EARLY MOBILIZATION AFTER TOTAL KNEE AND HIP ARTHROPLASTY

A Major Paper Presented

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Abstract

The lack of early ambulation after a total knee or hip arthroplasty places patients at a higher risk for postoperative complications and an increased hospital length of stay. This quality improvement project proposes to pilot the implementation of a nursing best-practice protocol utilizing Enhanced Recovery After Surgery (ERAS) to promote early mobilization of patients following knee or hip arthroplasty. In collaboration with key stakeholders, a nursing policy and protocol checklist will be developed and implemented on a single orthopedic unit. Nurses will be provided with in-service education and training on the early mobilization policy and protocol. Compliance and accuracy of nurses completing the early mobilization checklist will be analyzed at two weeks and again at four weeks, allowing for any necessary changes to the checklist or the need for further education and training by the nursing staff. The integration of this protocol on early mobilization is intended to prevent postoperative complications and promote optimal patient functionality, recovery, and outcomes.

Key Words: early mobilization; Early Recovery After Surgery (ERAS); total knee arthroplasty, total hip arthroplasty; joint replacement; best practice protocol

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Background and Significance

The percentage of the population aged 65 or older has increased over the last decade and will continue to do so over the next twenty years (Jaul & Barron, 2017). The increase in life expectancy will require the healthcare system to adapt to such trends. Chronic disease imposes long-term threats on the aging population and requires lifelong maintenance. Osteoarthritis is the second most common chronic disease in older adults. Osteoarthritis is a major cause of chronic pain, leading to disability, and is the most common disease of the joints that affects middle-aged and elderly individuals. Osteoarthritis attacks bone, cartilage, ligaments, joints, and joint linings and can be classified as a chronic disease without a cure that causes disability (Joint, 2024). Osteoarthritis can impact weight-bearing joints such as the knees and hips. Often, osteoarthritis causes pain, impacts physical mobility, and can negatively affect quality of life and activities of daily living. First-line interventions used to manage these debilitating effects related to osteoarthritis include weight loss, non-steroidal anti-inflammatory medications, physical and occupational therapy, and corticosteroid injections (Joint, 2024). Surgical interventions such as total joint replacement is recommended after first-line therapies have been tried and are unsuccessful. In the United States, 790,000 knee replacements and 544,000 hip replacements are performed yearly, thus providing patients with symptom relief, improved quality of life, and higher functioning levels (Joint, 2024).

Arthroplasty is the replacement of a diseased joint with the use of a prosthetic joint (Arthroplasty, 2021). More common types of arthroplasties include the hip and knee. Hip and knee arthroplasties are the primary procedures that hold significant importance as the number of patients undergoing these procedures continues to increase. Patients seek surgical intervention

and undergo joint replacement procedures, often after failing conservative measures. Other conditions besides osteoarthritis that patients may undergo total knee or hip arthroplasty include rheumatoid arthritis, avascular necrosis, or joint abnormalities. Swelling, joint stiffness, and joint pain not relieved by pharmacological and non-surgical interventions often lead to the need for arthroplasty (Arthroplasty, 2021).

In conjunction with the popularity of the arthroplasty procedure, new technological advancements are now available, allowing for safer and more accurate techniques. Beginning in the 1970s, arthroplasties were previously performed manually by surgeons (New, 2024). Today, arthroplasties can be performed using the least invasive methods with the assistance of robots that provide advancements in recovery time, improved techniques, and the construction of customized, durable implants. Computerized Tomography (CT) scans of the knee or hip are taken before the procedure, providing surgeons with a unique patient blueprint. Using 3D bone models, implants can also be customized for planning and sizing purposes and assist surgeons in visualizing how much bone to cut intraoperatively to ensure a perfect fit. X-rays are also taken at the end of the surgery to ensure proper alignment of the artificial implant replacing the joint (New, 2024).

Considering new advancements in total knee arthroplasty (TKA) and total hip arthroplasty (THA), institutional practices, nursing interventions, and patient goals must be in alignment to improve procedure designs. According to Zhou et al. (2024), institutions and health care providers can accomplish this by using the most up-to-date, evidence-based best practices in their postoperative care. Creating a best-practice protocol for nurses supported by evidence-based research will promote positive patient outcomes, decrease recovery times, lessen postoperative complications, decrease hospital spending, and maximize hospital resources. If

patients experience postoperative complications and experience a longer stay, it may decrease their overall quality of life.

Early mobilization is a cost-efficient initiative supported by research targeting benefits for the patient and the healthcare institution. The importance of placing clearly defined parameters on early mobilization creates a timeline for nurses and a universal standard of care. Early mobilization has only recently been clearly defined in literature. Castle et al., (2021) recommend that after hip or knee arthroplasty, patients be mobilized within four hours of transferring to the post anesthesia care unit (PACU) to ensure ongoing interventions and timely discharge. These authors indicate that mobilization is not limited to ambulating; mobilization can include range of motion exercises, dangling, standing, and transferring to a chair. Castle et al. (2021) suggested that early mobilization can decrease pain (therefore requiring less pain medication), increase range of motion, decrease the risk of thrombus or ileus, which can all potentially lead to a timelier discharge home. The desired discharge home following arthroplasty surgery is no more than 24 hours after surgery (Arthroplasty, 2021).

Enhanced recovery after surgery (ERAS) is an evidence-based, multifaceted approach to surgical care with the overall goal of minimizing the stress of surgery while assisting patients to recover in a timely manner, maintaining a normal physiology (Altman et al., 2019). This multifaceted approach to care originates from Henrik Kehlet, a Danish colorectal surgeon, who challenged surgical practices in the early 2000s (Altman et al., 2019). The ERAS approach has gained in popularity within orthopedic surgery (Riga et al., 2023) and is utilized across various specialties such as colorectal, urology, gynecology, hepatic, and esophagectomy surgeries with effective results (Altman et al., 2019; Zhou & Wei, 2024). Research suggests that if the ERAS protocol is implemented correctly for total joint replacement surgery, it can enhance the recovery

process, leading to a significant reduction in complications, length of stay, and healthcare costs (Riga et al., 2023; Altman et al., 2019). The ERAS approach to surgical care aims to minimize the stress of surgery and support patients to recover more efficiently, and it is recommended that it be initiated before surgery and continue into the postoperative period. Preferably, ERAS is a multidisciplinary team approach that coordinates care to ensure successful implementation of the protocol (Altman et al., 2019). The order set within the protocol can be customized to each patient to improve overall physical function and outcomes. Applying the ERAS protocol to all surgical patients has the potential to optimize their results and return them to their baseline more efficiently (Altman et al., 2019).

Order sets based on clinical guidelines for arthroplasty patients should be populated upon admission to ensure each patient has a universal standard of care. The National Association of Orthopedic Nurses (NAON) recommends same-day surgery mobilization, several hours after surgery (2025). To avoid a gap in care, patients should be given instructions before their surgery date on what to expect during the course of the pre-, intra-, and post-surgery phases. Implementing the ERAS order sets may also enhance collaboration of the surgical team before surgery. Ideally, utilizing early mobilization best practices may minimize post-operative complications, decrease costs, and hospital length of stay (NAON, 2025).

Next, the problem statement and purpose will be presented.

Problem Statement and Purpose

Research suggests that the lack of early ambulation after a total knee or hip arthroplasty places patients at a higher risk for postoperative complications, increased pain, and an increased length of stay (Arthroplasty, 2021; Castle et al., 2021). The literature suggests that there is a lack of implementation of a universally accessible protocol, such as ERAS, that should be used as a standard of care for joint replacement surgery (Castle et al., 2021; Zhou & Wei, 2024). Ideally, multiple members of the healthcare team support mobilization, including nurses, physical therapists, and certified nursing assistants (Altman et al., 2019; Chua et al., 2020). Protocols for early mobilization and education can support nurses in providing best practice standards of care and in preventing patient post-operative complications (Bontea et al., 2020). Due to a lack of an early mobilization protocol, the purpose of this quality improvement project is to develop an institutional policy and protocol at a local hospital related to early mobilization following arthroplasty surgery that integrates ERAS guidelines. The implementation of a protocol will promote early mobilization, prevent postoperative complications, and promote optimal patient functionality and recovery (Castle et al., 2021; Altman et al., 2019; Zhou & Wei, 2024; Chua et al., 2020; Bontea et al., 2023).

Next, a review of the literature will now be presented.

Literature Review

Articles selected for inclusion in the literature review were identified using an electronic search of the Cumulated Index to Nursing and Allied Health Literature (CINAHL), PubMed, *EBSCOhost, JBL,* and Nursing Standards library databases, and articles published between 2013-2025. Search key terms utilized included early mobilization, ERAS, total hip arthroplasty, total knee arthroplasty, and joint replacement best-practice protocol.

Chronic Diseases

By 2030, the number of adults over the age of 85 will rise exponentially, and by 2050, the number of adults around the world at age 80 will have nearly tripled since 2015 (Jaul & Barron, 2017). As the baby boomer generation continues to age from age 65 to age 85, the rise in need for patients experiencing chronic disease, such as osteoarthritis, will increase. Therefore, the healthcare system will need to implement health strategies to prepare healthcare providers to meet the evolving needs of the elderly population. Chronic disease negatively impacts the aging population by placing burdens on their quality of life, and as a result, placing barriers to their autonomy and activities of daily living. According to Jaul and Barron (2017), osteoarthritis is the second most common chronic disease of the aging population in the United States. Osteoarthritis causes chronic pain and disability, and is often higher among women than men, and fifty-two percent of 85-year-olds have a diagnosis of osteoarthritis. Hip or knee arthroplasty is often recommended in patients who do not respond to medication and exercise. The rate of obesity in the United States is a major contributing factor to osteoarthritis, which can exacerbate the disease. Additionally, the management of pain related to osteoarthritis is a significant concern as it can impact mobility and activities of daily living (King et al., 2021).

Arthroplasty

Arthroplasty is the surgical removal of the diseased or damaged joint and the repair of the weight-bearing joint with a metal, plastic, or ceramic prosthetic (Mori & Ribsam, 2018). Specifically, arthroplasty procedures have become extensively used for knee and hip disorders. The primary goal of an arthroplasty procedure is to eliminate pain and improve a patient's overall quality of life and functionality. Arthroplasty is often done as a same-day surgery, and the anesthesia used could be general or spinal. At times, nerve blocks may be used in combination with general or spinal anesthesia to better manage pain after the procedure. In addition, with several advancements in prosthetics, such as longer-lasting implants and advanced surgical techniques, surgeons are now able to perform these surgeries on younger age groups. The success of arthroplasty procedures is influenced by preparation before surgery, care during surgery, and early rehabilitation during the postoperative period (Bulut & Vatansever, 2022). The potential complications of arthroplasty include infection, blood loss or bleeding, blood clots in the lungs or legs, loosening of prosthetic parts, joint stiffness, and pain that does not dissipate. (Arthroplasty, 2021).

Knee and Hip Arthroplasty

Knee osteoarthritis impacts 37% of older adults aged 60 and older, often requiring a total knee arthroplasty procedure. This rate is expected to increase by 143% from 2012-2050 (Kim et al., 2021). According to Steinmetz et al. (2021), by 2050, there will be 642 million individuals with knee osteoarthritis, with an increase in case numbers of 74.9% by 2020-2050 globally. Increasing pain with bearing weight is often seen as a universal symptom of knee osteoarthritis, where pain limits mobility, functionality, and activities of daily living. Subsequently, increased pain may limit mobility, contributing to weight gain and other complications of immobility. As a

result of increasing disability related to osteoarthritis, patients are considered for knee or hip arthroplasty (Kim et al., 2021; Steinmetz et al., 2021).

Zhou et al. (2024) used a retrospective single-center study to determine factors influencing postoperative ambulation in total knee arthroplasty patients. Demographics included age, gender, BMI, diagnosis, and comorbidities. The two groups, totaling 453 unilateral knee arthroplasty patients, included those with early ambulation who began walking within 24 hours, and late ambulation who walked after 24 hours post-operatively. In addition, surgical time, surgical site, tourniquet time, intraoperative blood loss, drains, and prosthetic models were noted. The protocol under review included a rehabilitation team that focused on patients' function until the discharge criteria were met. Factors that influenced mobility included pain control regimens, blood loss monitoring, administration of mechanical prophylaxis such as SCD boots, and anticoagulants to prevent DVTs. Zhou et al. (2024) noted common factors that delayed discharge while generating solutions to prevent complications. The study characterized early ambulation as walking a few steps with the guidance of physical therapy (PT) starting on the first day after surgery. Two hundred and forty patients were able to ambulate within postoperative day one, while 213 patients required two days or more. The mean postoperative ambulation time was 1.6 days. Prolonged surgical time, increased blood loss, and drain placements significantly extended the time to postoperative ambulation. However, a delay to postoperative ambulation was correlated with significantly higher coagulation parameters, such as prothrombin time (PT) and partial thromboplastin time (PTT) before surgery, compared with those who mobilized early. The results of this retrospective study suggest a need to focus on predictive factors that delay postoperative ambulation with knee arthroplasty to promote mobilization and decrease delayed discharge.

Steinmetz et al. (2021) indicate that by 2050, a predicted 62.6 million individuals will be diagnosed with hip osteoarthritis, a 78.6% increase in case numbers from 2020-2050. The standard care and best possible treatment for hip osteoarthritis includes total hip arthroplasty, which can help alleviate pain, restore joint function, and increase overall mobility in a once diseased joint. In recent years, surgical planning and techniques for total hip arthroplasty have improved significantly. Implant design, materials, and perioperative care have also improved patient outcomes.

Bontea et al. (2023) used an observational cohort study including 115 patients who underwent total hip arthroplasty after being diagnosed with osteoarthritis. During this study, 66 patients underwent an anterior approach to hip arthroplasty and 49 underwent a lateral approach. Both groups were compared clinically and demographically, with similar comorbidities. According to Bontea et al. (2023), the direct anterior approach for hip arthroplasties takes advantage of the patient's natural intramuscular anatomy, deeming the approach as minimally invasive, compared to a lateral approach. The direct approach correlates with faster recovery times, less pain and complications, as well as greater accuracy and patient satisfaction. Factors such as implant design and care during the perioperative periods contribute to early mobilization, decreased length of stay (LOS), and potential complications. The study also suggests that an anterior hip approach undergoes less postoperative pain, and as a result, is capable of ambulating quicker and discharging earlier.

Participants in this study underwent preanesthetic evaluation; they were given a fixed analgesia protocol and were then mobilized after surgery at 6, 12, 24, 36, 48, and 96 hours after surgery. All patients began postoperative exercises following the same rehabilitation protocol. Bed exercises were conducted 0-6 hours postoperatively, including ankle pumps, quadriceps

stretching, and leg raises. Additionally, on postoperative day 1, standing and walking were also evaluated. Mobilization scores of 0-5 were assigned to each patient with 0 being no mobilization, 1 being mobilization at the edge of the bed, 2 mobilizing with the framework and help, 3 mobilizing with the framework and without help, 4 mobilizing with two crunches, 5 mobilizing with one crutch. Reaching a score of 5 for mobilization at the 96-hour mark equates to a satisfactory early mobilization score. Altogether, Bontea et al. (2023) suggest that advanced age and lateral approach are independently related to early mobilization failure, whereas pain control and early mobilization are related to the achievement of early discharge.

Paulsen et al. (2022) conducted a retrospective cohort study of patient self-reported outcomes and their correlation when utilizing a fast-track hip and knee arthroplasty program in the absence of postoperative restrictions. Participants included 917 hip replacements and 591 knee replacements from those eighteen and older. With the focus of early mobilization, researchers invited patients to report their outcomes on joint arthroplasty. Patient-reported outcome measures (PROMs) provide feedback for researchers to utilize the patient perspective as a means to evaluate the success of surgery and outcomes. In the fast-track regimen, standardized pain medication, information with a focus on early mobilization without restrictions, and patient-reported outcomes were reviewed. The criteria under review were hip and knee arthroplasty patients who were able to bear full weight immediately postoperatively. Mobilization began as soon as possible, contingent on the spinal anesthesia (within 3-6 hours). Questionnaires for this study were provided to patients preoperative, early postoperatively, and a year after surgery. One questionnaire focused on quality-of-life outcomes such as self-care, discomfort or pain, activities, and anxiety. The second questionnaire was based specifically on knee or hip replacement surgery regarding activity, recreation, and joint mobility. Patient-reported outcomes

responses ranged from 80-99%. Based on the questionnaires, the length of stay was reduced by 1.9 days, a 40% reduction seen in hip replacement patients, and a 37% reduction in knee replacement patients. Preoperative scores for hip replacement patients started in the low 20s and skyrocketed to the 90s at the one-year follow-up. Median preoperative scores for knee replacement patients started in the low teens and ended in the high 70s after the one-year follow-up. Paulsen (2022) concluded that the effects of combining two protocol changes, such as the fast-track regimen, with the absence of postoperative restrictions, can be challenging to examine and are considered a limitation. However, patient perspectives and outcomes measured using a fast-track TKA and THA method in the absence of postoperative restrictions were collected and displayed exceptional results. The absence of postoperative restrictions in the setting of mobilization was analyzed throughout the study and was shown to benefit patients.

Ripolles-Melchor et al. (2023) conducted a prospective two-month multicenter cohort study at 131 Spanish hospitals. The goal of the study was to determine the time to mobilization after THA and TKA and the factors associated with early mobilization. Adherence to the ERAS criteria was a key component of this study. Individual data on 16 ERAS criteria were collected on each patient. Participants' characteristics data included American Society of Anesthesiologists (ASA) score, age, sex, smoking status, body mass index, Rockwood clinical frailty score, comorbidities, procedure performed, surgical technique, perioperative interventions, ERAS items adherence, and outcomes (postoperative complications, time to achieve target mobility, LOS, and 30-day mortality). The study sample included 6093 patients. Of the 6093, 2280 underwent THA (37.4%) while 3813 underwent TKA (62.6%). There were 1558 patients (25.6%) treated in self-declared ERAS centers. The studies target measures time until mobilization after surgery, including walking in the same spot, walking from the bed to chair, or walking from the bed to the

bathroom. The median time to achieve mobilization at the end of surgery was 24 hours. Of the participants, 4,222 patients (69.3%) mobilized in less than 24 hours after THA/TKA. Local anesthesia, surgery performed in a self-proclaimed ERAS center, adherence to ERAS items, and preoperative hemoglobin were associated with shorter time to mobilization. Patients who were treated in a self-declared ERAS center were more strongly associated with early mobilization in both THA and TKA patients. The association of early mobilization and self-proclaimed ERAS centers displays that ERAS centers purposely mobilize their patients as soon as possible. The study also suggests that a higher ASA and fragility score, as well as those older than 76, were associated with a longer time to mobilization, often unable to move on the first postoperative day. The authors' conclusions indicate that early time to mobilization was correlated with compliance with ERAS protocols and postoperative complications. Authors also suggest that perioperative elements that are associated with early mobilization are modifiable, and there is room for improving patient outcomes, such as early mobilization and length of stay.

Preoperative Education

Preoperative education can assist in preparing patients for surgery, providing expectations, and relieving anxiety. Preoperative education is defined as any educational intervention given before surgery to support improved knowledge, recovery, health behaviors, and outcomes (Jones et al., 2022). Important topics found in preoperative education include procedural information, care during the postoperative period, pain management, potential complications, and discharge instructions. Subsequently, when patients are prepared for surgery ahead of time, there are clear expectations, no surprises, and importantly, they are not overloaded with an abundance of information during a short period of time after surgery. Preemptively educating patients allows time for the information to be processed. Therefore, on the day of

surgery, patients are better prepared for the perioperative and postoperative experience (Jones et al., 2022).

A descriptive retrospective study using a chart review design was conducted by Jones et al. (2022) on an orthopedic unit. Charts were reviewed to determine which patients attended the preoperative class and who did not attend. The study's aim was to compare the postoperative physical therapy performance following total knee or hip arthroplasties for patients who attended a preoperative education class compared to those who did not. A sample of 707 hip and knee arthroplasty patients identified through chart review was placed in the total knee or hip arthroplasty group. Ages ranged from fifty to eighty-nine years old, 43% male and 57% female, and 94.5% were Caucasian. Demographic data included surgical history, select comorbidities, discharge disposition, and length of stay. The class was conducted by an experienced orthopedic nurse who received input from orthopedic surgeons and physical therapists. The class taught patients how to prepare for surgery, the process of hospital stays, pain control, physical and occupational therapy, and discharge information. Teaching aids were provided for exercises for knee and hip mobility, and what to expect during physical therapy. After the established education, patients were then split into two groups depending on the type of replacement. Of the 707 participants, 498 patients received knee arthroplasties, and 209 patients received hip arthroplasties. In the knee arthroplasty group, 264 (53%) attended the class, and 106 (50.7%) of the hip arthroplasty group. Due to the homogenous sample of this study, with 94.5% of participants being Caucasian, it is difficult to generalize study results and is viewed as a limitation.

The results of Jones et al.'s (2020) study indicated that patients in the knee arthroplasty group who attended pre-operative education classes ambulated significantly greater distances

(131.34 ft. vs. 97.22 ft., respectively). The length of hospital stay in class for participants was also significantly shorter than that of non-participants (1.97 days vs. 2.10 days, respectively). In the hip arthroplasty group, differences in distance ambulated were statistically significant; patients who attended the preoperative education, ambulated greater distances compared to the group who did not attend class (146.13 ft. Versus 111.38 ft., respectively). In addition, the length of stay was shorter for those who attended the education class compared to those who did not (1.93 days vs. 2.07 days, respectively). A greater portion of knee arthroplasty patients who did not attend the class were discharged to a skilled nursing facility (SNF) as opposed to home than those who did attend (21.37% vs. 10.98%, respectively). For knee arthroplasties, the study reveals that preoperative education is associated with increased ambulation, degree of flexion, and shortened length of stay. This study found that attendance at a preoperative education class significantly decreased LOS for hip and knee arthroplasty and postoperative PT outcomes. Preoperative education can be effective in improving patient outcomes and reducing length of stay, costs, and related complications. Patient-focused education and preoperative counseling (by nurses) are important components of the ERAS protocol and are imperative components for patient recovery.

Mobilization

Castle et al. (2021) conducted a retrospective matched observational study to investigate the effects of enhanced recovery programs (ERAS), and first-time ambulation postoperatively on length of stay (LOS) for postoperative knee and hip arthroplasties. The hypothesis states that both THA and TKA patients who mobilize within 12 hours of returning to the unit will have a shorter LOS than those who mobilize after 12 hours of returning. A sample of 386 patients between the ages of 36- 89, with varying comorbidities, was included in the study. Of the

sample, 226 patients had a THA and 160 had a TKA. Case notes of eligible patients were reviewed in random order until the number of pre-calculated cases needed for the study had been identified. Patients who mobilized within 12 hours were matched by age and gender with those who mobilized more than 12 hours after surgery. Inclusion criteria included all surgeons who performed the arthroplasties and all patients who received preoperative education. Patients were also required to be on the orthopedic unit for at least two hours before mobilizing, after transferring from the PACU.

The enhanced recovery after surgery (ERAS) used by Castle et al. (2021) defined early mobilization as the time the patient first stood out of bed after being transferred to the orthopedic unit. Patients needed to be hemodynamically stable, have adequate sensation in both limbs, and have pain well-controlled on the day of surgery. Mobilization was done by nurses and physical therapy. Patients were discharged home when they were independently able to get in and out of bed, ambulate with a walking aid, and walk up and down at least one step. Before mobilization, wounds needed to be dry and intact, bowel sounds needed to be present, and pain needed to be controlled. Data was collected on preoperative, intraoperative, and postoperative factors including BMI, age, smoking status, age, height, weight, use of preoperative mobility aids, and the distance patients could walk preoperatively. Anesthesia scores and a risk assessment predictor tool were also documented. The independent variable was early mobilization, and confounders were recognized as use of a mobility aid preoperatively, number of medical comorbidities, and postoperative complications. First mobilization was coded as 6 hours, 6-12 hours, and 12 or more hours. Patients standing within 12 hours were referred to as “early stands” and those who stood 12 hours or later were “late stands.” The results of this study, Castle et al. (2021), determined THA patients averaged a length of stay (LOS) of 3.9 days. THA patients who

mobilized before 12 hours had a shorter LOS than patients who mobilized longer than 12 hours (3.7 vs 4.2 days, respectively). For TKA patients, the average LOS following surgery was 4.7 days, and there was no statistical difference in the mean LOS between early and late stand groups (4.7 vs. 4.8 days, respectively). The authors suggested that the lack of differences in early and late mobilization may have been due to different rehabilitation expectations. The author suggests increasing nurses' knowledge and skill surrounding the ERAS protocol on early mobilization and enhanced physical therapy improves patient outcomes such as length of hospital stay.

Barriers to Mobilization

Bulut and Vatansever (2022) proposed a study using the ERAS protocol to determine potential factors that could affect early mobilization for patients undergoing total knee and hip arthroplasties. Mobilization was correlated with taking a few steps from the bed within the first 24 hours postoperatively, with an assistive device or the assistance of a care provider. The sixty patients included in this study were operated on by the same surgeon using the same technique for either hip or knee arthroplasty. Data was collected during the preoperative, postoperative, and discharge periods. Preoperatively, a face-to-face 60-item questionnaire, which included socio-demographic data, as well as preoperative and postoperative information, was completed on each patient. Postoperatively, a functional ambulation category (FAC) score was completed. The FAC score evaluates ambulation on a scale of 0-5. FAC 0: patient cannot walk or needs two assists; FAC 1: patient is walking under constant support; FAC 2: patient walks with supervision to balance; FAC 3: patient walks with confidence alongside another person; FAC 4: patient walks independently with assistance on stairs; FAC 5: patient walks independently on any given surface. The study results displayed that the median first mobilization time after surgery was at

the nineteenth hour. Only 1.7% of patients were mobilized within the first day of surgery, 88.5% of patients were mobilized the day after surgery, and by the third day, everyone had been mobilized. However, during this study, all patients underwent lab draws and radiology exams and waited to be cleared by a physician before mobilizing. This study took note of barriers to earlier mobilization, including high pain scores, postoperative drains, nausea, vomiting, as well as hemodynamic measures such as low blood pressure and low hemoglobin. Barriers can be addressed or controlled by implementing appropriate interventions. For example, knowing that pain can effective mobilization, patient satisfaction, and recovery, 51.7% of patients were provided analgesia before mobilization, and a pain level was determined. On the other hand, Bulut & Vatanserver believed that individuals should stay in bed for a certain period after surgery. The study noted that mobilization should occur with assistance but should not occur until proper measures, such as labs and x-rays, are conducted, and patients are cleared by a doctor. Due to various limitations with this study, such as a single surgeon, wait time to be cleared by the surgeon before ambulating, and a small sample size, results may not be generalizable. This study points out the relationship between mobilization time, BMI, age, gender, chronic pain, blood transfusion before surgery, and surgical procedure site, the use of bone cement, ASA scores, surgical time, and medical diagnosis as all playing an important role in determining when patient take their first steps following arthroplasty surgery. Understanding the potential barriers and complications provides opportunities for improved education and skills to address them, so early mobilization can be achieved.

Best Practice Protocol

The origin of the enhanced recovery after surgery (ERAS) protocol was first utilized in colorectal surgery by a surgeon known as Henrik Kehlet (Altman et al., 2019). ERAS protocols

are now being used widely throughout surgical disciplines as the benefits of this protocol have been shown to improve patient outcomes (Altman et al., 2019; Bontea et al., 2023; Chua et al., 2020; Zhou & Wei, 2024). Enhanced Recovery After Surgery protocols aim to lower both recovery time and postoperative complications. The ERAS protocol encompasses evidence-based practice and effective strategies during the perioperative period and can be instrumental in reducing the stress of surgical trauma, decreasing the occurrence of complications, enhancing safety, promoting patient satisfaction, and improving recovery rates (Zhou & Wei, 2024).

Zhou & Wei (2024) studied the effects of a multidisciplinary team (MDT) approach nursing model with a focus on ERAS in total knee and hip arthroplasty patients. The MDT approach is an upcoming care model that emphasizes multidisciplinary collaboration to promote positive patient outcomes. The study used a retrospective analysis including 100 patients between the ages of 43-78 with TKAs and THAs. The patients were divided into two groups, a control group and an observation group, based on the nursing model used. The observation group received an MDT nursing model intervention based on the ERAS concepts (preoperative, intraoperative, postoperative), and the control group received a conventional perioperative nursing model. The visual analog scores (VAS) to measure pain were recorded at 6, 24, and 72 hours postoperatively. In addition, postoperative activities, length of hospital stay, and postoperative complications were also documented. The differences between the two groups were obtained before and one month after surgery, and measures included differences in knee joint range of motion, hip *Harris* score to assess functional outcome such as walking distance and aid usage, psychological stress score, and quality of life score. The results of this study suggest that patients in the observation group had significantly lower VAS scores compared to those in the control group. The study concluded that using the MDT nursing model, based on

ERAS concepts for THA/TKA, can effectively minimize postoperative pain, shorten hospital LOS, reduce costs, promote early activity, decrease the incidence of complications, restore joint function, reduce psychological stress, ultimately enhancing quality of life.

In a quality improvement study, Chua et al. (2020) used a mixed-method approach using two distinct phases. The first phase was a quasi-experimental design (before and after), and the second phase was a qualitative component comprising semi-structured interviews with key members of the multidisciplinary team (MDT) to determine if an accelerated mobilization protocol implemented in isolation was associated with a reduced LOS. The before and after protocol measured was determined by the MDT team, which included interventions such as anesthesia, use of catheters, surgical approach, and day of mobilization. The results of this phase suggest that the introduction of early mobilization displays a modest reduction in LOS, while considering other factors. The results of the qualitative component of the study yielded three themes: the need for person-centered care, a "loaded benefit appraisal" (workload), and communication and collaboration. The study highlighted the importance of concise roles when introducing new protocols and recognizing the challenge of sustainability, given the increase in workload, particularly for nurses.

Research supports early mobilization using best-practice protocols such as ERAS. Early mobilization is considered a safe, low-cost intervention, with minimal contraindications, that reduces post-operative complications, decreases post-operative pain, and decreases LOS therefore improving patient satisfaction Utilizing evidence-based practices, such as ERAS protocols, have shown to be effective in joint replacement surgery throughout the preoperative, perioperative, and postoperative phases to improving patient outcomes (Altman et al., 2019; Chua et al, 2020; Bontea et al., 2023).

Next, the theoretical framework will be presented.

Theoretical Framework

Lewin's Change Theory, created by Kurt Lewin, proposed a three-stage process for organizational change. The three stages include unfreezing, change, and refreezing. This model represents a structured way for institutions or organizations to transition from a current state to a desired state of change (Nursing Theory, 2020). Lewin's Change Theory has three major concepts: driving forces, restraining forces, and equilibrium. The driving forces are those that push in a direction that causes change to occur. Lewin believed the driving forces are those that bring light to change in the patient's best interests. Equilibrium is a state where the driving and restraining forces are equal, and no change occurs. Equilibrium can be increased or decreased by changes that occur between driving and restraining forces (Nursing Theory, 2020). The first phase in the Change Theory is unfreezing. The unfreezing phase of the theory focuses on organizations and/or individuals abandoning old practices and becoming receptive to new ideas. Receptiveness to change embodies changes in emotions, behaviors, and thoughts to transition to something more productive. The change stage, also referred to as "moving to a new level," involves a process of change in thoughts, feelings and behaviors. The refreezing stage is when the change is established as a new habit, taking place as the "standard operating procedure" (Nursing Theory, 2020). Without this final stage occurring, it can be easy for the organizations and/or the individual to fall back into old habits. To visualize this process, imagine you have an ice cube, and you want to change it into a different shape while keeping the same amount of liquid. To do so, you must unfreeze the ice cube, and place it into a mold of your choice, and then refreeze it. Now, you will have changed the ice cube into the shape of your desire (McEwen & Wills, 2014).

A historical example of Lewin's Change Theory can be illustrated when paper documentation was transitioned to electronic medical records (Payne, 2013). During the initial unfreezing phase, driving and restraining forces were identified. Driving forces include experience and positive attitudes regarding computers, and the belief that electronic documentation will deliver access to accurate clinical information. Appropriate training and support are also driving factors in any clinical scenario. Restraining forces include a negative working environment, the reluctance to learn something new, as well as unsupportive management and insufficient training. Developing a plan to strengthen the driving forces and eliminate the restraining forces while involving the staff through open communication was crucial. During the second phase of Lewin's model, the author focused on the benefits of electronic documentation while implementing the change proposed in the first phase. Opening the stage for suggestions and considerations from the staff allowed them to feel heard and further understand the need for the transition. Some recommendations included hands-on and interactive training, and accommodation for staff on work schedules in the initial learning period. The final refreezing stage focuses on finalization and stabilization of the change to electronic documentation. Maintaining change requires ongoing support by management to ensure a smooth transition, so the intervention can reach its full potential. In this example, having a help desk for informative purposes and troubleshooting issues that arise on and off shift (Payne, 2013).

The Change Theory can be implemented effectively for the development of an institutional protocol on early mobilization and the implementation of an educational plan for nursing, as proposed for this project. In the unfreezing stage, utilizing Lewin's Change Theory would require the nursing leadership to accept, create, and adopt an early mobilization protocol,

and for nurses to recognize the importance and need for the adoption of this protocol into their nursing practice. During the unfreezing phase, it would be important to allow individuals impacted by the change to express their thoughts and feelings openly and make suggestions regarding the implementation process, thus ensuring key stakeholder buy-in. The driving force is to promote positive patient outcomes, prevent postoperative complications, decrease medical costs, and hospital length of stay. Research and data can be presented to key stakeholders to illustrate the effectiveness of early mobilization using ERAS. Currently, there are no protocols or best practice guidelines in place related to early mobilization after arthroplasty surgery at the institution of interest. In the change phase, both driving and resisting forces need to be addressed. Resistance to adopting this protocol could potentially include pushback from the multidisciplinary team (surgeons, rehabilitation services, and nursing staff), and concerns about an increase in workload and documentation for nurses. The change phase will also focus on the planning and implementation of the protocol in the practice setting, as well as necessary education and training before the rollout. It is crucial in this stage to gain support from upper nursing management to navigate the implementation effectively and positively. One approach to support change is the identification of a “champion” in the units, who can serve as a role model and resource person to the nursing staff as they learn how to efficiently and effectively navigate the new protocol. In the final stage, refreezing focuses on establishing the protocol as a standard of practice, used for all patients to promote early mobilization after arthroplasty surgery and ongoing education for current and new nurses at the facility. As part of the refreezing phase, recognizing and/or rewarding the nursing staff for consistent compliance in utilizing the protocol could be initiated. An important component of refreezing is sustainability, which results in the establishment of a new policy and the adoption of a new early mobilization protocol.

Overall, changes are continually occurring within the healthcare system. With the application of Lewin's Change Theory, nurses can adapt to this change within an organizational structure and culture that supports nursing standards of care based on evolving evidence-based practice. Lewin's Change Theory creates a framework to guide and execute a planned change to support the creation and implementation of an early mobilization protocol.

Method

Purpose

To change previous perceptions and integrate best practices related to early mobilization, the healthcare team must be informed of up-to-date clinical practice guidelines and standards of nursing care surrounding early mobilization after total knee and hip arthroplasty. There is a gap in the implementation of an early mobilization best practice protocol based on ERAS guidelines that should be used consistently for joint replacement surgery to improve health outcomes. The deficiency of early ambulation in practice after a total knee or hip arthroplasty places patients at a higher risk for postoperative complications, increased pain, and expanded hospital length of stay (Castle et al., 2021; Altman et al., 2019; Zhou & Wei, 2024; Chua et al., 2020; Bontea et al., 2023). In a recent meta-analysis conducted by Sauro et al. (2024), the use of ERAS guidelines is associated with decreased hospital length of stay, hospital readmission, complications, and mortality rates compared to routine surgical care. The purpose of this practice-based project is to develop a nursing policy and protocol, using ERAS guidelines, that can be used as a standard of care for joint replacement surgery to promote early mobilization and prevent potential post-operative complications and drive positive patient outcomes.

The framework to support the development, planning, and implementation process of ERAS guidelines for early mobilization for this quality improvement project is the Plan-Do-Act-Study (PDSA) Model (AHRQ, 2025). The primary focus of this project will be reflected in the planning and implementation stages of the PDSA model. The ERAS guidelines are designed to achieve early recovery through the preoperative, intraoperative, and postoperative periods; however, the focus for this nursing early mobilization protocol will reflect the postoperative

phase once patients have recovered in the post-anesthesia care unit (PACU) and have transitioned to an orthopedic unit.

Planning

In the initial portion of the planning phase, the buy-in from stakeholders for this quality improvement project is key. To create and implement this policy and protocol, collaboration with nurse leadership, nurse management, nurse educators, and risk management is vital. Additionally, consultation with other multidisciplinary team members, such as orthopedic surgeons and rehabilitation services, is important to the success of creating and implementing a new protocol related to early mobilization after arthroplasty surgery. To help ensure a smooth transition to the implementation and compliance of the protocol and checklist completion, unit "Champions", whether Nurse Educator, licensed nurses, or Physical Therapist, will be identified and trained to serve as expert resources related to the utilization of the checklist and to provide feedback to the nurse leadership and management team so adjustments can be made as necessary to promote continuous quality improvement.

After stakeholder buy-in from the nurse leadership and multidisciplinary team members, it is crucial to begin an awareness campaign for all nurses related to early mobilization and the upcoming implementation of a protocol and procedure (checklist). Buy-in from frontline nurses is imperative to the success of a smooth roll-out of the protocol. Awareness efforts can be done by posting the new policy and protocol, hanging best-practice guidelines flyers in key areas on the unit, providing brief research articles related to ERAS for early mobilization, for review by the nurses, and holding informal conversations on the unit with nurses by the nurse educators and rehabilitation services. Additionally, the institution's email system or message feature can be used to provide ongoing information regarding the roll-out of the protocol and attachments such

as the protocol checklist. The roll-out of this protocol ideally will take place on a single orthopedic unit first (pilot) in a local hospital in Providence, RI. Running a small-scale pilot will allow for feedback from nurses and gather data on compliance in completing the required checklist. An additional step that will be key to successful implementation is identifying, anticipating, and addressing potential barriers. These barriers to implementation may include nurses' knowledge, attitudes, and skills, compliance, accessing the checklist, and the timing of educational and skill training in-service sessions to capture all nurses assigned to the unit.

The development of the protocol will be consistent with the formatting of similar nursing policy and protocol at the institution of interest. In creating the checklist, multiple variables needed to be considered, such as formatting, ease of use, clear and concise directions, inclusion and exclusion criteria, assessment data, and mobilization criteria. Additionally, to roll out the protocol checklist, being clear on who should complete the checklist, when to complete the checklist, and where to turn in the completed checklist is important. The checklist was created to reflect ERAS guidelines to promote safe and meaningful mobilization as soon as possible after surgery (within the first 24 hours). The guidelines address two key areas, assessment and mobilization (see Appendix E), that require "yes or no" responses, and at times, if warranted, more detail. The assessment data includes items such as placements of catheters, drains, monitors, cables, pain level, and vital signs. The mobilization criteria include such items as time of mobilization, assistance required for use of assistive devices, type of mobilization or exercise, and how the patient tolerated the movement. The checklist also includes a place to reflect arrival time to the unit, type of anesthesia, and side and site of the arthroplasty surgery. The checklist was created to be clear and easy to use by all nurses. Once a draft protocol and checklist are

developed, they will be vetted by the identified key stakeholders on the multidisciplinary team, and edits will be made as needed.

In the implementation phase, the key elements will include in-service training for nurses and rolling out a small-scale dry run of the protocol checklist on the unit. Educational and skill practice sessions need to be scheduled for all nurses who work or float to the designated orthopedic unit. Sessions need to take into consideration different shifts and times to capture all nurses. Rolling out a small-scale dry run on the unit will allow for unforeseen barriers to be addressed and questions to be answered. It is important to understand early on in the implementation phase what is working well and what adjustments need to be made.

Implementation

In the implementation stage, the goal is to carry out a small-scale roll-out on one specific orthopedic unit in order to evaluate the initial effectiveness and/or the need for further training related to the early mobilization protocol. Additionally, this initial roll-out will inform adjustments to the protocol checklist. Data on checklist compliance rates, including thorough and accurate recording of requested information, will be analyzed. The expectation would be to collect data after two weeks, and again at four weeks, to identify implementation concerns, identify needed changes, and consider additional resources that may be needed to fully roll out the protocol to all three orthopedic units in the facility. Feedback from the unit "champions" during the implementation will also be gleaned for any ideas or suggestions that may be ascertained from the nurses on the unit. During the initial roll-out, it will be important to provide ongoing education and support for nurses on all shifts. Initially, a paper version will be used to roll out the new early mobilization checklist; however, after the pilot phase, the idea is to have

the checklist created in an electronic format and made available within the electronic health records once in its final draft version.

Evaluation

During the evaluation phase, data will be analyzed related to completion rates, and the thoroughness and accuracy of information provided on the checklist. Compliance/completion rates will be measured at both the two-week and four-week benchmarks. The expectation is that nurses will complete the checklist on every patient admitted to the unit within four hours of their arrival. The results from analyzing the data will help inform what changes need to be made to the checklist, whether further training or in-service is needed, and what barriers need to be addressed. Based on what is learned from the pilot rollout, the necessary modifications to the protocol and checklist will be completed before fully rolling out the protocol on additional orthopedic units and adding it to the hospital's nursing policy and procedure manual.

Meeting with nursing staff, management, and educators is crucial to further investigate whether the changes being made are feasible for the staff and their workload. Investigating what could be done further to support the staff and the transition of this protocol is vital to sustaining change. Maintaining the role of unit champions to serve as ongoing support to nurses and regularly connecting with the nurse educators may be helpful after the protocol checklist has been fully implemented on designated units.

Barriers

There are several patient barriers that nurses may encounter when receiving total knee and hip arthroplasty patients post-operatively to the unit, which may delay early patient mobilization and lower compliance with ERAS recommendations (Tazreean et al., 2022). Barriers the patients may face include nausea, vomiting, hypotension, dizziness, and paresthesia

from the surgery, anesthesia, or both. All these factors may delay mobilization until the patient is ready to be ambulated in a safe manner. In addition, complications such as wound dehiscence and bleeding can delay early mobilization. Patients' outlooks and attitudes can also negatively affect efforts to promote early mobility and ambulation. For example, the fear of falling or the lack of education surrounding the benefits of early mobilization and ambulation can impede progress. The nursing team plays a vital role in postoperative mobilization and must be supported through adequate training and sufficient staffing to manage patients' symptoms and concerns (Tazreean et al., 2022).

Organizational Factors

The hospital identified for this project is the primary teaching hospital for the Warren Alpert Medical School of Brown University. This quality improvement project aligns with the "CARE" shared values and mission at the institution of interest. CARE stands for compassion, accountability, respect, and excellence. The patient population reflects the diversity of Rhode Island across ethnicity and lifespan. The site selected for implementation of the early mobilization protocol is a 30-bed medical-surgical orthopedic unit. The oversight of nursing staff is performed by a Clinical Nurse Manager, while professional development and continuing education are provided by a Nurse Educator within the institution.

An analysis of the institution's organizational factors was performed using the Kellogg Logic Model referenced in Appendix A (W.K. Kellogg Foundation, 2004). The Logic Model addresses inputs (stakeholders), outputs (participation and activities), and outcomes (impact) of this continuous quality improvement project.

Inputs

Key to the input phase of the logic model is buy-in from stakeholders, from nursing leadership and management to staff nurses on the orthopedic unit. The orthopedic floor chosen for the purpose of this project is composed of a clinical nurse manager, staff nurses, and Certified Nursing Assistants. In general, the unit's culture is composed of shared beliefs surrounding positive patient outcomes. A Nurse Educator is assigned to the orthopedic unit and promotes adherence with policies and procedures, as well as ongoing educational support. The hospital model also may assign Residents, Physician Assistants, Nurse Practitioners, and medical/ nursing students to the unit as appropriate.

Outputs

Key to the output phase of the logic model is staff education and training with the early mobilization policy and protocol checklist that will be implemented starting on one orthopedic unit. The MSN project leader will share the project goals of the quality improvement project with the multidisciplinary team. A formal meeting for stakeholder buy-in with nursing leadership, nursing educators, nursing management, surgeons, physical therapy, unit nurses, and the unit champion will be held. In-service education and skills development will be held for all staff nurses who work on the designated orthopedic unit in order to share information surrounding ERAS early mobilization benefits, guidelines, and how to safely mobilize total knee and hip arthroplasty patients. The easy-to-use protocol checklist will be presented to all staff nurses on the orthopedic unit, and directions on how to properly fill it out will be provided.

Ethical Considerations

Quality improvement projects, such as evidence-based practice protocols, are designed to improve the quality-of-care patients receive and promote positive patient outcomes. Institutional

Research Board (IRB) approval was not required for this quality improvement project as the intended goal is to promote education through knowledge and skills of nurses in the delivery of safe early mobilization best practices.

When implementing a new hospital policy and protocol into the nurse workflow, staff nurses on the pilot unit must be involved from the onset of the project as key stakeholders. Unit nurses need to be informed, educated, and trained to carry out this early mobilization policy and procedure checklist safely and effectively. Buy-in from the nurses will promote a smooth transition of the checklist into their daily routine. Participation in upholding an established protocol for nurses within an institution is required and is not optional. Therefore, ongoing positive reinforcement during training and compliance and accuracy of completing the checklist is vital. Ongoing education and training will need to be scheduled to support 100% compliance.

Early mobilization is a best practice strategy to promote positive patient outcomes and decrease post-surgical complications, while also ensuring there is no harm to patients. Nurses need to be sufficiently trained and evaluated on the assessment and mobilization criteria checklist (See Appendix E) to ensure no harm to patients.

To protect patient anonymity in the pilot phase, since the checklist will initially be in a hardcopy format, the checklist will be kept in a designated space on the unit. The checklists will include only the patients' MRN numbers with no other identifying information. The checklist's information will only be analyzed by the master student/project leader, clinical nurse manager, and nurse educator of the pilot unit. After the pilot phase, the checklist will be converted to the electronic medical record and integrated into the assessment protocol within nursing documents.

Projected Outcomes

Projected outcomes for this quality improvement project include an evidence-based practice, early mobilization policy, and protocol using ERAS guidelines for nurses. The protocol will be implemented on all patients undergoing total knee or hip arthroplasty surgery. Ongoing collaboration with physical therapy staff is anticipated. Physical therapy staff support the placement of designated wall markers for distance patient ambulate, and will assist in the evaluation and shared outcomes of patients. The formulated protocol checklists will be used for ongoing data collection to support continuous quality improvements and the upholding of an early mobilization standard of care. After the pilot phase, the protocol checklist will be converted to an electronic format and integrated into the electronic medical record and the patients' care plans. The implementation of this early mobilization best-practice protocol is intended to promote a culture of mobility and safety and uphold quality nursing standards of care.

Summary and Conclusion

The purpose of this project was to develop an institutional protocol for nurses at a local hospital related to early mobilization following arthroplasty surgery that integrates ERAS guidelines to drive positive patient outcomes. Research supports the use of early mobilization best-practice guidelines by nurses following knee or hip arthroplasty to promote positive patient outcomes and prevent post-operative complications during the recovery phase. Research also supports nurse-driven protocols to improve nursing standards of care (Agency for Healthcare Research and Quality, 2017). The National Association of Orthopaedic Nurses' guidelines also reinforce the use of early mobilization guidelines to ensure nurses are empowered with the knowledge, confidence, and skills to safely mobilize patients after arthroplasty surgeries. The development of nursing policy and protocol is a key quality improvement tool to address this gap in post-operative nursing care related to early mobilization and to support a culture of safety and multidisciplinary collaboration. To support a culture of safety related to early mobilization of best practices, often changes in institutional policies and individual knowledge, skills, and attitudes are required. In the final "refreeze," phase of Lewin's Change Model, to maintain and sustain change of the early mobilization protocol, it is important to have key stakeholder buy-in from the onset, including nurses, present a well thought out rollout plan and timeframe that is realistic to promote sustainability, and established a user-friendly early mobilization procedure/checklist that can be integrated smoothly into the nurse's workflow.

Implications for Advanced Nursing Practice

The nursing profession needs to be able to identify, measure, and document nursing contributions to clinical practice. The creation of an early mobilization protocol based on evidence-based practice and the ERAS guidelines seeks to create a culture of mobility and safety, minimize post-operative complications, and enhance patient outcomes. Research supports nurse-driven protocols (Agency for Healthcare Research and Quality, 2017), and the benefits of early mobilization of patients who have undergone knee or hip arthroplasty are also well documented in the literature and are identified as one of the most significant general nursing measures to prevent post-operative complications (Zhou et al., 2024). The launch of an early mobilization structured procedure/checklist can lead to improvements in nursing standards of care. As key stakeholders in this quality improvement project, nursing leadership and the nursing education department will serve as catalysts to the development of an early mobilization policy and protocol to support frontline staff nurses in the education, skill training, and implementation phases. Today's healthcare settings are challenged with expanding technologies and treatment options. Initiating an early mobilization protocol will help the organization improve competencies in nursing care needed to provide safe practices and efficiencies in nursing care. Advanced Practice Nurses can use this project as a template to change standards of nursing care regarding evidence-based practice/guidelines to promote positive clinical outcomes and enhance interdisciplinary communication and collaboration.

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Appendix A

Kellogg Logic Model

Early Mobilization After Total Knee and Hip Arthroplasty: Organizational Factors

Inputs	Outputs		Outcomes -- Impact		
	Activities	*Participation*	*Short*	*Medium*	*Long*
Concept Development MSN Student	**Planning:** Share the continuous quality improvement project (policy and checklist development)	Nursing leadership and key members of the MDT.	Approval to initiate the pilot early mobilization protocol for consistency on a single orthopedic unit	Expand the project to other orthopedic floors.	Successful implementation and sustained early mobilization policy and procedure.
Buy-in by Stakeholders	A formal meeting with key stakeholders	Nursing Leadership Nursing Education Nursing Managers Orthopedic Surgeons Rehabilitation Services Unit Nurses and champions	Obtain support and approval to initiate the early mobilization pilot project on a single orthopedic unit	Initiate awareness of upcoming implementation of the early mobilization protocol to unit nurses	Ongoing MDT meetings during the roll out and implementation of the early mobilization protocol
In-service education & training	Mandatory in-service sessions regarding ERAS early mobilization guidelines and implementation of a checklist	All staff nurses on the pilot unit (all shifts) Training done by nurse educators	100% of nurses will participate in the mandatory training prior to roll out	Nurses will identify ongoing education and skill development needs Unit champions will provide ongoing education and	Nurses will be supported by the nursing education department and unit champion

Pilot roll-out of ERAS protocol	In-service training on early mobilization skill development. Roll-out of early mobilization checklist utilizing ERAS protocol	and physical therapists A single orthopedic unit All staff nurses on all shifts Unit champions	The early mobilization checklist will be accessible on the unit Feedback from nurses will be gleamed by unit champion and nurse educators, and appropriate adjustments will be made	skill training as needed The compliance rate and accuracy of completed checklists are evaluated at 2 weeks The MDT team will meet to review the success of the rollout in order to address concerns or issues before full implementation to all orthopedic units	The compliance rate and accuracy of completed checklists are reevaluated again at 4 weeks A culture of safety that promotes early mobilization and positive patient outcomes Early mobilization checklist will be converted to an electronic version with the support of informatics nurse specialists at the institution for ongoing use by all nurses on all orthopedic units

Assumptions	External Factors
CARE shared values are incorporated within nursing practice. A teaching hospital focused on quality improvement and positive patient outcomes. Nursing protocols are updated based on evidence-based research and best practice guidelines	Lack of buy-in from nursing leadership or support from the multidisciplinary team Mandatory attendance of all nurses working on the orthopedic unit at in-service training in a timely manner Compliance with the completion of the ERAS protocol checklist by staff nurses Staff nurse continuity and turnover

Appendix B

Early Mobilization Poster Board

RHODE ISLAND COLLEGE
SCHOOL OF NURSING

Early Mobilization after Total Knee and Hip Arthroplasty

Emily Araujo RN, BSN, NP-Student
Sharon Galloway RN, BSN, MSN, DNP

Background and Significance

- Osteoarthritis is the second most common chronic disease in older adults involving bone, cartilage, ligaments, joints, and is a major cause of chronic pain, leading to disability (Joint, 2024).
- Arthroplasty is the replacement of a diseased joint with the use of a prosthetic joint, with knee and hip arthroplasties being the most common (Arthroplasty, 2021).
- In the United States, 790,000 knee and 544,000 hip replacements are performed yearly. Total joint replacements provide individuals with symptom relief, higher functioning levels, and improved quality of life (Joint, 2024).
- Enhanced recovery after surgery (ERAS) is an evidence-based method of surgical care with a focus on early mobilization and a goal of minimizing the stress of surgery, while assisting patients to recover in a timely manner (Altman et al., 2019).
- Early mobilization best practices may minimize postoperative complications, decrease medical costs, and hospital length of stay (Castle et al., 2021; Altman et al., 2019; Zhou & Wei 2024; Chua et al., 2020; Bontea et al., 2023).

Problem Statement

- Early mobilization has not been consistently defined in the literature.
- The deficiency of early ambulation in practice after a total knee or hip arthroplasty places patients at higher risk for postoperative complications, increased pain, and an increased length of stay (Arthroplasty, 2021; Castle et al., 2021).
- There is a gap in the implementation of a universally accessible protocol, such as ERAS, that could be used as a standard of care for joint replacement surgery (Altman et al., 2019).
- ERAS best practices were developed in the early 2000's to standardize postoperative mobilization, however, there is a lack of utilization of this protocol in a local healthcare setting (Altman et al., 2019).
- There is a need for improved nursing education and training related to the utilization of protocols for early mobilization to support best practices and prevent post-operative complications.

Opportunities for Improvement

- Utilization of a best-practice protocol for postoperative knee and hip arthroplasty patients.
- Education and training for nurses to support safe early mobilization and prevent postoperative complications.
- Multidisciplinary collaboration in implementing an early mobilization protocol.

Literature Review

Arthroplasty

- Arthroplasty procedures have become extensively used for knee and hip disorders with a primary goal of eliminating pain and improving patient's overall functionality and quality of life (Bulut & Vatansever, 2022; Paulsen et al., 2022).
- The success of arthroplasty procedures is influenced by preparation before surgery, care during surgery, and the early rehabilitation postoperatively (Bulut & Vatansever, 2022).

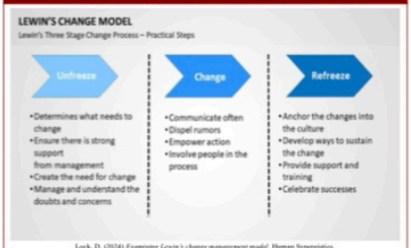
Early Mobilization

- Factors that can influence postoperative mobility include pain control regimens, blood loss monitoring, administration of mechanical prophylaxis such as sequential compression device boots, and anticoagulants to prevent deep vein thrombosis (Zhou et al., 2024).
- Utilizing early mobilization best practices and placing clearly defined parameters on early mobilization can create a universal standard of care (Castle et al., 2021).
- Ealy mobilization after arthroplasty procedures has been correlated with facilities that use the enhanced recovery after surgery (ERAS) approach (Bulut & Vatansever, 2022; Ripolles-Melchor, 2023).

Current Best Practices

- Enhanced recovery after surgery (ERAS) is an evidence-based method to surgical care with an overall goal of minimizing the stress of surgery while assisting patients to recover in a timely manner (Altman et al., 2019).
- The enhanced recovery after surgery (ERAS) guidelines are holistic, multidisciplinary tools designed to improve outcomes after surgery (Brindle et al., 2020).
- The ERAS approach was initially developed for colorectal surgery and has been implemented successfully across a large number of settings (Altman et al., 2019).
- ERAS protocols are now being used widely throughout surgical disciplines and have been shown to improve patient outcomes, lower recovery time, and prevent postoperative complications (Altman et al., 2019; Zhou & Wei 2024; Chua et al., 2020; Bontea et al., 2023; Paulsen et al., 2022).
- The effects of ERAS programs using early mobilization protocols are associated with a decrease in hospital length of stay, recovery time, medical costs, pain, and postoperative complications following total knee and hip arthroplasties (Altman et al., 2019; Castle et al., 2021; Emma, 2017; NAON, 2024; Riga et al., 2018; Ripolles-Melchor et al., 2023).
- According to the National Association of Orthopedic Nurses (2025), evidenced-based practice for postoperative hip and knee replacement patients includes early mobilization several hours following surgery, and that early mobilization directly correlates to decreased pain, increased distance ambulated, and decreased length of stay in the hospital.

Theoretical Framework



Lock, D. (2024) *Examining Lewin's change management model*. Human Synergistics.

Purpose and Proposed Project

- Develop a draft institutional protocol at a local hospital for early mobilization following arthroplasty surgery that integrates ERAS to drive positive patient outcomes.
- Develop an implementation plan to educate and train nurses on the early mobilization protocol.

The purpose of this protocol is to:

- Promote early mobilization
- Prevent postoperative complications
- Provide a standardized protocol for early mobilization following arthroplasty surgeries
- Promote optimal patient recovery and functioning
- Incorporate nursing in-service education and training on the early mobilization protocol

(Castle et al., 2021; Altman et al., 2019; Zhou & Wei 2024; Chua et al., 2020; Bontea et al., 2023).

References

Appendix C

Project Timeline and SMART Goals Framework

GOAL
To create an ERAS early mobilization protocol (policy and procedure checklist) for nurses on an orthopedic unit at a local hospital to promote safe early mobilization of patients following total knee and hip arthroplasty surgery that will promote a timely recovery, decrease complications, and promote positive patient outcomes.
SPECIFIC
• Review of the literature • Review of ERAS early mobilization guidelines and protocol for early mobilization • Identification of a facility and unit to implement the project • Month 1: Meet with key stakeholders to share the idea and get buy-in • Months 2 & 3: Create the policy and the procedure checklist on early mobilization with key stakeholders • Months 4 & 5: Educate unit Champions and staff nurses on the identified pilot unit on the ERAS protocol, checklist, and early mobilization skills • Month 6: Implement (roll out) the checklist on the pilot unit, analyzing compliance and accuracy of the checklist at 2 and 4 weeks • Months 7 & 8: Conduct informal unit meetings to gather feedback from nurses, and make necessary edits to the process and checklist; meet with nursing key stakeholders, provide additional training as needed to ensure competency and skill proficiency with ongoing implementation • Months 9 & 10: Transition checklist to an electronic format in the "intranet" • Month 11 & 12: Monitoring compliance by nurses and providing ongoing support
MEASURABLE
• The creation of a Policy and Procedure (protocol) • The development of an Early Mobilization Checklist using ERAS • Identified Unit Champions (nurses and rehabilitation staff) • Attendance and participation in in-service education and skill training • Compliance and accuracy with completing the checklist (will be measured at 2 weeks and again at 4 weeks) • Ongoing compliance with full rollout
ACHIEVABLE
• Establishing a realistic timeline to fully implement a new nursing policy and procedure effectively and efficiently could take up to one year. • Obtain support from the Orthopedic Unit Manager and Nurse Educator related to safe patient handling and early mobilization best practices • Identify Unit Champions as a resource to the nurses who can serve as an "expert" on the accurate completion of the early mobilization checklist and early mobilization skills

• Holding mandatory in-service training regarding the new policy and the early mobilization checklist, consistent with the implementation of any new policy and procedure at the facility
RELEVANT
• Nursing implication to clinical nursing practice is to ensure quality and safe nursing care that promotes positive patient outcomes post-operatively following hip or knee arthroplasty • The policy and procedure checklist created is consistent with the formatting of other nursing policy and protocol at the facility of interest •
TIME-BOUND
• To fully implement a new nursing policy and procedure realistically, effectively and efficiently, a one-year timeline was established

Appendix D

Status: Active
Origination: 12/2023
Last approved: 07/2025
Effective: 07/2025

Policy Stat ID: 44444444
Owner: Nursing Department
Area: Adult Orthopedics
Applicability: Local Hospital

Post-Operative Arthroplasty (Hips and Knees)

Nursing Early Mobilization Policy and Protocol

Purpose
The purpose of this protocol is to promote a culture of mobility to improve patient outcomes and minimize post-operative complications after knee and/or hip arthroplasty surgeries.

Background
-Enhanced Recovery After Surgery (ERAS) provides best practice guidelines for early mobilization.
-Early mobilization is a series of activities that begin after surgery, including light activities in bed such as ROM exercises, and the ability to transfer out of bed, ambulate to the bathroom, and ambulate in the hallway of the unit.
-Early mobilization interventions can facilitate the return of physiological function, baseline activities of daily living, and minimize medical complications.
-Immobility is linked to patient harm, post-operative complications, and longer hospital stays
-Nurses are expected to provide a standard of quality nursing care and have the knowledge and skills to implement early mobilization interventions for patients after hip and knee arthroplasty surgery to promote the return of patients' muscle function and minimize the potential symptoms experienced after surgery.

Early Mobilization
-Bed mobility, standing, or walking as soon as possible after surgery.
-Early mobilization can also include bed mobility such as ankle pumps and ROM exercises, sitting at the edge of the bed and dangling, a stand and pivot, out of bed to a chair, taking 10-20 steps, or walking through the
halls.
-Physical therapy will assist if a patient is walking in the room or on the unit by placing wall markers to indicate distance in feet.

Policy: These policy guidelines include all patients who have undergone total knee and hip arthroplasty.

Nursing Assessment:
For all patients undergoing total knee and hip arthroplasty. The nurse will assess the patient for any barriers that prevent the patient from safely mobilizing. See the table below.

Barriers	Nursing Interventions
Nausea and Vomiting	Medicate the patient with a PRN antiemetic if applicable. Postponing getting the patient up and OOB until the N/V passes. If unable to get the patient OOB at the four-hour mark, assist the patient with bed mobility, such as ankle pumps or range of motion exercises.
Pain	Medicate the patient with pain medications 20-30 minutes before beginning early mobilization. Early mobilization can help reduce stiffness in the long run and the requirement for additional pain medication such as narcotics.
Paresthesia	If the patient does not have sensation back in their leg/legs, do not have the patient get up out of bed. Continue to reassess sensation to the legs until the patient is ready for mobilization.
Hypotension	If the patient is hypotensive, wait for the patient to be medically stable before being ambulated. Check orthostatic blood pressure. The patient may require an IV fluid bolus or H &H labs to be checked.
Arrythmia	Ensure the patient is medically stable before getting them out of bed.
Confusion	If a patient is confused after anesthesia, do not ambulate or get the patient up out of bed until they can follow commands and move safely.

Hip precautions:
Patients are not to cross their legs or ankles, not bring their knees up higher than their hip, not to reach down past their knees, or twist their body.

Knee precautions:
Patients are not to twist, pivot, squat, or kneel.

Safe mobilization (ambulation):
-Seat the patient at the edge of the bed with the walker in front of them, placing the affected leg slightly forward from the body.
-When preparing to stand the patient, have the patient place one hand on the bed and one hand on the walker.
-Once standing, have the patient place both hands on the walker. Patients should slide the affected leg back as they stand.
-Then have the patient push the walker forward and take a step with the affected leg first, followed by the non-operated leg.

Appendix E

Post-Knee and Hip Arthroplasty Patients

Early Mobilization Checklist:

MRN #: ***Arrival Time to Unit:***

Anesthesia Type: ***Site & Side:***

Directions:

1. Review the Exclusion Criteria:

a. If you answered NO to any of the questions, do not proceed with early mobilization

b. Date and sign the checklist, and place the checklist in the designated bin on the unit

Exclusion Criteria:

- ✓ Is the patient conscious?
- ✓ Can the patient move their lower limbs?

2. If no exclusion criteria exist, proceed with Part I: Assessment and Part II: Mobilization.

- ✓ Review the **Assessment Criteria** and respond ***YES or NO*** in the corresponding box
- ✓ Review the **Mobilization Criteria** and provide appropriate detail
- ✓ Please provide comments as applicable in the box provided

Part I: Assessment

***Assessment* Criteria**	***YES***	***NO***	***Comment***
Vital Signs			
Pain (0-10)			
Is patient Hypotensive? *(Systolic >100)*			
Monitors/cables			
Antiemetics Used			
Nausea			
Vomiting			

Nasogastric Tube			
IV fluids			
Foley Catheter			
Drains: Hemovac, Jackson Pratt)			
Pneumatic Compression Device			

Part II: Mobilization

Mobility Criteria	**Comments**
Date and time of first mobilization?	
Hours after surgery	
Number of persons assisting?	
Assistive device used? (Gait belt, walker, cane, sit-to-stand lift, mechanical lift)	
Type of Mobility	
Bed mobility (turn and reposition); ROM exercises; dangling; stand and pivot; transfer OOB to commode; transfer to chair (bedside, wheelchair); (distance)?	
How did the patient tolerate mobility?	
Did the patient walk (ambulate) in the room or on the unit?	
If the patient ambulated, how far (feet)? Were ambulation markers being utilized?	