. 2: Readmission Proportions

| Characteristic | <i>Project Cohort</i> | | | <i>SAR Cohort</i> | | | P-value² |
|-------------------------------|-----------------------|----------|---------------------------|-------------------|----------|---------------------------|----------------------------|
| | N | % | 95% CI^l | N | % | 95% CI^l | |
| All patients | 8/166 | 4.82 | (2.10, 9.27) | 20/310 | 6.45 | (3.99, 9.79) | 0.471 |
| Post-discharge call | | | | | | | |
| Only connected on first call | 1/20 | 5.00 | (0.13, 24.87) | 20/310 | 6.45 | (3.99, 9.79) | 0.797 |
| Only connected on second call | 0/25 | 0.00 | (0.00, 13.72) | 20/310 | 6.45 | (3.99, 9.79) | 0.190 |

| Characteristic | Project Cohort | | | SAR Cohort | | | P-value ² |
|-------------------------|----------------|------|---------------------|------------|------|---------------------|----------------------|
| | N | % | 95% CI ¹ | N | % | 95% CI ¹ | |
| Connected on both calls | 7/115 | 6.09 | (2.48, 12.14) | 20/310 | 6.45 | (3.99, 9.79) | 0.891 |
| Procedure | | | | | | | |
| Gastric Bypass | 3/42 | 7.14 | (1.50, 19.48) | 8/87 | 9.20 | (4.05, 17.32) | 0.696 |
| Sleeve Gastrectomy | 5/124 | 4.03 | (1.32, 9.16) | 12/223 | 5.38 | (2.81, 9.21) | 0.577 |

¹ Confidence intervals calculated using the Clopper-Pearson method.
² Equality of proportions tested using a 2-sample test of proportions.

Among all patients, 11.5% (95% CI: 7.0 to 17.3) were recorded as having a post-operation ED visit. Comparatively, among the SAR cohort, 9.7% (95% CI: 6.6 to 13.5; P = 0.55) were recorded as having an ED visit post-operation. Among the patients who answered both post-discharge calls, 14.8% (95% CI: 8.9 to 22.6) had a post-operation ED visit; among those who only answered the first post-discharge call, 5% (95% CI: 0.1 to 24.9) had a post-operation ED visit; and, among those who only answered the second post-discharge call, 0% (95% CI: 0 to 13.7) had a post-operation ED visit. By procedure type, 16.7% (95% CI: 7.0 to 31.4) of patients who underwent a Gastric Bypass had a post-operation ED visit compared to 11.5% (95% CI: 5.7 to 20.1; P = 0.42) among the SAR cohort; 9.7% (95% CI: 5.1 to 16.3) of patients who underwent Sleeve Gastrectomy had a post-operation ED visit compared to 9.0% (5.6 to 13.5; P = 0.83) among the SAR cohort (see Table 3).

Table. 3: ED visit Proportions

| Characteristic | Project Cohort | | | SAR Cohort | | | P-value ² |
|-------------------------------|----------------|-------|---------------------|------------|-------|---------------------|----------------------|
| | N | % | 95% CI ¹ | N | % | 95% CI ¹ | |
| All patients | 19/166 | 11.45 | (7.03, 17.30) | 30/310 | 9.68 | (6.62, 13.53) | 0.545 |
| Post-discharge call | | | | | | | |
| Only connected on first call | 1/20 | 5.00 | (0.13, 24.87) | 30/310 | 9.68 | (6.62, 13.53) | 0.487 |
| Only connected on second call | 0/25 | 0.00 | (0.00, 13.72) | 30/310 | 9.68 | (6.62, 13.53) | 0.103 |
| Connected on both calls | 17/115 | 14.78 | (8.85, 22.61) | 30/310 | 9.68 | (6.62, 13.53) | 0.136 |
| Procedure | | | | | | | |
| Gastric Bypass | 7/42 | 16.67 | (6.97, 31.36) | 10/87 | 11.49 | (5.65, 20.12) | 0.416 |
| Sleeve Gastrectomy | 12/124 | 9.68 | (5.10, 16.29) | 20/223 | 8.97 | (5.56, 13.51) | 0.827 |

¹ Confidence intervals calculated using the Clopper-Pearson method.
² Equality of proportions tested using a 2-sample test of proportions.

A short questionnaire was given to the RD's after the completion of the project which asked about strengths, weaknesses, feasibility and sustainability of intervention, as well as ideas for changes to intervention that could be used on a larger scale. There was also a section for comments which none of them filled out. Overall, the RD's found the intervention to be "helpful" and believed that the second post-discharge check-in placed patients "at ease" and made them feel "less anxious." Commonly identified weaknesses included difficulty in reaching patient on first attempt and patients not returning calls made by RD's. The RD's agreed that the

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
intervention was feasible and sustainable if it yielded positive outcomes. Changes that were recommended included incorporating an application that would remind patients about hydration, supplements, medications, etc. Additionally, they recommended providing a reminder to patients before surgery about when they would be contacted for post-op check-ins to improve contact rate with patients.

DISCUSSION

This project incorporated 166 patients from diverse racial backgrounds, though there were a small number of patients who declined to list race or selected ‘other.’ More specifically, 15 patients declined to list race and 5 selected ‘other.’ This project was conducted in a single institution over a 7-month period, from July 1, 2019 to February 25, 2020. Of the group, 124 patients underwent Roux-en-Y gastric bypass and 42 underwent sleeve gastrectomy. The SAR cohort, which was the comparison group, consisted of 310 patients. The data for the SAR cohort was collected from July 2018 to June 2019. While the findings of the project did not illustrate a statistically significant decrease in readmissions for the project cohort, a clear trend was noted in the overall readmission rate reduction from 6.5% in the SAR cohort to 4.8% in the project cohort. The readmission rate also improved by procedure type in the project cohort. The readmission rate for patients who were status post Roux-en-Y gastric bypass and sleeve gastrectomy improved from 9.2% to 7.1% (3/42) and 5.4% to 4.0% (5/124), respectively. Preliminary work was published in the *Bariatric Times* (Sharma & Nam, 2019).

Sixty-nine percent of patients or 115/166 patients connected on both post-discharge calls, 12% of patients or 20/166 patients connected only on the first post-discharge call, and 15% or 25/166 patients connected on the second post-discharge call only. It should be noted that 3.6% or 6/166 patients did not connect on either call. The readmission rate for patients who connected on

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

both calls, only first post-discharge call, and only second post-discharge call was 6.1% (7/115), 5.0% (1/20) and 0% (0/25), respectively. The readmission rate was highest among patients who connected on both calls. In contrast, there were no readmissions in the group of patients who only connected on the second post-discharge call. There were 8 readmissions in total in the 166 group of patients.

There may be several reasons that help explain why patients who picked up one call had lower readmission rates compared to those who picked up both calls. First, patients may have not picked up or returned the provider's phone call because they were recovering well and had nothing to report. Hence, these patients would also be less likely to be readmitted. Second, patients may have contacted the office on their own if they had a question or concern rather than attending a post-discharge call made by the office. The proactive nature of these patients may have prevented an unnecessary ED visit or readmission.

Conversely, patients who had questions or needed additional support may have been more likely to attend or return provider calls. Furthermore, it could be that the second post-discharge call was well-timed because patients typically transition from a full liquid diet to pureed diet 7 days post-op and may have questions.

In terms of overall post-op ED visits, the SAR cohort had a better rate than the project cohort (9.7% compared with 11.5%). There were a total of 16 post-op ED visits in the project cohort. Those who connected on both calls had an ED visit rate of 14.8% (17/115), those who connected on the first post-discharge call had an ED visit rate of 5.0% (1/20), and those who connected on the second post-discharge call had an ED visit rate of 0% (0/25). Interestingly, patients who only connected on the second post-discharge call not only had 0 readmissions but

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY
also had 0 ED visits post-op. This further proves the point that these patients may have been recovering well or proactively contacted the office when necessary.

Data show that the ED visit rate slightly increased in patients who were status post Roux-en-Y gastric bypass and sleeve gastrectomy compared to the SAR cohort. The post-op ED visit rate for Roux-en-Y gastric bypass patients in the project cohort was 16.7% which was slightly higher than that of the SAR cohort which was 11.5%. Furthermore, the post-op ED visit rate for sleeve gastrectomy patients increased from 9.0% to 9.7% compared to SAR cohort. The literature shows that patients who undergo Roux-en-Y gastric bypass are more likely to experience complications post-op, and therefore, this finding was not unexpected. It should be noted that the sample size for the project cohort was smaller in comparison to the SAR cohort. It would be valuable to re-evaluate ED visit rates using comparable sample sizes in future projects.

As previously mentioned, 3.6% or 6/166 patients did not connect on either call. The APP's attempted to reach the patient according to protocol. The RD's attempted to reach 5/6 of these patients. The RD missed a call to a patient who had a prolonged hospital stay and was seen shortly after discharge from the hospital for an in-person visit. In this specific case, the APP and patient played telephone tag so no direct communication occurred between the two. One of the patients was not primarily English speaking; the patient's relative picked up the call when both attempts were made confirming that he or she was doing well. However, there was no direct communication with patient despite using an interpreter. In one case, the number listed in the chart was incorrect and therefore there was no communication with patient; however, the patient called at another time and requested to speak with the RD to review diet progression. In another case, the patient called to schedule a post-op visit and informed the call center representative that he or she received our messages and emails and was doing well and therefore, did not need to

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

speaking with anyone. One out of these six patients had an ED visit post-op; this particular patient underwent Roux-en-Y gastric bypass.

Limitations to this project include its small sample size, short project timeline, and focus on a single institution. It would be valuable to conduct additional projects or studies to evaluate readmissions on a larger, multi-institutional scale and incorporate revisional procedures as well as the less common bariatric operations such as Lap Band and BPD-DS. Additionally, it would be helpful to obtain more real-time data on RD and APP compliance with calls to make changes to the intervention as necessary. A consideration could be made to schedule the post-discharge phone calls to evaluate if patients would be more likely to pick up when contacted though this may not be realistic for all provider schedules. Additionally, there is a possibility that the contact rate may improve if the patient receives the post-discharge call from the RD he or she is followed by. Furthermore, it would be helpful to seek periodic feedback from the team to evaluate progress and opportunities for improvement. Lastly, it may be helpful to consider evaluating factors that may place patients in a 'higher risk' category for readmission. Such factors may include obstructive sleep apnea, diabetes, depression/anxiety, and history of DVT/PE.

In conclusion, findings are promising. Additional projects should be conducted on a larger scale and include factors that may place patients in a 'higher risk' category for readmission.

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Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

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Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

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Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

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APPENDIX A

Glossary

| Term | Definition |
|--|--|
| Adjustable gastric banding (AGB) | A procedure that involves placement of an adjustable silicone band around the upper part of the stomach to cause restriction (Gagnon & Sheff, 2012) |
| Bariatric surgery | It is the surgical alteration of the stomach and/or intestine to produce weight loss |
| Biliopancreatic diversion with duodenal switch (BPD-DS) | A procedure that involves bypassing half of the small intestine and reconnecting the stomach to the shortened small intestine (Gagnon & Sheff, 2012) |
| Early readmission | 30-day readmission |
| NIDDK | National Institute of Diabetes and Digestive and Kidney Diseases |
| Roux-en-Y gastric bypass (RYGB) | A procedure that involves creating a smaller stomach pouch and attaching it to a limb of the intestine, thus bypassing a majority of the stomach and a small portion of the small intestine (Gagnon & Sheff, 2012) |
| Severe obesity | Body mass index $>40\text{mg}/\text{m}^2$ (Chen et al., 2015) |
| Sleeve gastrectomy (SG) | A procedure that involves removing two-thirds of the stomach (Gagnon & Sheff, 2012) |

APPENDIX B

TEMPLATES FOR EPIC

NP/PA 1-3 Day Post-Discharge Follow Up

How many days post-discharge? ***

Patient is s/p *** on ***. He/she was discharged from the hospital on ***. He/she is doing well.

Patient denies fever or chills. Pain medication discontinued; he/she denies any real pain. Patient knows to use Tylenol for discomfort if needed. He/she is having daily and regular bowel movements and knows to call the office with any irregularity. He/she denies chest pain, palpitations, shortness of breath, or leg pain/cramping. Patient is drinking adequate fluids per day. He/she is taking his/her multivitamin and PPI. He/she is also taking calcium supplement. If Rx'ed, he/she is compliant with thromboprophylaxis. Patient has a 3-week post-op visit scheduled. Patient will call the office with any further questions or concerns.

RD 7-10 Post-Discharge Follow Up Template

How many days post-discharge? ***

Patient is s/p *** on ***. He/she was discharged from the hospital on ***. He/she is doing well.

Patient denies fever or chills. Pain medication discontinued; he/she denies any real pain. He/she is having daily and regular bowel movements and knows to call the office with any irregularity. He/she denies chest pain, palpitations, shortness of breath, or leg pain/cramping. No change in condition since last post-op phone call. Patient is drinking adequate fluids per day. He/she is taking his/her multivitamin and PPI. He/she is also taking the calcium supplement. If given Rx thromboprophylaxis, compliant with it. Patient knows to follow up with prescribing physicians for any medication adjustments post-surgery. Patient has a 3-week post-op visit scheduled.

Running head: REDUCING EARLY READMISSIONS AFTER BARIATRIC SURGERY

Patient verbalizes understanding of today's conversation. Patient will call the office with any further questions or concerns.

*** denotes fill in the blank

APPENDIX C

STAFF QUESTIONNAIRE

1. What are some strengths of this intervention?
2. What are some weaknesses of this intervention?
3. Is this a feasible and sustainable intervention?
4. What changes can be made so this intervention can be used on a larger scale?
5. Other comments: ...