

Exploring the Impact of an Elective Joint Replacement Care Pathway in a Safety-Net Hospital: Ongoing Quality Improvement

By

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**Exploring the Impact of an Elective Joint Replacement Care
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Ongoing Quality Improvement: Exploring the Impact of an Elective Joint Replacement Care
Pathway in a Safety-Net Hospital

Abstract

One of the innovative ways that organizations have tried to bridge the gap between quality and cost is with the implementation of care pathways. Truman Medical Center (TMC), a safety-net hospital, has implemented a multidisciplinary care pathway for patients undergoing an elective joint replacement in an effort to increase quality and control cost. The pathway, developed by a multidisciplinary team, addresses care of elective joint replacement patients through the continuum of care.

The purpose of this ongoing quality project was to explore the impact of the implementation of an elective joint replacement pathway on quality outcomes and the nurses perceptions of the benefits and challenges associated with the care pathway implementation. The three study questions for this ongoing quality improvement project were: (1) does the implementation of a care pathway decrease length of stay for patients undergoing an elective joint replacement? (2) Does the implementation of a care pathway decreases readmission rates post elective joint replacement surgery? and (3) What are staff perceptions regarding the benefits and challenges of the implementation of the elective joint replacement care pathway? This quality improvement project obtained data in two ways. The first was a review of available agency outcomes data. The second was a survey of nursing staff on the orthopedic nursing unit. All data collected was organized and evaluated by the primary author. The assumptions were that both length of stay and readmission rates would decrease with implementation of a care pathway. The findings of this ongoing quality improvement project will help to determine if further study is needed on this topic of interest.

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Introduction

The aging population and the fiscal realities in healthcare have led providers and organizations to recognize the need to develop innovative approaches aimed at improving clinical outcomes and controlling cost (Van Citters et al., 2013). This need is highlighted in safety-net hospitals in which financial constraints are of great concern. The current healthcare environment has forced safety-net hospitals to focus on their “ability to provide quality healthcare to their patients while staying financially viable and legally compliant” (Lukas et al., 2015, para. 12).

One method to improve quality of care that has been explored in the literature is the implementation of care pathways. The implementation of integrated care pathways could potentially be one solution to imminent cost and access pressures that organizations face (Manning et al, 2013). A care pathway has been defined as “a multidisciplinary outline of anticipated activities, placed in an appropriate timeframe, to help a patient with a specific condition or set of symptoms to move progressively to positive outcomes” (Middleton, Barnett, & Reeves, 2001, p. 1). A care pathway provides links between scientific literature and best practices that allow for each care provider to have a clear understanding of the needed activities in the recovery process (Van Citters et al., 2013). The care pathway, in essence, becomes the roadmap to recovery for the patient, family and the care team.

Statement of Problem

The implementation of a care pathway for elective joint replacements in a safety-net hospital is a complex process that has the potential to impact length of stay and quality for indigent populations. Indigent populations are often challenged with risk factors that increase surgical risk and lead to negative surgical outcomes in knee and hip replacements (Jergesen &

Yi, 2016). This concern can be expected to grow as predictions indicate that total hip and knee arthroplasty will increase by as much as 673% by 2030 (Tessier et al., 2016). This will become critically important in safety-net hospitals due to the scarcity of resources including follow-up services for this patient population. The use of care pathways while caring for patients that have undergone an elective joint replacement leads to decreased cost of care and fewer requirements for follow-up care (Tessier et al., 2016).

The hospital is an academic medical center, level-one trauma center, and a safety-net hospital that provides services to many uninsured and underserved residents in a large Midwest urban city. This hospital has historically struggled with long lengths of stay and high readmission rates for this patient population. A multidisciplinary care pathway, which this author helped to develop and will be further described, was implemented at this hospital in the summer of 2017 in an attempt to meet quality goals.

Project Purpose and Questions

The purpose of this quality improvement project was to examine the impacts on quality measures and nursing staff perceptions regarding the implementation of an elective joint replacement care pathway. This quality project addressed three project questions:

- 1) Does the implementation of a care pathway decrease length of stay for this patient population?
- 2) Does the implementation of a care pathway reduce readmission rates post elective joint replacement surgery?
- 3) What are the staff's perceptions regarding the benefits and challenges of the implementation of the elective joint replacement care pathway?

Literature Review

The databases, PubMed, Cochrane Library, CINAHL, and Google Scholar were utilized to identify literature related to the topic. The initial timeline was established as being from 2014 to present date. The online search was limited to only include research articles that were published in English. Research topics included: safety-net hospitals, length of stay, post-op complications or joint replacements, care pathways and readmissions.

In 2013 healthcare spending in the United States increased by 3.6% to reach an estimated cost of 2.9 trillion dollars (Watson, 2015). The amount spent on healthcare in our country is expected to continue to rise. One of the many areas of increased spending is elective joint replacements. Greater than one million elective joint replacements are completed each year in the United States and joint replacements are on track to become the largest elective surgery in the coming years (Kremers et al., 2015). It was estimated that in 2010 there were “2.5 million individuals with total hip replacements and 4.7 million individuals with total knee replacements” (Kremers et al., 2015, p. 1387). The current and projected prevalence of joint replacements illustrate the large impact of elective joint replacements on the healthcare industry.

The introduction of care pathways has been one of the methods the healthcare industry has implemented in an attempt to control quality and cost. A study by Van Der Sluis (2014) effectively demonstrated the value of the implementation this type of care pathway. This study involved developing, implementing and evaluating a pathway for patients undergoing knee replacements. The aim of this was to explore if the implementation of a care pathway would impact the amount of time it took for patients to return to functional independence as well as the length of stay in an inpatient setting. Post-pathway implementation the time to achieve

functional independence decreased from 4.5 to 4.1 days, $p < 0.05$ and length of stay decreased from 5.2 days to 4.2 days, $p < 0.01$.

This decrease in post-op length of stay pathway implementation was supported by a study conducted by Malviya et al (2017) that explored whether or not care pathways for patients undergoing an elective joint replacement would decrease length of stay without increasing complications. The study authors report that post-implementation of a care pathway there was a decrease in length of stay from 8.5 to 4.5 days, $p, 0.0001$. Mortality rates decreased to 0.1% from 0.5% after the pathway implementation.

The decreased mortality rates post-pathway implementation are critically important in safety-net hospitals were “intrinsic qualities of safety-net hospitals lead to inferior surgical outcomes and increased cost” (Hoehn et al., 2016, p. 120). Hoehn et al (2016) report that safety-net hospitals have increased rates of readmissions, higher rates of mortality and post-op complications. Hand (2015) reports that an analysis of outcomes in safety-net hospitals revealed that outcomes, mortality and readmission rates were higher in safety-net hospitals.

Not all research supports that mortality is increased and outcomes poorer in safety-net hospitals. Jaing et al (2016) conducted a longitudinal analysis that disputes the findings of Hoehn et al (2016). Jaing et al (2016) found that there are only small differences in mortality between safety-net and hospitals that are not safety-net. The differences that they did find were attributed to teaching hospitals. Differences in the risk adjusted mortality between safety-net hospital and non-safety-net hospitals were only determined to be significant in teaching hospitals. These findings were supported by Shahan et al (2015) with their study that determined that there is not an increase in mortality at safety-net hospitals. The study authors felt that the

findings were due to safety-net hospitals being able to effectively recognize and treat complications.

Framework

The conceptual framework for this quality improvement project is Donabedian's model of structure, process and outcome. This model was selected due to its ability to help "connect important aspects of the project" (Moran, Burson, & Conrad, 2017, p. 258).

The Donabedian model, helps to organize a project to determine the quality of care (Donabedian, 2003). The relationships between structure, process and outcomes relate to the quality of care. The structure impacts the process, which in turn, impacts the outcome.

According to the Donabedian framework the structure is the setting that a project will take place in (Moran et al., 2017). Donabedian (2003) equates structure to the conditions under which care is being provided. Settings can include staffing ratios, structure and access to care. For the purpose of this quality improvement project, the setting was an orthopedic care nursing unit. The orthopedic nursing unit is a 35 bed unit and is a combination of semi-private and private rooms. The patient population on this unit is comprised of elective joint replacement patients, other orthopedic surgery patients and trauma patients. It is also common for medicine patients to be placed on the unit when beds are available. The unit is typically staffed with 8 RNs, 3 support staff and an unit secretary. A nursing manager is present or available to the unit around the clock.

The process of this quality improvement project was the care pathway for elective joint replacements. Processes in the Donabedian framework are the activities or interventions that make up the care provided to a patient and can be linked to outcomes (Donabedian, 2003). Donabedian (2003) offers examples of process as prevention, treatment and rehabilitation. The

elective joint replacement care pathway refers to an outline, or roadmap, of anticipated care that guides the progression of care from preparing for surgery through recovery. This roadmap, or structure, then outlines the process used to care for elective joint replacement patients. For the purpose of this project, the process will be the activities implemented in the care pathway for elective joint replacements. An example of care pathway for hip replacements is provided (See Appendix A Total Hip Replacement Care Pathway.)

The outcome portion of the Donabedian framework refers to what the quality improvement project will be evaluating (Moran et al., 2017). Outcomes can be defined as the changes that can be attributed to the interventions or an implementation of a change (Donabedian, 2003). Donabedian (2003) shared that outcomes fall under one of seven classifications. The classifications are; clinical, psychological-biochemical, physical, psychological/mental, social-psychological, integrative outcomes and evaluative outcomes.

This quality improvement project looked at outcomes from the clinical perspective. For the purpose of this project, the outcomes evaluated will be length of stay, the reduction in readmission rates post discharge after elective joint replacement surgery, and the orthopedic staff RN's perception surrounding the challenges and benefit of the care pathway implementation.

This quality improvement project examined the impact of an elective joint replacement care pathway from the orthopedic staff RN's perspective as well as the impact the intervention had on quality metrics. This will reflect Donabedian's model of structure, process and process, and outcomes.

Project Background and Context

Historically elective joint replacement patients have been managed as a part of the general orthopedic patient population and often times their specialized needs were not addressed.

This approach potentially negatively impacts quality measure and has a negative financial impact on organizations.

In reaction to the forecasted growth of elective joint replacement surgeries, organizations are competing to set themselves up to have a competitive edge in the marketplace. The challenge that organizations face is to manage cost and quality while building an orthopedic program that attracts the savvy healthcare consumers of today.

This challenge is even greater at safety-net hospitals as resources are scarcer. TMC is the only safety-net hospital located in this area and provides a large amount of uncompensated care each year. TMC is a two hospital, 600 bed non-profit hospital system. The orthopedic unit, at the downtown location, has a 35 bed orthopedic nursing unit that cares for surgery patients including elective joint replacements. According to TMC (2018), the hospital consistently provides around \$ 120 million in uncompensated care each year. This large amount of uncompensated care combined with constant pressures of changing reimbursement forces TMC to be good stewards of resources. The management of elective joint replacement patients through the use of care pathway and pursuit of certification in Joint Excellence is part of that stewardship.

Specific Project Context

This project is related to this author's work at this large Midwest academic medical center. The work began with the organization acknowledging the need to improve outcomes and control cost in the elective joint replacement program. Through working with a mentor at a sister hospital and meetings with hospital leadership it was determined that the best approach to

controlling cost and quality was to pursue the becoming a center certified in joint excellence through the Joint Commission.

Certification of Joint Excellence through the Joint Commission demonstrates a commitment to quality while providing organizations with a framework to structure and manage patients undergoing elective joint replacements. Certification focuses on compliance with national standards, evidence based clinical practice and performance measures. The following project appendices help document the project progression and the components of the program this author had leadership or collaborative work on. These have led to the need for the proposed project evaluation:

TMC Sample Pathway: Total Hip Clinical Pathway (Appendix A)

TMC Elective Joint Replacement Program SWOT Analysis (Appendix B)

Total Joint Risk Modification Screening Tool (Appendix C)

Outline of Patient Education (Appendix D)

Staff Education Outline (Appendix E)

Orthopedic Nurse Navigator Job Description Summary (Appendix F)

Total Hip Clinical Pathway

The care pathway for elective hip replacements was developed by a multidisciplinary team, including this author. The pathway outlines clinical goals that each patient meets as they progress from an initial clinic visit in the orthopedic clinic, through the joint replacement and up through the post-operative period. Each clinical goal in the pathway is supported by evidence based practice that was examined by this author and the multidisciplinary team.

SWOT Analysis

As TMC started the journey to certification a SWOT analysis was completed by this quality project author as a method to identify needed areas of improvement as well as strengths that could be built upon. (See Appendix B for SWOT analysis.) The SWOT analysis was shared with the leadership team by the project author. The SWOT analysis helped to determine that the organization needed to put focus and efforts around quality of care, continuous improvement outcomes and resource management.

The SWOT analysis identified that TMC had several strengths to build upon and those included: an engaged leadership team with a dedicated orthopedic surgeon, an academic medical center setting and a designated orthopedic nursing unit. These strengths could be leveraged to impact some of our identified weaknesses. The identified areas of weakness included: lack of staff training in caring for elective joint replacement patients, a complex surgery schedule led to the lack of a bed placement plan that was coordinated with the surgery schedule, lack of data collection, limited resources and lack of patient education.

Through the examination of our programs weaknesses the opportunities for improvement presented. Through the improvement of our elective joint replacement program we potentially could increase our market share, decrease length of stay and readmissions as well as increase the education provided for our patients prior to a joint replacement. Our opportunities had to be managed while being aware of our every present threat of possible changes in reimbursements and competing priorities in our organization.

The steering team continued with the close examination of our elective joint replacement program's strengths, weaknesses, opportunities and threats it was determined that the

development of a care pathway would provide the structure needed to move our weaknesses to strengths and threats to opportunities. The care pathway would serve as the structure and roadmap to achieve certification. This ongoing quality improvement project will explore some of the impacts of this elective joint replacement care pathway.

Total Joint Risk Modification Screening Tool

A critical aspect of the work conducted was the examination of how a patient is determined to be a suitable candidate for an elective joint replacement. This author and a group of steering committee members developed a risk stratification tool to use in order to determine if a patient was appropriate for surgery. Key risk factors that impact recovery post-op were identified and scores were assigned based on the potential impact. Each patient is screened and scored at the initial clinical appointment. The patient's overall score determines if lifestyle modifications will be required before surgery can be scheduled. (See Appendix C for risk stratification tool.)

Patient Education

Once a patient is screened as appropriate for elective joint replacement surgery, they are educated on what to expect as they move through the process. The steering committee, including this author, reviewed literature, organization materials and education offered at centers of joint excellence to develop patient education. Every patient that is scheduled for an elective joint replacement at TMC is now educated by the Orthopedic Navigator using the developed patient education materials. (See Appendix D for patient education.)

Staff Education

Once the patient education was completed, the materials were reviewed and staff education was developed. (See Appendix E for staff education.) The steering committee approved the staff education and this author and a nursing manager partnered to ensure all staff on the orthopedic nursing unit were educated. The completion of this education is now part of the basic orientation process for all nursing staff hired to work on the orthopedic nursing unit.

Orthopedic Nurse Navigator Job Description Summary

This role was created by steering committee, including project author, to serve as a type of gatekeeper for this patient population. (See Appendix F for Orthopedic Navigator job description.) The navigator, a bachelor prepared RN, takes primary responsibility for overseeing the patient experience from the first appointment in the orthopedic clinic up until sixty days post-op. This is the key person to ensure that all patients are being cared for according to the care pathway. The role dictates that if care has strayed from the pathway the team is alerted and actions are taken to correct the care plan.

Elective Joint Replacement Surgery Data Tool

The data collection tool was developed by project author for the collection and tracking of patient data that has been collected by the orthopedic navigator. The tool will allow for an assessment of length of stay and readmission rates both pre- and post-implementation of the care pathways.

Pathway Development

The certification steering committee, including this author, began the work of developing the care pathway through selecting four separate but related areas. These include: the focus of patient education, staff education, improved quality measures and data collection. The patient experience was traced from the moment a patient reports to the orthopedic clinic to up until sixty

days post-op. Evidence based best practices were explored and the steering committee committed to making all steps of the care pathway reflective of those evidence best practices.

The steering committee then determined the interventions needed in order to achieve the desired patient outcomes, patient and staff satisfaction and organizational goals. Each intervention on the care pathways is supported by current literature around best practice. Prior to an intervention becoming part of the care pathway the steering committee reviewed literature around the intervention and obtained support from all steering committee members. When an intervention couldn't initially be agreed upon, steering team members would continue to investigate the intervention until all members either supported or eliminated the intervention. These agreed upon interventions were used to form the care pathways for both hip and knee replacements.

Once staff education was completed, the care pathways were implemented and data collection continued. Each month the steering committee meets to review data and discuss any possible needed changes. To date the only change that has been made to the care pathway is how cold therapy is applied. Once a change is made to the pathway, education goes to all stakeholders via email. The orthopedic nurses review email updates but are also updated via one on one education with their manager.

The organization has completed the application for certification in Joint Excellence and expects a site visit at the start of the year. All work to date will be a part of the certification survey.

Methods and Results

Permission to conduct this quality improvement project at TMC was obtained from Christine Corbett, DNP, FNP-BC, CNN, NP, FNKF, Corporate Director of Advanced Practice Providers at TMC. (See Appendix G for letter for DNP Site Approval Letter.)

Quantitative Data

One component of this quality improvement project was a review of available data to evaluate outcomes post-implementation of the elective joint replacement care pathway. This data review was completed by reviewing available agency data that had been collected both prior to and post elective joint replacement care pathway. Data was collected by the Orthopedic Navigator, a bachelor prepared nurse that works in a case management capacity with patients that underwent an elective joint replacement. (See Appendix H for Elective Joint Replacement Surgery Data Collection Tool.)

The parameters for this data review were: data for six months prior to the implementation of the care pathway (January of 2017- June of 2017) was compared to six months of data post implementation (November of 2017 to April of 2018). Sample size was $n= 54$ males and females pre-pathway and $n=62$ males and females post-pathway implementation. An independent sample t -test was conducted to test the hypothesis:

- H_0 : Readmission rates did not differ between patients pre-implementation of the care pathway (January of 2017-June of 2017) and patients post-implementation of the care pathway (November of 2017 to April of 2018).
- H_1 : Readmission rates did differ between patients pre-implementation of the care pathway and patients post-implementation of the care pathway.

For the purposes of these tests an alpha level of .05% was selected. A *t*-test is selected to use to test if mean of a continuous variable differ across two different groups (Berman & Wang 2012). The independent samples *t*-test was associated with a statistically significant effect, $t(114) = 3.326, p = .000$ and the null hypothesis was rejected. The implementation of the elective joint replacement care pathway was associated with a statistically significant decrease in hospital readmission rates. (See Appendix I for *t*-test readmission rates.)

Another independent sample *t*-test was conducted to test the hypothesis:

- H_0 : Length of stay did not differ between patients pre-implementation of the care pathway (January of 2017-June of 2017) and patients post-implementation of the care pathway (November of 2017 to April of 2018).
- H_1 : Length of stay did differ between patients pre-implementation of the care pathway and patients post-implementation of the care pathway.

For the purposes of these tests an alpha level of .05% was selected. The independent samples *t*-test was not associated with a statistically significant effect, $t(114) = 1.055, p = .001$ and the null hypothesis was accepted. The implementation of the elective joint replacement care pathway was not associated with a statistically significant decrease in length of stay post elective joint replacement surgery. (See Appendix for J *t*-test length of stay.)

The data review is a type of evaluation in which pre-recorded, patient-centered data are used to answer one or more project questions (Vassar & Holzmann, 2013). The use of an available data review design has several challenges and benefits associated with its use.

The benefits of utilizing an available data review for the quality improvement project is that it can be an affordable way to generate an initial hypothesis to later be examined by a larger prospective study (Nickson, 2017). This quality improvement project will help to determine if

further investigation into the use of care pathways for elective joint replacement patients in this safety-net hospital is warranted.

While there are benefits of using the available data review, there are several challenges associated with this design as well. Available data reviews are often conducted with convenience sampling and can make them prone to selection bias (Nickson, 2017). If it is determined that a deeper examination of care pathways in safety-net hospitals is warranted, the use of a more expansive prospective study could help eliminate this bias.

Qualitative Data

In order to collect information from the orthopedic RN stakeholders, all nursing staff on the orthopedic unit were provided with an anonymous paper survey to complete about their perceptions of the program. As appropriate for a quality improvement project and a debriefing approach, there were three questions to respond to. The questions were: What is working best with the elective joint replacement pathway? What is not working well with the elective joint replacement pathway? What is still needed to improve the elective joint replacement pathway for both patients and nursing staff? (See Appendix K for nursing survey.)

Surveys were provided to staff by the project author at the completion of monthly staff meetings held on January 3, 2019 and January 8, 2019. The author presented the quality improvement project at the staff meetings and handed out surveys to all RNs assigned to work on the orthopedic unit. The orthopedic unit has approximately 30 RNs that make up the team and the goal was to have 30 surveys returned. The orthopedic nurses had the option to return the brief survey at the conclusion of the meeting by placing it in a locked box in the meeting room. Staff that required more time to complete the survey had the option to return the survey to a locked box that was placed in the breakroom on the orthopedic unit. The lockbox was left in the

breakroom for a period of two weeks following the staff meeting on January 8th. Staff members were reminded, by their unit manager, of the request to complete a survey at morning huddles several times during the two week period. At the completion of that two week period, January 22, 2019, the project author collected all surveys and the lockbox was removed. A final tally of surveys indicated that 23 RNs had completed and returned the survey as requested. Project author distributed 30 surveys, the 23 completed resulted in a return rate of 77%.

A content analysis was completed on staff responses seeking key themes from the responses. Content analysis is a set of techniques that can be used to evaluate data and elicit themes (Vaismoradi, Jones, Turunen, & Snelgrove, 2016). All staff responses were examined by the project author and taken through the four phases of theme development. Vaismoradi et al. (2016) identified the phases of theme development as initialization, construction, rectification and finalization. The identified phases assisted the author in looking for similarities and differences in staff responses and then to consider potential relationships between the responses. Through this examination the staff responses told the story of the benefits and challenges of the use of the elective joint replacement care pathway.

The initialization phase of this data review involved the project author reading the survey responses multiple times taking note each time and coding the responses. Survey questions were reviewed separately and key words or phrases were counted. (See Appendix L for nursing survey key phrases.) In the first survey question, “what is working best with the elective joint replacement pathway?” the key words identified include: up, walking, moving, mobile, goals, expectations, tasks and meds. A summary of staff RNs responses around what is working well included:

- Patients better know what is going to happen (8 responses)

- Pain control is better (6 responses)
- Clearly delineated tasks for each discipline each day (3 responses)

The second survey question, “what is not working well with the elective joint replacement pathway?” identified the key words: goals, understanding, diet order, and communication. The concept of pain relief came up with this question as well indicating that while some staff RNs perceive that pain is well addressed in the pathway, others perceive it is not adequately addressed. Staff responses around what is not working well with the pathway included:

- Patient understanding that they will have some pain (6 responses)
- Diet orders need to be added to the pathway (8 responses)
- Patient understanding of how long they will be in the hospital (4 responses)

The final question of the survey, “what is still needed to improve the elective joint replacement pathway for both patients and nursing staff?” identified the following key words: education, training, physical therapy, communication, expectations, and diet orders. RN responses to what is still needed to improve the pathway include:

- Physical therapy to stay later in the day for late day admits (4 responses)
- More education and staff involvement (7 responses)
- Better communication with the Orthopedic Surgeons when they are in the operating room (improved ability to contact Orthopedic Surgeons while in the operating room and improved response times while they are in the operating room) (3 responses)

The next phase of theme development conducted was construction. During this phase the author looked for similarities and differences in the initial coding. As anticipated, the responses by each question were unique. While pain was considered in responses for Question 1 and Question 2, the first example related to pain control and the second related to patient understanding of the pain they should be expecting. The project author then distanced herself from the data by stepping away from the work for several days in order to allow for increased sensitivity once data was reviewed again. Once themes were reviewed again the project author compared these to the purpose of the project and current literature around care pathways. The finalization stage of theme development allowed the project author to discover the story the survey results told. In summary the process indicated according to Question 1, that when the orthopedic RNs were asked what is working best with the elective joint replacement pathway they indicated that the pathway's strength is the focus it places on patients mobilizing quickly after surgery. The early mobilization is attributed to clear goals and expectations for patients and staff. The nursing team also felt that the pathway offers a good plan for pain management in the post-operative period.

The orthopedic RNs, when asked what is not working well with the elective joint replacement pathway, indicated that the lack of diet orders in the immediate post-operative period as well as difficulty in communication with orthopedic surgeons at times were areas that needed improving. Several of the RNs would like to see changes in the pain management process for this patient population.

The final question in the RN survey, "what is still needed to improve the pathway for both patients and nursing?" staff, indicated that the orthopedic RNs feel that more training and

education is needed for both patients and staff. The RNs also see the need for a change in the hours that the Physical Therapy team is available on the nursing unit.

Survey Summary

The survey results show the orthopedic RNs appreciated that the pathway has patients up and walking sooner which leads to fewer complications. The staff indicated that this was achieved with clear goals and expectations. The orthopedic RNs felt the elective joint replacement pathway would be made better if a diet order was placed sooner in the post-operative period and the communication between nursing and the orthopedic surgeons increased. There was disagreement as to whether pain management was an area that was working well. Staff responses in question 1 indicates that pain control is better while staff responses to question 2 indicates that pain control needs to be improved. Further dialogue with the unit staff on this topic is indicated. In order to make the elective joint replacement care pathway better the orthopedic RNs felt that increased education for both staff and patients is needed. This education combined with expectations would improve outcomes. The increased availability of physical therapy on the nursing unit later in the day was also viewed a needed change.

Project Conclusions

This ongoing clinical improvement project evaluated the impact of the implementation of a care pathway for patients undergoing an elective joint replacement at an urban safety-net hospital. Available agency data was compared from both pre- and post- elective joint replacement; nursing staff surveys were completed and evaluated. While there was no statistically significant difference in length of stay for patients that received an elective joint replacement post-implementation of the care pathway, there was a statistically significant

difference in readmission rates for that group. Both of these findings are important indicators and should continue to be monitored.

This project author chose to explore the orthopedic nurse's perceptions of the benefits and challenges of the elective joint replacement care pathway in order to gain a better understanding of what was working and what needed improvement on the care pathway. Involving staff in the decision making of quality improvement has been shown to be a major predictive factor in managing change (Wallin et al., 2006). The use of the anonymous survey tool allowed the RN stakeholders to provide feedback around their perceived benefits and challenges of the implementation of the elective joint replacement care pathway. This served as a type of debriefing for the new program. Needed changes discovered through this survey can be made with the input the unit shared governance process which will also lend towards adherence with the use of the care pathway and better patient outcomes. In order for the elective joint replacement care pathways to have the greatest impact on patients, staff must be fully vested in the process. The examination of the nursing staff's perceptions will lend towards ensuring the pathway is understood and therefore implemented (Wet, Bowie, & O'Donnell, 2018). This quality improvement project provided an important evaluative component of the care pathway implementation. Consistent with quality improvement processes, ongoing monitoring is indicated.

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Appendix A

TOTAL HIP CLINICAL PATHWAY **DAY OF SURGERY**

MULTIDISCIPLINARY ACTIVITIES:

- Educate on Incentive Spirometer and encourage usage 10 times per hour every hour while awake
- Consult Dietician, Respiratory, Social Services

DIAGNOSTIC TESTS:

- Bedside glucose monitoring if Diabetic

MEDICATIONS:

- O2 at 2 liters per NC (d/c when O2 saturation > 91%)
- IVF as ordered-Saline Lock when tolerating po fluids
- Anti-emetics (Zofran)
- Pain control per orders
- DVT Prophylaxis (Aspirin for low risk, Lovenox for high risk)
- Antibiotics per SCIP protocol-2nd dose 4 hours after end of anesthesia time. (To be scheduled by pharmacy).

TREATMENTS:

- Ice bags to Hip
- Foot pumps/SCD's
- TCDB every 2 hours
- Circulation checks of affected extremity
- IS 10 times per hour

KEY NURSING ACTIVITIES:

- Monitor vital signs every hour x 4 hours then vital signs every 4 hours
- Monitor and record I/O every shift
- Obtain stool riser for toilet
- Dangle/up in chair as tolerated TID
- Gait as tolerated considering weight bearing status ordered by Physician
- Lock bed to prevent knee flexion
- Assess need for specialty mattress or bed
- Assess surgical dressing and drain site every 1 hour x 4 hours then every 4 hours
- If patient has spinal anesthesia the nurse will perform respiratory and neuro checks every 1 hour x 24 hours

POST OP DAY 1

MULTIDISCIPLINARY ACTIVITIES:

- Incentive Spirometer Continues
- Discontinue Urinary Catheter if present
- Up to chair TID for all meals
- Discuss Discharge Plan
- Discontinue O2 if not already

DIAGNOSTIC TESTS:

- Bedside glucose monitoring if Diabetic
- PT/INR
- BMP

- CBC

MEDICATIONS:

- IV Saline Lock
- Milk of Magnesia daily until BM
- Pain control Oral—IV for breakthrough
- Continue DVT Prophylaxis (Aspirin for low risk, Lovenox for high risk)
- Antibiotics 2nd and 3rd doses not to extend beyond 24 hours past end of anesthesia time

TREATMENTS:

- Ice bags to Hip
- Foot pumps/SCD's
- Circulation checks of affected extremity
- IS 10 times per hour

KEY NURSING ACTIVITIES:

- Monitor vital signs routine (Every 8 Hours)
- Monitor and record I/O every shift
- Consider need for Blood/Blood products (tachypnea, tachycardia, decreased capillary refill, fatigue, etc.)
- Up in chair TID
- Gait as tolerated considering weight bearing status ordered by Physician
- Give POD #1 patient letter
- Assess need for laxative
- Assess surgical dressing every 4 hours
- Continue respiratory and neuro checks q 1 hour up until 24 hours post-op.

TEACHING:

- Pharmacy-Anticoagulation education
- Reinforce smoking Cessation

DIET:

- Diet as ordered
- Encourage PO Fluids

THERAPY SERVICES:

- PT BID
- OT Eval and Treat

DISCHARGE PLANNING:

- Social Work to assess discharge needs including DME and referrals

OUTCOMES:

- Verbalizes adequate pain control
- Ambulate 100 feet in Hallway
- Ambulate to and from bathroom with Nursing
- Demonstrate proper use of walker/weight bearing status with Supervision from PT/OT/Nursing
- Verbalizes control of nausea
- Completes toileting and grooming/hygiene standing at sink with OT

- Advance diet to diet as ordered

THERAPY SERVICES:

- PT eval and treatment completed late afternoon (If arrival before noon).

OUTCOMES:

- Verbalizes adequate pain control
- Ambulate 30 feet
- Ambulate to and from bathroom with Nursing
- Demonstrate proper use of walker/hip precautions with Supervision from PT/OT/Nursing

POST OP DAY 2

MULTIDISCIPLINARY ACTIVITIES:

- Incentive Spirometer Continues
- Finalize discharge plans (ensure follow up visit is scheduled 2-3 weeks post-op)
- Up to chair for all meals and increase ambulation
- Discontinue drains if present

DIAGNOSTIC TESTS:

- Bedside glucose monitoring if Diabetic
- PT/INR
- BMP
- CBC

MEDICATIONS:

- Continue Milk of Magnesia daily until BM
- Suppository x 1 if no bm and d/c today
- Pain control Oral
- Continue DVT Prophylaxis (Aspirin for low risk, Lovenox for high risk)

TREATMENTS:

- Ice bags to Knee
- Foot pumps/SCD's
- Circulation checks of affected extremity

KEY NURSING ACTIVITIES:

- Monitor vital signs routine (Every 8 Hours)
- Monitor and record I/O every shift
- Up in chair TID
- Gait as tolerated considering weight bearing status ordered by Physician
- Give POD #2 patient letter
- Patient may shower (no tub baths)

TEACHING:

- Reinforce Anticoagulation education
- Wound Care instructions (keep silver dressing in place x 7 days then remove and leave open to air)

DIET:

- Diet as ordered
- Encourage PO Fluids

THERAPY SERVICES:

- PT BID

- OT Treatment

DISCHARGE PLANNING:

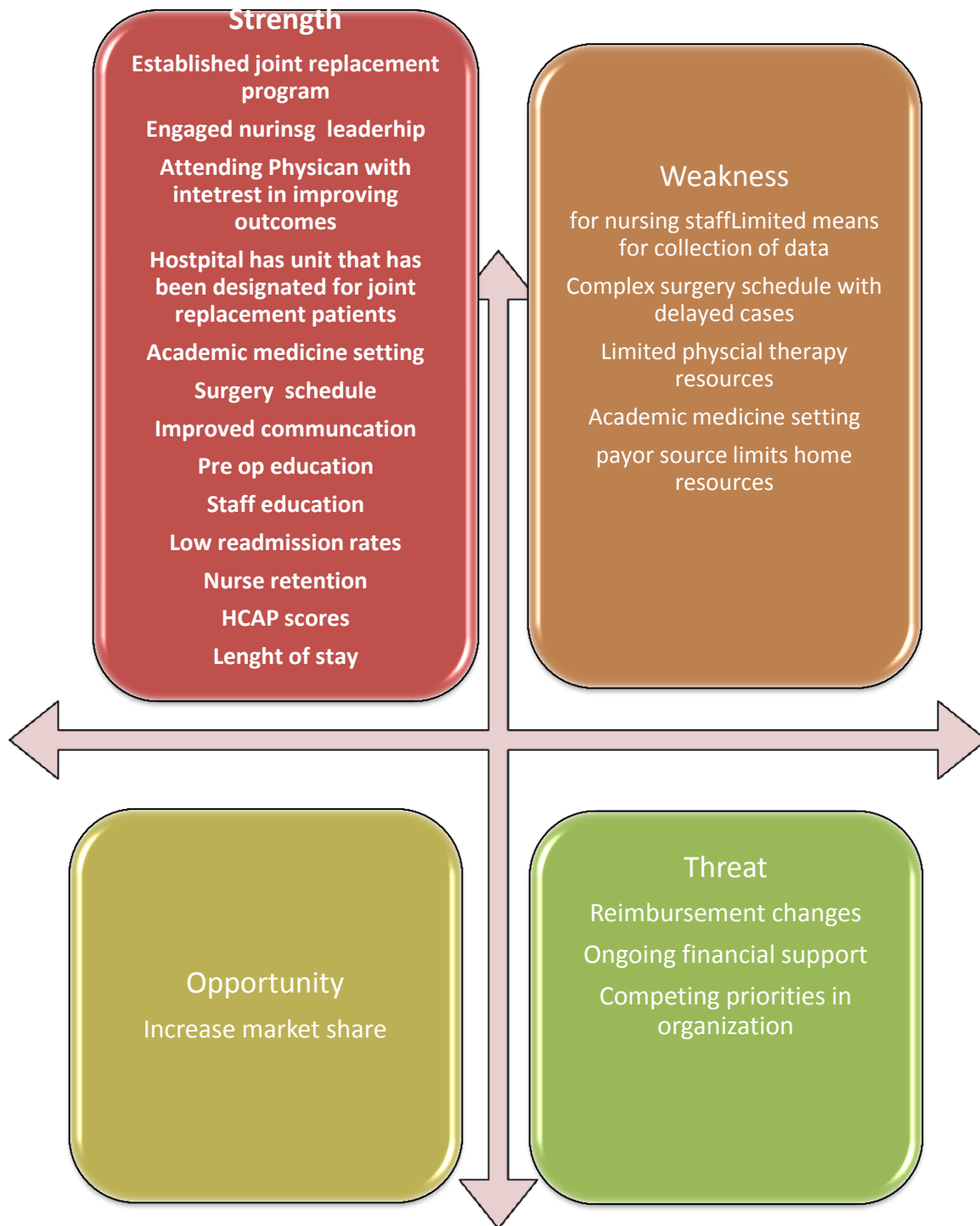
- Social Work finalizes discharge plans

OUTCOMES:

- Verbalizes adequate pain control
- Ambulate 200 feet in Hallway
- Complete stairs with PT
- Ambulate to and from bathroom with Nursing
- Complete ADL's, Dressing, grooming, and Toileting with OT
- Verbalizes control of nausea
- Completes toileting and grooming/hygiene standing at sink with OT
- Demonstrate safe use of walker with OT and PT
- Verbalize tub/shower technique with OT
- Have bowel movement
- State understanding of home medication management to include anticoagulants
- Verbalizes control of nausea

Appendix B

TMC Elective Joint Replacement Program SWOT Analysis



Appendix C

Total Joint Risk Modification Screening Tool

| Risk Factors | Points on Risk Stratification Scale |
|--|-------------------------------------|
| Obesity: | |
| • Body Mass Index (BMI) > 40 | 5 |
| Diabetes: | |
| • Hemoglobin A1C > 8 | 5 |
| Infection Risk Factors: | |
| • (+) HIV/AIDS untreated | 1 |
| • (+) MRSA in the joint | 1 |
| • Hepatitis C; RA | 1 |
| Social (any of these consult to SW): | |
| • Homeless | 1 |
| • Untreated Alcohol/Drug abuse or dependency | 1 |
| • Untreated Psychological History | 1 |
| Venous Thromboembolic Disease: | |
| • History of pulmonary embolism or deep venous thrombosis | 1 |
| Smoking (Tobacco use)(provide educational resources to encourage patient to stop) | |
| • Smoker | 1 |
| Anemia | |
| • Hemoglobin < 11 | 5 |
| Mobility (Upper/Lower extremity weakness) | |
| • Limited Mobility | 5 |

Total: _____

Point Range:

- **1-3** Acceptable for surgery
- **3-4** Borderline (case by case basis)
- **5 or above** not to have surgery before modification

Appendix D

Outline of Patient Education

DAY OF SURGERY

Patients will be given information on when and where to report day of surgery. Please stop eating and drinking at midnight before your surgery. The only exception will be that you can take your medications with sips of water. Your family will be allowed to stay in the pre-op holding area with you up until it is time to go to the operating room. .

TYPES OF ANESTHESIA

You will be given one of the following types of anesthesia during your surgery.

- General - with a breathing device
- Neuraxial- such as a spinal with IV sedation
- Regional Pain Block-Pre or Post-operative Placement in medically appropriate total knee patients – often at discretion during surgery

The type of anesthesia that you receive will be determined by anesthesia before you go to the operating room. You will be a chance to ask any questions you may have. Some other medications you may receive in the operating room include nausea and pain medications. You can expect to be in surgery for an hour.

INFECTION CONTROL

Several precautions will be put in place to reduce the risks of infections. You will use Chlorhexadine wipes prior to surgery and again once you arrive in pre-op area. You can also expect to be given IV antibiotics both before and after surgery. Some of the ways that you can help prevent infection is to not touch our wound/dressing, avoid contact with sick people and don't submerge your wound in water.

AFTER SURGERY

After surgery you can expect to remain in PACU for 90 minutes and then you will be moved to the orthopedic nursing unit. You can expect to feel drowsy for several hours after your surgery. Your care team will be focused on pain and nausea control. These will be managed with a combination of medication and ice. You can expect physical therapy to meet with you once you are settled on the nursing unit. The goal is for you to stand on your new joint within a couple of hours of arriving on the nursing unit. Physical therapy will work with you throughout your stay and give you exercises to continue with at home.

Discharge

You can expect to discharge 2 days after your surgery. Pain will be lessened, but you will not be pain free. You will be sent home with a prescription for pain medication, an ice pack and exercises. The combination of all 3 will help decrease your pain and increase your mobility. You will be attending outpatient physical therapy for several weeks and you will see your orthopedic surgeon 2 weeks after surgery. You can expect to have some pain or discomfort for 6 weeks post-op.

Appendix E

Staff Education Outline

Day of Surgery Prep on Unit

Prior to the patient coming to unit have the patient's room ready with a commode, walker, gait belt and ice packs. You can expect PACU to call you report within 60 minutes of the patient arriving in PACU. The goal is to have the patient stable with nausea and pain controlled and to the nursing unit within 90 minutes of the time they arrive to PACU.

Interventions for your patient on the day of surgery include: use of the incentive spirometer 10 times every hour while awake, Ice affected limb, circulation check of affected extremity, I&Os every shift, up and out of bed, lock bed to prevent knee flexion, assess surgical dressing, education of your patient.

Your patient will have consults ordered with a dietician, respiratory therapist and social worker.

Remember to consult the care pathway to ensure your patient is meeting goals!

Post Op Day 1

On post op day 1 you will continue all of the interventions from the day of surgery. The goal today is to walk further and move more than the previous day. It is important on post op day 1 to assess for the need of a laxative. Pain and nausea control will still be key for your patient. You will start educating your patient on what to expect when they go home. Remember to discuss pain control, bowels, wound care and the follow up appointments with physical therapy and the orthopedic surgeon.

Remember to consult the care pathway to ensure your patient is meeting goals!

Post Op Day 2

On post op day 2 you will continue with all interventions from the previous day. If your patient had a drain in place, the surgeon will remove the drain today. Today your patient needs to walk a little further than the previous day and prepare for discharge. Be sure that education on what to expect at home is completed and that your patient can verbalize the plan for pain control, swelling and follow up care once they are home.

Remember to consult the care pathway to ensure your patient is meeting goals!



Appendix F

Job Description Summary

Job Title: Orthopedic Nurse Navigator

Summary :

As part of the collaborative care team providing joint replacement services, the Orthopedic Nurse Navigator (ONN) ensures efficient patient navigation throughout the care continuum. The ONN coordinates all resources as serves as the care manager for continuity of care throughout the entire episode of care. The ONN coordinates patient and coach education during joint school and acts as a point of contact for questions and concerns that may contribute to delays in discharge or increase the risk of complications or poor clinical outcomes. The ONN works closely with social services (SW) to ensure patients are seamlessly discharged to home using the preferred vendor list for outpatient services to continue rehabilitation. The ONN works closely with the medical team to help communicate changes that are made to individualize the plan of care with the entire multidisciplinary team.

Job Duties and Responsibilities

1. Understands the various regulatory requirements (insurance providers) that will affect discharge planning for the joint patient.
2. Educate the patient and coach regarding the joint pathway (including length of stay and discharge home); patient expectations and responsibilities; optimizing their health status (such as stopping smoking); preventing post-operative infection.
3. Help the patient to obtain medical clearances if necessary in conjunction with the pre-anesthesia and orthopedic clinic to ensure timely completion for review.
4. Coordinate the clinical information from the patient record (EMR) and assist with data collection to determine risk stratification (physical, emotional, environmental and psychosocial needs).
5. Round on the patients as part of the multidisciplinary team daily to ensure patients are progressing on the pathway daily and progressing towards day of discharge.
6. Work with social services (SW) to ensure equipment and resources are arranged

and no discharge delays occur.

7. Works closely with the medical team to evaluate the patient outcomes throughout the entire continuum of care. Provides nursing oversight to ensure education for medication administration is completed timely as the patient/coach understand what is expected.
8. Provides point of contact for the patient and coach to answer questions and concerns when the patient leaves the hospital.
9. Assists the patient and coach with scheduling future appointments, testing, or any transportation needed after discharge.
11. Serves as clinical liaison with outside care providers (such as home health, rehabilitation, SNF's, third party administrators) and primary point of contact for post-acute facilities in the event there are questions about the patient's care.
12. Engages in monthly data collection for performance improvement (PI) measures through chart reviews, patient satisfaction surveys, monthly interdisciplinary team meetings. Reports outcome measures to the CJR steering committee.
13. Provides service in a manner that is appropriate for the patient's age; demonstrates knowledge and skills necessary to meet the patient's physical, psychosocial, educational, and safety needs.
14. Presents a courteous and helpful demeanor, appropriate for age, to all patients, visitors, other Truman employees/medical staff members, or any other person an employee encounters while representing Truman Medical Center.
15. Maintains current knowledge related to applicable statutes, regulations, guidelines and standards necessary to perform job duties in accordance with the requirements of the Corporate Compliance Plan. Complies with the requirements of the Code of Conduct, Corporate Compliance Plan and Compliance Policies and Procedures, including training requirements. Participates in compliance activities under the direction of the Department Manager and Corporate Compliance Officer.

Minimum Requirements

1. Graduate of an accredited school of professional nursing, licensed in MO. Bachelors of Science in Nursing required.
2. Basic Life Support certification (Healthcare Provider)
3. Minimum 3-5 years nursing experience in a hospital setting
4. Minimum 2-3 years of experience orthopedic setting; at least one year of total joint experience
5. Excellent customer service skills and the ability to work independently, multitask and problem solve
6. Flexibility in work schedule (primarily day shift)

Preferred Qualifications

Appendix G

PERMISSION LETTER

October 16, 2018

Re: Brigid Toyne-Barfoot
University of Kansas
School of Nursing
Kansas City, Kansas

To whom it may concern,

Let this letter reflect that Brigid Toyne-Barfoot, a University of Kansas doctorate student, has the support of Truman Medical Centers to conduct her Doctorate of Nursing Project, “Ongoing Quality Improvement: Exploring the Impact of an Elective Joint Replacement Care Pathway in a Safety-Net Hospital.” It is understood that the project includes a review and comparison of available agency data and a staff survey on the orthopedic nursing unit (3 blue/gold) at Truman Medical Center, Kansas City, Missouri during the time period of 2017-2018.

Data collection will consist of a review and comparison of available agency data around length of stay for patients that underwent and elective joint replacement and readmission rates up to 90 days post-op from January of 2017 through June of 2017 and November 2017 through April of 2018. A short paper survey will be given to all nurses on the orthopedic trained units (3 blue/gold). This survey will be designed to serve as a type of debriefing for the new program. Questions will focus on the staff’s perceptions of the benefits and challenges of the implementation of the elective joint replacement care pathway as well what is still needed to improve the care pathway. All responses will be confidential and the staff will not be identified. The information collected in this ongoing quality improvement project will help to determine if further investigation into the use of care pathways in safety-net hospitals is needed.

Truman Medical Centers approves this research project in the Medical Surgical Department, Units 3 blue/gold, setting with the ultimate goals of measuring the impact of the implementation of the elective joint care pathway and to improve quality of care to our patient population. Please let me know if you need anything further.

Sincerely,



CHRISTINE CORBETT, DNP, FNP-BC, CNN-NP, FNKF
Corporate Director of Advanced Practice Providers
Nephrology Nurse Practitioner
(816) 404-3256 | christine.corbett@tmcmcd.org

Appendix H

Elective Joint Replacement Program Data

| | Pre-Pathway Implementation (January 2017-June 2017) | Post-Pathway Implementation (November 2017- April 2018) |
|----------------------|--|--|
| Length of Stay (LOS) | N= Number of patients LOS= | N= Number of patients LOS= |
| Re-Admission | N= (Number of patients) R= (Number of patients readmitted up to 60 days post-op) R/N= P= (Percentage of total patients) | N= (Number of patients) R= (Number of patients readmitted up to 60 days post-op) R/N= P= (Percentage of total patients) |

APPENDIX I

T-Test-Readmission Rates

Group Statistics

| | pre or post pathway | N | Mean | Std. Deviation | Std. Error Mean |
|-------------|---------------------|----|------|----------------|-----------------|
| Readmission | pre pathway | 54 | .26 | .442 | .060 |
| | post pathway | 62 | .05 | .216 | .027 |

Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | 95% Confidence Interval of the Difference | |
|-------------|-----------------------------|---|------|------------------------------|--------|-----------------|-----------------|-----------------------|---|-------|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Readmission | Equal variances assumed | 59.270 | .000 | 3.326 | 114 | .001 | .211 | .063 | .085 | .336 |
| | Equal variances not assumed | | | 3.187 | 74.570 | .002 | .211 | .066 | .079 | .343 |

APPENDIX J

T-Test-Length of Stay

Group Statistics

| | pre or post pathway | N | Mean | Std. Deviation | Std. Error Mean |
|----------------|---------------------|----|-------|----------------|-----------------|
| Length of stay | pre pathway | 54 | 3.444 | 1.7874 | .2432 |
| | post pathway | 62 | 3.145 | 1.2525 | .1591 |

Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|----------------|-----------------------------|---|------|------------------------------|--------|-----------------|-----------------------|---|--------|-------|
| | | F | Sig. | t | df | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | | |
| | | | | | | | | Lower | Upper | |
| Length of stay | Equal variances assumed | 12.721 | .001 | 1.055 | 114 | .294 | .2993 | .2838 | -.2629 | .8615 |
| | Equal variances not assumed | | | 1.030 | 93.212 | .306 | .2993 | .2906 | -.2778 | .8764 |

Appendix L**Nursing Survey Key Phrases**

| | |
|---|---|
| What is working best with the pathway | Up Walking Mobile Goals Expectations Tasks Medications |
| What is not working well with the pathway | Goals Understanding Diet order Communication |
| What is still need to improve the pathway | Education Training Physical Therapy Communication Expectations Diet orders |