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Implementing Nurse Education on Evidence-Based Birthing Positions for First and Second Stages of Labor to Promote Fetal Descent

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NURS653 Quality Improvement Internship

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Abstract

Cesarean deliveries can increase the risk of maternal and newborn complications. A cost-effective method to reduce unnecessary cesarean deliveries is through maternal repositioning during the first and second stages of labor. Research has shown that flexible sacrum positions such as standing, squatting, kneeling, lunging, hands and knees, side-lying, and use of a peanut ball reduces the duration of labor, lowers rates of cesarean deliveries, and promotes fetal descent. This project aims to increase nurse confidence in these evidence-based labor positions by implementing nurse education in the labor and delivery unit at a Bay Area County hospital. A pre-survey identified current confidence level and practices used for maternal positioning, and showed a gap in knowledge among the staff nurses due to their various degrees of training. An educational intervention was implemented among nurses through an educational handout, live demonstrations of the positions, and a video outlining labor positions based on stages of labor. Results of the post-survey showed that nurse education on evidence-based labor positions effectively increased nurse confidence levels of these positions. This project suggests that standardization of evidence-based positions should be adopted into the unit as new practice.

*Keywords*: labor and delivery, labor, first stage, second stage, maternal positioning, fetal descent, duration of labor, cesarean sections, cesarean births, birth
Implementing Nurse Education on Evidence-Based Birthing Positions for First and Second Stages of Labor to Promote Fetal Descent

In California, the current rate of cesarean deliveries is 30.8% of all live births (March of Dimes, 2023). While California's cesarean delivery rates average below the national rate of 31.9% of all live births (March of Dimes, 2023), improvements can be made to further reduce cesarean delivery rates. Healthy People 2030 outlines a target goal of a 23.6% cesarean delivery rate, especially for low-risk labor patients (U.S. Department of Health and Human Services, 2020). A cesarean delivery, also commonly referred to as cesarean births, cesarean section, or c-section, is a surgical intervention for fetal delivery through performing an open abdominal and uterine incision (Sung & Mahdy, 2022). Cesarean deliveries can be an emergent, life-saving intervention to prevent fetal or maternal morbidities and mortalities (Smith et al., 2019). However, similar to other surgeries, cesarean deliveries can impose major risks and complications to both the laboring patient and baby, highlighting the need to promote evidence-based practices to prevent unnecessary cesarean births.

Understanding the risk of cesarean deliveries is essential to improving patient outcomes at the bedside. The risk of maternal mortality and morbidity associated with cesarean deliveries include increased risk of infections, cardiac arrest, wound hematomas, anesthetic complications, blood clots, and hemorrhage that may lead to hysterectomy (Smith et al., 2019). Laboring patients by cesarean delivery generally have a more negative perception of the laboring experience, may be at higher risk for postpartum depression or mood disturbances, and are at risk for increased financial burden, as cesarean deliveries cost more than vaginal births (Smith et al., 2019). In addition to maternal complications from cesarean deliveries, respiratory distress requiring oxygen treatment is more often present in neonates that are delivered through cesarean
sections (Smith et al., 2019). As nurses, it is important to minimize patient harm and avert unnecessary risks that compromise patient safety.

One of the most common causes of cesarean deliveries is labor dystocia with prolonged induction of labor (Grishchenko & Mamedova, 2020). Labor dystocia is identified as slow progress during labor, including slow fetal descent, and accounts for about one-third of unplanned cesarean deliveries (Kissler & Hurt, 2022). A low-cost, non-invasive, and time-efficient intervention to progress fetal descent is through maternal positioning (Huang et al., 2019). Therefore, this quality improvement project will focus on increasing education among labor and delivery nurses about evidence-based practices for maternal positioning in the first and second stages of labor that progress fetal descent, shorten the duration of labor, and reduce cesarean births.

This quality improvement project takes place at a Bay Area County Hospital (Hospital X) in a 14-bed labor and delivery unit, with 80 registered nurses providing 24-hour care for laboring patients. This unit is equipped with two operating rooms for cesarean births, contains four beds for triaging labor patients, and is located next to the Neonatal Intensive Care Unit for babies that need closer monitoring or resuscitation, during or after birth. Hospital X is recognized by the U.S. News and World Report as a top-performing hospital for maternity care, out of the 2,700 nationwide hospitals (County of Santa Clara, 2021). The cesarean delivery rate at Hospital X is less than 23.9% for term, low-risk pregnancies (County of Santa Clara, 2021), with data confirmation from the unit manager stating the cesarean rate to be around 21%. While Hospital X has a low rate of cesarean deliveries and performs better than average California and national hospitals, some neighboring hospitals in the Bay Area are seen to have even lower rates of cesarean deliveries ranging from 16% to 21% (Los Angeles Times, 2016). By implementing this
quality improvement project at Hospital X, nurses, and nurse leaders can work collaboratively to mitigate the risk of negative maternal outcomes that occur as a result of cesarean deliveries.

**Problem Description**

Education levels in the labor and delivery unit range from ADN, BSN, and MSN nurses with various degrees of training, experience, and knowledge of optimal labor positions. Some nurses have many years of experience and hold additional certifications or have attended classes for maternal positioning such as “Spinning Babies”, while other nurses are starting off their careers as new graduate nurses. With diversity in training and education, nurses currently utilize maternal positioning during the first and second stages of labor based on their clinical expertise and what has been shown to promote positive maternal labor outcomes based on midwifery or doula anecdotes. In an effort to provide the highest quality care, nurses also position laboring patients based on patient preferences, comfort levels, positioning ability, and ability to track fetal heart tones. New studies and evidence-based practice on optimal birthing positions to progress fetal descent continue to be added to the current body of research as nursing practices evolve and change. Some nurses may not be up to date with the latest evidence-based practices to promote fetal descent and reduce the risk of cesarean births, as new information may be difficult to disseminate and adapt on a consistent basis.

Among the 80 nurses, a wide variety of positions are used to reposition laboring patients during the first and second stages of labor. There is a gap in knowledge and a lack of standardization for the positions used in the first and second stages of labor to progress fetal descent. Implementing education on birthing positions can help nurses gain the knowledge and confidence to adapt these current, evidence-based positions and standardize the positions used in the first and second stages of labor. With the standardization of labor positions, care can be provided in a consistent manner for all patients leading to increased patient satisfaction,
improved patient outcomes, increased unit performance, and decreased costs related to cesarean births.

**Available Knowledge**

**PICO Question**

A Population, Intervention, Comparison, Outcome, and Time (PICOT) question provided a clear structure for research, data collection, and evaluation of the intervention. The question states, among (P) Labor and Delivery nurses, how does (I) nurse education on evidence-supported birthing positions to progress fetal descent in the first and second stages of labor compared to (C) no additional nurse education (O) affect nurse confidence to utilize evidence-based positions to progress fetal descent in the first and second stages of labor over a (T) two month period.

**Search Strategy**

A systematic literature review was conducted from January to February 2023 to explore the PICOT question. Databases for finding peer-reviewed literature included Google Scholar, CINHAL Complete and Ultimate, and PubMed. Keywords such as “labor positions”, “maternal positioning”, “first stage of labor”, “second stage of labor”, “fetal descent”, “labor progress”, “labor and delivery”, “position changes”, and “positions for labor” were used to search for relevant articles from the years 2017 to 2023. Limited studies and research were available with these inclusion criteria thus, one 2010 systematic review ranking in level I evidence from the Johns Hopkins Evidence-Based Practice for Nurses and Healthcare Professionals: Model and Guidelines (2022) was included in the final literature review as seen in Appendix B. Additionally, a total of seven articles ranging from evidence levels I and II were included to gain an understanding of the available knowledge and answer the PICOT question.
Synthesis of Literature

To ensure the intervention followed evidence-based practice, a thorough review and synthesis of the literature was conducted. Articles were analyzed based on the reliability, and quality of evidence according to the Johns Hopkins Evidence-Based Practice for Nurses and Healthcare Professionals: Model and Guidelines (See Appendix B) (Dang et al., 2022). Synthesized research determined the best practices for maternal positioning in the first and second stages of labor that contributed to progression of fetal descent, progression of labor, and reduction of cesarean births. Education components including the poster handout (see Appendix E), training video, PowerPoint, and live demonstration were created from the information gathered from the literature review.

Throughout the articles, specific positions are seen to be generalized under three categories: upright, lying, recumbent, side-lying, or lateral, and supine. Upright positions are defined as any position whose spine is over a 45-degree angle and vertical (Kibuka et al., 2021). In the literature, specific positions in the upright category include sitting, kneeling, throne, squatting, assistive squatting, hands and knees, lunging, and ambulation. Lateral positions include left or right lateral and sim's or modified sim's with the use of a peanut ball or stirrup. Another terminology found in the literature were flexible sacrum versus non-flexible sacrum positions. A flexible sacrum position takes body weight off of the sacrum (Edqvist et al., 2016) and promotes vaginal delivery and optimal birth outcomes by allowing the pelvic outlet to expand more (Berta et al., 2019). These positions include standing, kneeling, hands and knees, squatting or assistive squatting, lunging, left and right lateral, and sim's or modified sim's. Non-flexible sacrum positions on the other hand put body weight on the sacrum (Edqvist et al., 2016) with positions that include supine, lithotomy, and any supine-lying position without a 45-degree bed incline.
Berta et al. (2019) conducted a systematic review of eight studies; seven randomized control trials, and one cross-sectional study with 1,985 laboring patient participants. Out of the 1985 participants, the laboring patients who were positioned in flexible sacral positions had a shorter duration of the second stage of labor by an average of 21.12 minutes (Berta et al., 2019). Flexible sacral positions include lateral and upright positions in which upright positions were shown to help the uterus contract stronger and more efficiently, contributing to quicker progression of fetal descent through the pelvis (Berta et al., 2019).

Kibuka et al. (2021) evaluated the effects of maternal positioning through a systematic review of three Cochrane systematic reviews that included 65 randomized control trials and quasi-experimental studies with 18,697 participants. Kibuka et al. (2021) concluded that labor patients without epidural analgesia utilizing upright positions compared to horizontal positions during the first stage of labor had significant reductions in cesarean birth rates. Additionally, among the women without epidural analgesia, Kikuba et al. (2021) reported statistically significant results showing a reduction in the duration of the first stage of labor by one hour and 22 minutes in those using upright positions compared to horizontal positions.

A BUMES randomized control trial conducted by Bick et al. (2017), explores the effects of maternal positioning in upright compared to laying positions. Study participants included 3,039 nulliparous patients utilizing low-dose epidurals who were at least 16 years of age, at term gestation, and with singleton cephalic presentation. Among the 1,637 participants who were placed in lying positions such as left or right lateral during the second stage of labor and had at least a 30-degree bed incline resulted in more spontaneous vaginal births (Bick et al., 2017).

Peanut balls are an assistive positioning device commonly used among laboring patients. In a quasi-experimental study by Hickey & Savage (2019), 343 participants were included with 164 labor patients in the peanut ball group. When laboring patients used the peanut ball (n=164)
in positioning changes after epidural analgesia placement and removed the peanut ball at full dilation, effacement, and descent, there was a 50% less likelihood of resulting in a cesarean birth compared to the comparison group who did not use a peanut ball (Hickey & Savage, 2019). This study emphasizes the significance of early peanut ball use during maternal positioning and furthermore showed that the duration of the first and second stages of labor were shortened by frequent maternal changes (Hickey & Savage, 2019). Positions that contributed to these results include side-lying, semi-sitting lunge, and tuck (Hickey & Savage, 2019). Frequent maternal positioning should be considered for patients with epidurals and high Body Mass Index (BMI) due to the impacts on positive maternal outcomes.

Bueno-Lopez et al. (2018) conducted a randomized control trial to evaluate the modified sims position and its impact on fetal occiput rotation during labor. The study consisted of 119 patients using epidural analgesia with 59 patients in the sims position group and 60 patients in the free position group. When patients were positioned in sims with the upper leg on top of the stirrup, this led to a 50.8% rate of rotation of the fetal head to occiput anterior compared to the free position group which had a rate of 20.7% (Bueno-Lopez et al., 2018). Additionally, the sims position group had an increased vaginal delivery rate at 84.7% and lower cesarean birth rate at 15.3% compared to the free position group which had a vaginal delivery rate of 68.3% and cesarean birth rate of 31.7% (Bueno-Lopez et al., 2018). This article indicates that the sims position, a side-lying position, can improve maternal labor outcomes by assisting with fetal head rotation to an optimal position to pass through the birthing canal faster, ultimately progressing fetal descent.

In a quasi-experimental study by Emam & Al-Zahrani (2018), a comparison between upright and recumbent maternal positions during the first stage of labor is explored. The study participants were 100 primipara patients in the first stage of labor with 50 patients in the upright
group and 50 patients in the recumbent group. Results showed upright positions and maternal movement during labor increase the strength of contractions, strengthen the pelvic floor muscles, increase pelvic diameter, and help progress fetal descent which led to a decrease in operative births. Furthermore, upright positions leverage gravity to bring the baby down while frequent maternal position changes lead to pelvic bone movement, ultimately helping the baby descend in the pelvis.

Lastly, Zwelling (2010) explores the relationship between maternal positioning and movement to progress fetal descent through a systematic review that includes laboring patients from years 1975 to 2009. Zwelling (2010) found that the durations of first and second stages of labor were shorter for laboring patients who were upright compared to laboring patients who were in recumbent or flat positions. This article along with more recent literature state that maternal position changes during labor, especially in upright positions have been often found to promote the progress of labor (Zwelling, 2010). Consequently, immobility decreases the fetal ability to engage in the pelvis, descent, rotate, and find the best fit (Zwelling, 2010).

These seven articles show the best practices for maternal positioning among laboring patients in both the first and second stages of labor, with or without epidural analgesia. Upright positions were strongly supported by research with a second common category of side-lying positions that shortens duration of the first and second stages of labor, reduce cesarean birth rates, increase vaginal births, and promote the progression of fetal descent. In general, frequent maternal position changes were also associated with positive labor outcomes and should be encouraged among laboring patients. There was limited research, however, on the considerations for patients with high BMI in regard to position changes. Labor and delivery nurses play a critical role at the bedside to improve the quality of care and help patients achieve the best
outcomes. Therefore, the literature supports a need for this intervention and continuous quality improvement by standardizing the labor positions used in the first and second stages of labor.

**Rationale**

The framework used to develop and implement this quality improvement project was Kurt Lewin’s Change Theory. Changes are constantly occurring in the labor and delivery unit; therefore, structuring the intervention with a change theory may contribute to the longer sustainment and adaptation of these labor position tools. Lewin’s Change Theory is a three-stage process to creating effective change in the microsystem, with the stages referred to as unfreezing, change, and refreezing (Harris et al., 2018).

The purpose of the unfreezing stage is to become aware of the need for change (Barrow et al., 2022). Learning new behaviors for change is dependent on the ability to recognize imperfections in the current state of practices, processes, or other contributing factors to unit performance or outcomes (Harris et al., 2018). Motivation and urgency for change should be created to gain attraction to the proposed change and increase nurse engagement and participation. In the context of this quality improvement project, the proposed change is to standardize labor positions used in the first and second stages of labor by increasing nurse education and confidence in various labor positions. By educating labor and delivery nurses on the best practices for labor positions in the first and second stages of labor, they will contribute to progressing fetal descent, accelerating labor, and ultimately reducing cesarean births.

In the second stage of Lewin’s Change Theory, change is initiated with support from unit role models and signals that indicate this change is accepted as the new unit normal (Harris et al., 2018). Leadership from the labor and delivery unit including nurse managers, staff developers, charge nurses, and nurse champions will help create traction for the quality improvement project by getting nurses engaged and involved. Conveying the purpose for initiating the quality
improvement initiative and stating the benefits of nurse education will create a culture that accepts the new way of operating.

In Lewin’s refreezing stage, new changes and practices are integrated into the unit as the standard of operation, and a culture of social support is used to sustain the state of change long-term (Harris et al., 2018). Comprehensive nurse education will increase nurse confidence in utilizing evidence-based birthing positions during the first and second stages of labor. With all of the nurses and unit leadership accepting the standardization of birthing positions as normal unit practice, maternal labor outcomes can be improved.

Specific Project Aim

The specific aim of this quality improvement project is to standardize the labor process through increasing nurse confidence of evidence-based birthing positions in the first and second stages of labor by 60%. Education and training will be provided to Labor and Delivery nurses over a two-month period and an evaluation of the invention will occur to determine if the specific project aim has been met.

Methods

Microsystem Assessment

The 5 Ps microsystem assessment was conducted to evaluate the labor and delivery unit before intervention implementation. A synopsis of the 5 Ps which includes purpose, patients, professionals, process and patterns, identified existing practices that help this microsystem function.

Purpose

The purpose of the Birth Center at Hospital X is to provide access to safe, compassionate, high-quality care for all patients regardless of their socioeconomic status or ability to pay (Santa Clara Valley Medical Center, 2023). This microsystem is dedicated to delivering culturally
inclusive, family-centered care for mothers, birth partners, and their babies (Santa Clara Valley Medical Center, 2023). The Birth Center provides comprehensive services such as genetic counseling, obstetrical consultation, and is equipped for high-risk deliveries through collaboration with the level IV Neonatal Intensive Care Unit (Santa Clara Valley Medical Center, 2023).

Patients

Patients of this microsystem are primarily high-risk pregnant and laboring people with comorbidities including high BMI, hypertension, cardiovascular disease, kidney disease, preeclampsia, and other influences from the social determinants of health. It is common that patients face language barriers and vary in insurance and housing statuses as this microsystem provides care for uninsured and unhoused patients. Additionally, Hospital X receives patients from two other facilities within the same healthcare network due to the additional resources and capacity for higher acuity patients. The primary objective of this quality improvement project is to increase nurse confidence and knowledge of optimal birthing positions in first and second stage of labor therefore, our target population includes labor and delivery nurses.

Professionals

Individuals and teams from multi disciplines collaborate to provide comprehensive care for pregnant and laboring patients. The professionals in this microsystem include registered nurses, staff developers, nurse managers, nurse leaders, physicians for specialties such as obstetrics, urology, cardiology, unit clerks, obstetric technicians, anesthesiologists, medical interpreters, respiratory therapists, neonatologists, nurse practitioners, social workers, and radiologists.
**Process**

The processes that occur in this microsystem are admissions to the unit through triage and examination, daily registered nurse assessments, operating room set up for cesarean deliveries, delayed cord clamping, and discharges. Physicians partner with nurses and other staff to prioritize the safety of patients and their babies.

**Patterns**

The labor and delivery unit includes daily patterns such as shift huddles where nurses are assigned to patients at the beginning of each shift, nurse handoff report, physicians huddle, briefing before entering patient rooms, interdisciplinary communication, debriefing after interventions, continuous electronic fetal monitoring (EFM), and electronic health record charting with EPIC.

**Plan Do Study Act (PDSA) Cycle**

One of the quality improvement tools used to identify microsystem problems that use a rapid cycle model for improvement is the Plan Do Study Act (PDSA) cycle (Harris et al., 2018). PDSA cycles assist with identifying small measures of success and lead to the achievement of the intervention aim (Harris et al., 2018). Every component of the PDSA cycle includes written goals for the team to progress toward the project outcome (see Appendix D). The “Plan” phase included goals to complete the 5 Ps assessment, preliminary research, educational intervention material creation, and meetings with the unit leaders. In the “Do” phase, team members set goals to administer the pre-survey, implement the intervention, and administer the post-survey. In the “Study” phase, outcomes of implementing nurse education on evidence-based birthing positions were analyzed from the pre and post-survey results. Lastly, in the “Act” phase, the effectiveness of the intervention was evaluated and suggestions for future improvements were made. This leads the future intervention to start back at the beginning of the PDSA cycle in the “Plan” phase.
Gantt Chart

To supplement the PDSA cycle, a Gantt chart was created for project goal visualization in the form of a timeline. The Gantt chart shows the project timeline over the course of 16 weeks starting from January, 2023 to May, 2023 with four project stages being initiation, planning, implementation, and evaluation (see Appendix G). This timeline was sent to the labor and delivery unit staff developer and shared among project team members to keep track of the ongoing change process.

Strengths Weaknesses Opportunities Threats (SWOT) Analysis

A SWOT analysis identified key strengths, weaknesses, opportunities, and threats to implementing this quality improvement project (see Appendix C). The key strengths included the project being low-cost and relatively low time commitment, along with having support from the staff developer and nurse champions. On the contrary, being unable to provide continuous EFM along with time constraints for nurse education implementation persisted as weaknesses, due to the unpredictability of the birthing process and unit workflow. There were also limited supplies and birthing equipment available for demonstrations. The opportunities to increase nurse knowledge and confidence in evidence-based birthing positions and improve labor-patient outcomes outweigh the threats which included nurses not having scheduled time for education. Although there was limited research on evidence-based birthing positions for high-risk obstetric patients, there is an opportunity to contribute to this body of literature for future projects.

Fishbone Diagram

Fishbone diagrams highlight the causes of failures to the proposed change and the effects on project outcomes (Harris et al., 2018). A Fishbone diagram was created to identify potential barriers that contribute to decreased nurse confidence in standardizing labor positions (see Appendix F). These barrier categories include patient population, materials, equipment, and
policy. During creation and implementation of the intervention, solutions were created to overcome some of these potential barriers to further progress the project outcome.

**Cost-Benefit Analysis**

Lastly, a cost-benefit analysis was conducted to compare the intervention costs to the potential benefits. Due to having no financial funding from the nature of the Internship course and Hospital X budget, this intervention was relatively low cost. Educational material such as the handout (see Appendix E), pre and post-survey, and educational video for labor positions were created with no costs associated. A few copies of the educational handouts along with the pre and post-surveys were printed prior to coming in for the shift, and additional copies were made for each nurse using the photocopier on the unit. The team utilized an empty room for live demonstrations of the labor positions and assistive devices were provided by Hospital X, which included peanut balls, chairs, and birthing balls. To incentivize nurses to participate in the intervention and complete the pre and post-surveys, cookies and muffins were brought as treats by alternating team members who came onto the shift. Individually, treats averaged six dollars, with a two to three-time occurrence equaling to an average of 12 to 18 dollars. During the implementation of nurse education, nurses were asked to participate anytime during their eight hour shift excluding break time, which kept the cost of additional nurse pay to no more than what the nurses are originally getting paid on the shift.

If there is an allocated budget in the future to adapt and further this intervention, it may benefit the microsystem and further incentivize nurses to participate if there are Continuing Education Units (CEUs) offered. This may also include providing compensation for nurses who complete the training on their own time. The cost of future compensation is not determinable for this project timeline, however, the cost-benefit of increasing nurse education and participation
can directly impact patient outcomes which can ultimately save hospital costs related to the cesarean birthing process.

**Intervention**

This intervention was implemented over a 16-week period (see Appendix F) starting with project initiation in January, 2023. Some phases of the intervention had overlaps in the weeks as the team worked diligently and simultaneously to plan, create, and execute the intervention. Team meetings with the Internship supervisor took place during this phase to discuss the goals and plans surrounding successful implementation of the intervention. To ensure the intervention was rooted in evidence, a literature review was conducted and the information was synthesized to prepare for the project planning phase.

In the project planning phase which spanned over five weeks, the team met with the labor and delivery Staff Developer to discuss the current microsystem challenges surrounding positioning during labor and introduce the intervention to the labor and delivery team. A microsystem assessment identified the 5 P’s and gave the team a stronger understanding of how the nursing staff functions each shift. An educational handout was created from the literature which differentiated labor positions by subcategories that include: first stage versus second stage of labor, epidural versus no epidural, flexible sacrum versus non-flexible sacrum positions, and considerations for bariatric or high BMI patients. All of the positions included in these categories were seen in studies to progress fetal descent, shorten the first and second stages of labor, and reduce cesarean births. A pre-survey was also created on Google Forms to gauge nurse confidence in various labor positions before implementing the intervention (see Appendix H). In an effort to increase staff participation, a flyer was created with a QR code to the pre-survey link. Additionally, the post-survey was created in the planning phase to prepare for intervention analysis.
The project implementation phase took place over six weeks which included the team going to the labor and delivery floor and administering the pre-survey, implementing the nurse education, and creating the birthing positions video. The team took turns going into the unit during various AM, PM, and NOC shifts to reach as many nurses as possible. Team members attended shift huddles to introduce the project to nurses on each shift. Students approached nurses throughout their eight-hour shift to complete the pre-survey, which was provided as options to complete it on paper, QR code, or on student laptops. If nurses had time after completing the pre-survey for nurse education, the five to ten-minute nurse education was conducted immediately. Nurse education included a brief overview of the educational handout and live demonstrations of the positions listed in the pre-survey and educational handout. The positions demonstrated were assisted squat, lunging, kneeling, backward sitting, sitting, throne, side-lying with a peanut ball, and sims or modified sims. After the demonstration, information was provided to nurses about high BMI patient positioning and flexible versus non-flexible patients, along with time for questions at the end that nurses may have. After completion of the nurse education, nurses were asked to complete the post-survey either through paper, QR code, or student laptops by the end of their shift. If nurses were only able to complete a part of the intervention, students followed up with these specific nurses the following shifts to finish up the pre-survey, education, and post-survey. Lastly, a birthing positions video was created using an empty labor and delivery room at Hospital X and assistive devices they had on the unit such as a birthing ball and a peanut ball. This video was sent to the labor and delivery Staff Developer to integrate into the training modules for staff onboarding and future educational use.

In the final project evaluation phase, students ensured that the nurses who received education were followed up with to complete the post-survey. The results from the data in the pre-survey and post-survey were analyzed to determine the impact of nurse education on
increasing confidence in labor positions. This information was synthesized into a poster presentation and presented to the Staff Developer and labor and delivery staff at a unit meeting.

**Study of Interventions**

The measurement tool used to study the intervention is a five to ten-minute, 13-question pre-survey (see Appendix G) to gauge nurse confidence levels prior to the intervention implementation. A post-survey determined nurse confidence levels in various birthing positions in the first and second stages of labor after receiving the education intervention. A PDSA cycle was used as a tool to document the progression of the intervention and the intervention was evaluated on an ongoing basis, depending on immediate feedback from conversations with nurses. The content of the education intervention remained consistent throughout the implementation period however, the structure of the delivery was modified upon evaluation to fit the needs and workflow for nurses. For example, within the first two weeks of the intervention implementation, some nurses requested more hands-on training and live demonstrations of all positions. Due to time being the largest barrier to conducting education during the shift, demonstrations were adjusted to be completed where the nurses were located, using a chair and images on the handout rather than gathering nurses into an empty patient room each time. Lastly, the teach-back method tool was utilized for nurses who had additional time to complete the educational intervention. The teach-back method is known to help improve knowledge and understanding of the content presented (Agency for Healthcare Research and Quality, 2020). Therefore, integration of this tool was utilized whenever time allowed it for the nurses during their shift.

**Measures**

A pre-survey and post-survey were used as measures for the nurse education intervention. The survey first asked the participants to fill out their names in order to keep track of nurses that
completed the survey and can be followed up with the education intervention. Education level was asked to determine the average nursing degrees held in the unit, as varying education levels contributed to the lack of standardization in labor positions. Required free-response questions for the first stage of labor asked what positions the nurses usually use during first stages of labor, followed by a Likert scale question stating: “STAGE 1 LABOR: Describe your confidence level for each position or activity”. The Likert scale ranged from numbers one to four, with one being “not confident at all”, two as “somewhat confident”, three as “confident”, and four as “very confident”. There were six positions included in the first stage of labor gauging confidence level for assisting patients to walk, kneeling position, lunging position, backwards sitting (on a chair), and sitting position. The free response question remained the same for the second stage of labor and the positions included in the Likert scale question included hands and knees position, assisted squat position, sitting position, side-lying with peanut ball, and throne (Semi-sitting).

Nurses were also asked to rate their confidence level using the same Likert scale when positioning bariatric patients and epidural patients, and confidence level when using assistive devices which included the peanut ball, squat bar, sheet pulling, birthing chair, and birthing ball. The survey also asked nurses about the frequency of placing patients in lithotomy position with answer choices as “less than 25% of the time”, “25-50% of the time”, “50-75% of the time”, and “more than 75% of the time”. The last two required survey questions with the answer choices being “yes” or “no” asked “are you familiar with flexible sacrum positions versus non-flexible sacrum positions, and their effects on fetal descent”, and “have you received off-unit training on maternal positioning? (ie. Spinning babies class)”. Lastly, for the optional free response questions, nurses were asked if there were any specific positions that they would like to increase their confidence in and their perceived barriers to increasing confidence in maternal positioning.
Results

Among 79 labor and delivery nurses, pre-survey, intervention, and post-survey were completed for 54% of the total nurses (n=43). 90% of nurses had a bachelor of science degree in nursing (n=39), 0.13% of nurses had an associate degree in nursing (n=6), and 0.02% of nurses had a master of science degree in nursing (n=1). 53.5% (n=23) of nurses had additional off-unit training for labor positions such as Spinning Babies and 46.5% (n=20) of nurses indicated they received no additional labor position training in the pre-survey. In the pre-survey, nurses were asked if they were familiar with flexible sacrum positions versus non-flexible sacrum positions and the effect on fetal descent in which 55.8% (n=24) of nurses stated they were not familiar with the concept while 44.2% (n=19) stated that they were familiar with the concept prior to the education intervention. Post-survey results showed an increase in knowledge about flexible sacrum versus non-flexible sacrum positions as 95.3% of nurses stated “yes” when asked “Are you familiar with flexible sacrum positions versus non-flexible sacrum positions, and their effects on fetal descent?” on the post-survey.

To identify current positioning practices for the first stage of labor, a free response question asking what positions nurses usually assist patients to during the first stage of labor indicated a variation in practices. Answers ranged from lithotomy, walking, flying cowgirl, left or right lateral, side lying, squatting, using the birthing ball, throne, runners, squatting, lunging, and using a peanut ball. When asked to rate their level of confidence from a Likert scale on some of the common evidence-based positions to promote fetal descent in the first stage of labor, level of confidence varied for each position as seen in Figure 1.
Upon completion of the education intervention, post-survey results showed an increased level of confidence for all five listed positions during the first stages of labor, seen in Figure 2. During the post-survey, more nurses selected they felt “very confident” or “confident” in these positions, with fewer nurses selecting “somewhat confident” and no nurses selecting “not confident at all”. Figure 3 displays the overall percentage increase in confidence for each of the five positions in the first stage of labor comparing results from the pre-survey and the post-survey. Confidence level for lunging position increased by 93%, kneeling position by 74%, backwards sitting by 55%, assisting patients to walk by 17%, and sitting by 13%.
For the second stage of labor, the same free response question stating what positions nurses usually assist patients to during the second stage of labor also indicated a variation in practices. Common responses included lithotomy, throne, side lying, peanut ball, hands and knees, and flying cowgirl. Level of confidence for positions in the second stage of labor was identified in the pre-survey using the same Likert scale as the first stage of labor question. Figure 4 displays the level of confidence on five positions used for second stage of labor to promote fetal descent, prior to the education intervention.

Upon completion of the education intervention, post-survey results also showed an increase in nurse confidence for the positions used for second stage of labor, as seen in Figure 5. Assisted squat position had the highest increase in level of confidence with an overall 131%
increase while hands and knees position had a 37.5% increase in nurse confidence level. The positions that had low increase in nurse confidence were throne (semi-sitting) position with an 11% increase, sitting position with a 10% increase, and lastly side-lying with a peanut ball which had a 6% increase in nurse confidence levels. The three positions that did not show a large increase in nurse confidence were due to a high level of initial nurse confidence in the pre-survey. The overall increase in level of confidence for positions in the second stage of labor is displayed in Figure 6.

**Figure 5**

*Post-Survey for Second Stage “Describe your confidence level for each position or activity”*

![Bar chart showing confidence levels for different positions in the second stage of labor.]

**Figure 6**

*Post-Education Survey Confidence Improvement in the Second Stage of Labor*
In addition to gauging nurse confidence levels for positions used in the first and second stages of labor, nurses were asked to rate their level of confidence when positioning the following patient types of epidural patients and bariatric patients. There was an increase in confidence level for both patient types with nurses answering only “confident” (n=12) and “very confident” (n=31) in the post-survey result for epidural patients, compared to the pre-survey results which ranged from “somewhat” (n=2) to “confident” (n=11) to “very confident” (n=30). For bariatric patients, there were more nurses who stated they felt “very confident” (n=23), “confident” (n=14), in the post-survey compared to the presurvey which had a lower selection for “very confident” (n=18) and “confident” (n=13). The pre-survey confidence levels for positioning epidural and bariatric patients can be seen in Figure 7 in comparison to the post-survey confidence levels which are exhibited in Figure 8.

**Figure 7**

*Pre-Survey Rate of Confidence Level When Positioning The Following Patient Types*

![Figure 7 Pre-Survey Rate of Confidence Level](image)

**Figure 8**

*Post-Survey Rate of Confidence Level When Positioning The Following Patient Types*

![Figure 8 Post-Survey Rate of Confidence Level](image)
Discussion

Pre-survey and post-survey results showed that implementing nurse education in labor positions for the first and second stages of labor effectively increased nurse confidence for all ten positions. The education intervention increased nurse confidence by an average of 44.75%, which did not meet the original specific project aim of increasing nurse confidence by 60%. While the specific aim was not met this PDSA cycle, a positive finding was that a large percentage of nurses were initially highly confident in many positions including assisting patients to walk, throne, side-lying with a peanut ball, and sitting as noted in the pre-survey. This may have lowered the average percentage of increased nurse confidence. For nurses who were originally confident with certain positions, the next steps should include spending time with patients to position them in these evidence-supported positions including frequency of position changes.

The results of this quality improvement project highlight a need for continuous education in labor positions to promote fetal descent in the first and second stages of labor, especially for the positions that nurses do not feel confident in. A key factor in the success of this intervention included having unit leaders such as the staff developer, unit managers, and unit champions encourage staff nurses to be involved in completing surveys and receiving education. On shifts where there was at least one nurse that seemed excited, enthusiastic, and interested to learn about the evidence-supported interventions to best care for their patients, this created stronger motivation and participation among all of the other staff nurses.

Even in the short time frame given to implement this quality improvement project, education materials were created and utilized in the unit along with the completion of nurse education. These materials can be accessed by unit management in the future, thus making the
next step to standardize these evidence-supported positions more convenient. Nurse leaders will be crucial stakeholders in sustaining practice change and reducing the rates of emergent cesarean births to ultimately improve patient outcomes. While the implementation of this project was generally successful, there were some limitations that should be addressed for the next PDSA cycle.

**Limitations**

One of the biggest limitations of this quality improvement project was time. The shift flow of the labor and delivery unit is often unpredictable, thus, there was limited time to collect the pre-survey, implement education, and collect post-surveys. When nurses were needed in patient rooms, the intervention had to be paused to meet immediate patient needs. Due to this, pre-survey, intervention, and post-survey were often fragmented into separate time blocks rather than completing one task at a time. Another limitation related to time was student schedules and the short implementation period. To reach as many nurses in the unit as possible, students attended all three shifts including AM, PM, and NOC. Some students rotated during all shifts, making it difficult to keep track of the nurses who had already completed parts of the intervention. Due to the short implementation period, some of the intervention steps were sometimes condensed into one session with nurses filling out the pre-survey, receiving the education, and completing the post-survey in one sitting. While this made it easier to complete the intervention all the way through and gather multiple nurses for education at once, this may have affected the survey results compared to if there were separate weeks dedicated to one part of the intervention at a time.

A barrier to repositioning labor patients regardless of the level of nurse confidence included the need and ability for continuous EFM, nurse preference, and patient comfort.
Evidence-based practice considers patient preferences and clinical expertise; however, research supports patients to still be frequently repositioned with the evidence-supported positions patients feel comfortable performing. Continuous efforts should still be made to introduce patients to evidence-supported labor positions and improve outcomes of labor. This is especially emphasized for high-risk obstetric patients, such as patients with high BMI, who may be more difficult to reposition but would benefit greatly from frequent repositioning and non-supine birthing positions. Patient safety is the number one priority for nurses to maintain, thus using their clinical judgment and following hospital policies for positions is still recommended.

**Recommendations**

After evaluating the education intervention, it is recommended to extend the implementation period in the next PDSA cycle. A longer education implementation period can account for a longer processing time between the initial education and the post-survey. Extending the implementation period may also address barriers identified in the pre-survey such as short staffing and limited time to perform in-service education sessions. Through qualitative analysis of the post-survey results, nurses indicated a desire for more hands-on demonstration either with a simulation model or on actual patients, and to have posters in patient rooms. The next steps for this project are to make these changes in the next PDSA cycle and further move into standardizing these birthing positions as regular unit practice.

**Conclusion**

Providing education on evidence-based birthing positions to promote fetal descent in the first and second stages of labor is effective in increasing nurse confidence in these positions. By increasing nurse confidence in evidence-based labor positions and taking the next step to apply this knowledge into practice, patient outcomes can be improved by lowering the risk of
emergency cesarean births. Buy-in from key stakeholders should be prioritized for future projects to create more momentum around implementing nurse education and utilizing the knowledge as part of everyday patient care. The results of this project show that standardization of these labor positions is the next step to improving patient outcomes. Additionally, this project highlighted a need for further research on high-risk obstetric patients with comorbidities such as high BMI and consideration of patient safety with those who use epidurals.
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best#:~:text=Santa%20Clara%20Valley%20Medical%20Center%20was%20recognized
%20as%20excellent, were%20delivered%20by%20Cesarean%20section.

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https://www.ncbi.nlm.nih.gov/books/NBK546707/


https://doi.org/10.1097/NMC.0b013e3181caeab3
Appendix A

Student Project Approval: Statement of Determination

Title of Project
Implementing Nurse Education on Evidence-Based Birth Positions for First and Second Stages of Labor to Promote Fetal Descent

Brief Description of Project:
This project aims to improve nurse confidence in evidence-based labor positions to promote fetal descent in the first and second stages of labor. Interventions include an educational handout, demonstrations of positions, pre and post-survey, and a labor positions video.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Students may proceed with implementation.

Comments:

Signature of Supervising Faculty Dr. Nicole Zimmerman, DNP, FW-AC (date) 5/11/2023

Signature of Student (date) 05/09/2023
## Appendix B

### Literature Synthesis Table

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Sample</th>
<th>Outcomes</th>
<th>Level of Evidence</th>
</tr>
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<tbody>
<tr>
<td>Berta, M., Lindgren, H., Christensson, K., Mekonnen, S., &amp; Adefris, M. (2019). Effect of maternal birth positions on duration of second stage of labor: systematic review and meta-analysis. <em>BMC pregnancy and childbirth, 19</em>(1), 466. <a href="https://doi.org/10.1186/12884-019-2620-0">https://doi.org/10.1186/12884-019-2620-0</a></td>
<td>Systematic review and meta analysis. Eight studies with seven randomized control trials and one cross-sectional study.</td>
<td>1,985 laboring women</td>
<td>Upright and lateral positions (flexible sacrum birthing positions) reduced the duration of the second stage of labor among women. Upright positions help the uterus contract stronger and more efficiently, contributing to positioning the baby in an optimal position to pass through the pelvis more quickly.</td>
<td>Level I B</td>
</tr>
<tr>
<td>Kibuka, M., Price, A., Onakpoya, I., Tierney, S., &amp; Clarke, M. (2021). Evaluating the effects of maternal positions in childbirth: An overview of Cochrane Systematic Reviews. <em>European journal of midwifery, 5</em>, 57. <a href="https://doi.org/10.18332/ejm/142781">https://doi.org/10.18332/ejm/142781</a></td>
<td>Three Cochrane systematic reviews with meta-analysis of 65 randomized control trials and quasi experimental studies</td>
<td>18,697 women</td>
<td>Women with no epidural utilizing upright positions compared to horizontal positions during the first stage of labor had significant reductions in cesarean birth rates. Additionally, women with no epidural reported statistically significant results of 1 hour and 22 minutes shorter duration of first stage of labor for upright positions compared to horizontal positions.</td>
<td>Level II A</td>
</tr>
<tr>
<td>Reference</td>
<td>Study Type</td>
<td>Study Details</td>
<td>Findings</td>
<td>Level</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>---------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Hickey, L., &amp; Savage, J. (2019). Effect of Peanut Ball and Position Changes in Women Laboring With an Epidural. <em>Nursing for Women's Health</em>, 23(3), 245-252. <a href="https://doi.org/10.1016/j.nwh.2019.04.004">https://doi.org/10.1016/j.nwh.2019.04.004</a></td>
<td>Quasi-experimental study</td>
<td>343 participants with 164 women in the peanut ball (PB) group. Women using a PB after epidural placement with removal of PB at the second stage of labor (full dilation, effacement, and descent) were 50% less likely to result in a cesarean birth compared to the comparison group (no PB). Length of first and second stages of labor were shortened by frequent position changes which included side lying, semi-sitting lunge, and tuck.</td>
<td>Level II A</td>
<td></td>
</tr>
<tr>
<td>Bueno-Lopez, V., Fuentelsaz-Gallego, C., Casellas-Caro, M., Falgueras-Serrano, A. M., Crespo-Berros, S., Silvano-Cociner, A. M., Alcaine-Guisado, C., Zamoro Fuentes, M., Carreras, E., &amp; Terré-Rull, C. (2018). Efficiency of the modified Sims maternal position in the rotation of persistent occiput posterior position during labor: A randomized clinical trial. <em>Birth (Berkeley, Calif.)</em>, 45(4), 385–392. <a href="https://doi.org/10.1111/birt.12347">https://doi.org/10.1111/birt.12347</a></td>
<td>Randomized control trial</td>
<td>119 patients with epidural, n=59 in Sims position group, n=60 in free position group. Sims positioning with upper leg on the stirrup led to 50.8% spontaneous rotation of fetal head to occiput anterior compared to the free position group, which was 20.7%. Sims position group resulted in increased vaginal deliveries (84.7%) and lower cesarean births (15.3%) compared to free position group which had a vaginal delivery rate of 68.3% and cesarean birth rate of 31.7%.</td>
<td>Level I A</td>
<td></td>
</tr>
<tr>
<td>Zwelling E. (2010). Overcoming the challenges: maternal movement and positioning to facilitate labor progress. <em>MCN. The American journal of maternal child nursing</em>, 35(2), 72–80.</td>
<td>Systematic review including randomized control trials</td>
<td>Laboring patients from 1975-2009. The durations of first and second stages of labor were shorter for women who were upright compared to a flat or recumbent position. Maternal position changes during labor, especially upright positions have been</td>
<td>Level II A</td>
<td></td>
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</tbody>
</table>

| Upright positions and movement increase the strength of contractions, strengthen pelvic floor muscles, increase pelvis diameter, and consequently help progress fetal descent which led to a decreased rate of operative births. Upright positions utilize gravity to bring the baby down while frequent maternal position changes move pelvic bones, helping the baby down into the pelvis. | Quasi experimental study | 100 primipara women in the first stage of labor. N=50 in recumbent group, n=50 in upright group. | Level II A |
## Appendix C

### SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Low-cost intervention for equipment, education space, and resources</td>
<td>● Unpredictability of birthing process and patient needs: need for continuous electronic fetal monitoring restricts repositioning efforts</td>
</tr>
<tr>
<td>● Relatively low time commitment</td>
<td>● Time constraints for project implementation and nurse education</td>
</tr>
<tr>
<td>● Support from the staff developer and nurse champions</td>
<td>● Limited supplies and equipment for birth</td>
</tr>
<tr>
<td>● County hospital: government funding for quality improvement initiatives and use of evidence-based practice is mandated by the county</td>
<td></td>
</tr>
<tr>
<td>● Research and teaching hospital: resources and leverage to implement evidence-based quality improvement projects</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Increase nurse knowledge and confidence on birthing positions that increase positive maternal outcomes during labor</td>
<td>● Lack of evidence-based research on high-risk obstetric patients</td>
</tr>
<tr>
<td>● Improve patient outcomes: progress fetal descent, shorten the duration of first and second stages of labor, lower rates of cesarean births</td>
<td>● Unpredictable shift flow in the labor and delivery unit: nurses are unable to have scheduled time for education</td>
</tr>
<tr>
<td>● Contribute research and results to current existing literature</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix D

### Plan Do Study Act (PDSA) Cycle

<table>
<thead>
<tr>
<th></th>
<th>P</th>
<th>D</th>
<th>S</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plan</strong></td>
<td>• Conduct research and literature review</td>
<td>• Administer nursing staff pre-survey</td>
<td>• Analyze data comparing pre- and post-survey results</td>
<td>• Evaluate effectiveness of interventions</td>
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<tr>
<td></td>
<td>• Create pre-survey and education poster handout for nurses summarizing optimal birth positions for 1st and 2nd stages of labor</td>
<td>• Distribute educational handout to all nursing staff</td>
<td>• Present results and findings to nursing staff</td>
<td>• Adjust and repeat PDSA cycle based on evaluation</td>
</tr>
<tr>
<td></td>
<td>• Create PowerPoint education for team to reference when educating nursing staff</td>
<td>• Conduct educational demonstration of birthing positions</td>
<td></td>
<td>• Identify position education needs for future quality improvement interventions</td>
</tr>
<tr>
<td></td>
<td>• Meet with nurse leader to determine unit needs</td>
<td>• Administer post-intervention survey</td>
<td></td>
<td>• 5P’s microsystem assessment</td>
</tr>
</tbody>
</table>
Appendix E
Educational Handout

Positions for 1st and 2nd Stages of Labor

**Terminology**

**Upright Position:**
Spine is over a 45 degree angle and vertical (Kikuba et al., 2021).

**Flexible Sacrum Positions:**
Birth positions that take body weight off of the sacrum (Edqvist et al., 2016). Promotes vaginal delivery and birth outcomes by allowing the pelvic outlet to expand more (Berta et al., 2019).

**Non Flexible Sacrum Positions:**
Birth positions that put body weight on the sacrum (Edqvist et al., 2016).

**C-Curve (Spinal Flexion):**
Curving the spine forward in flexion to better align the uterus with the pelvis and the fetal presenting part with the pelvic inlet (Zwelling, 2010).

**Flexible Sacrum vs. Not Flexible Sacrum**

<table>
<thead>
<tr>
<th>Flexible Sacrum:</th>
<th>Non-flexible sacrum:</th>
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<tbody>
<tr>
<td>Upright positions</td>
<td>• Supine</td>
</tr>
<tr>
<td>• Standing</td>
<td>• Lithotomy</td>
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<tr>
<td>• Kneeling</td>
<td>• Recumbent</td>
</tr>
<tr>
<td>• Hands and knees</td>
<td>• Semi Recumbent</td>
</tr>
<tr>
<td>• Squatting/Assisted Squat</td>
<td></td>
</tr>
<tr>
<td>• Lunging</td>
<td></td>
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<tr>
<td>Side-lying</td>
<td></td>
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<tr>
<td>• Left and Right Lateral</td>
<td></td>
</tr>
<tr>
<td>• Sims/Modified Sims</td>
<td></td>
</tr>
</tbody>
</table>

**Effects of frequent maternal position changes**

- Shortens the duration of 1st and 2nd stages of labor
- Promotes progress of labor
  - Immobility decreases the baby’s ability to engage into the pelvis, descend, rotate, and find the best fit.

**References**
Positions for 1st and 2nd Stages of Labor

**Stage 1**

- **Epidural**
  - **Side-Lying / Lateral**
  - Peanut Ball: less likely to result in a cesarean birth, shortens duration of 1st stage of labor.
  
- **Upright**
  - Throne

- **No Epidural**
  - **Upright**
    - Squatting (Assistive)  
    - Sitting
  - Kneeling
  - Ambulation
  - Lunging

  Associated with shorter duration of 1st stage of labor and reduced cesarean births.

**Stage 2**

- **Epidural**
  - **Upright**
    - Sitting, Kneeling, Throne
    - Accelerates progress, facilitates stronger contractions, shortens duration of 2nd stage of labor.

- **No Epidural**
  - **Upright**
    - Throne with birthing seat
  - **Side-Lying / Lateral**
    - Left or Right Lateral
    - At least a 30 degree incline results in more spontaneous vaginal births among nulliparous women.

  - Peanut Ball
  - Less likely to result in a cesarean birth compared to no peanut ball (taken out at full dilation and effacement). Shortens duration of 2nd stage of labor.

  - Sims/Modified Sims with Stirrup
  - Reduced cesarean births.

  (Bueno et al., 2015)

- **No Epidural**
  - **Upright**
    - Squatting, Sitting, Kneeling, Lunging, Standing
    - Shortens duration of 2nd stage of labor.

  - Hands and Knees
  - Lower cesarean birth rates.
Appendix F

Fishbone Diagram
# Appendix G

## Gantt Chart

### Gantt Chart Timeline

<table>
<thead>
<tr>
<th>TASKS</th>
<th>JANUARY</th>
<th>FEBRUARY</th>
<th>MARCH</th>
<th>APRIL</th>
<th>MAY</th>
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<tr>
<td></td>
<td>WEEK 1</td>
<td>WEEK 2</td>
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</tbody>
</table>

**Legend**
- Blue: Project Initiation
- Red: Project Planning
- Orange: Project Implementation
- Yellow: Project Evaluation

### Project Initiation
- Project Initiation Team Meeting: 1/13/23 to 1/31/23, Duration: 2 weeks
- Literature Review and Research: 2/1/23 to 2/18/23, Duration: 5 weeks

### Project Planning
- Survey Creation: 2/19/23 to 3/1/23, Duration: 3 weeks
- Meeting with Staff Developer: 3/1/23 to 3/12/23, Duration: 1 week
- Creation of Educational Handouts and Flyers: 3/1/23 to 3/12/23, Duration: 2 weeks
- Microsystem Assessment: 3/8/18 to 3/17/18, Duration: 2 weeks

### Project Implementation
- Administer Pre-Survey: 3/9/23 to 3/22/23, Duration: 3 weeks
- Implementation of Nurse Education: 3/13/23 to 4/14/23, Duration: 4 weeks
- Birthing Positions Video Creation: 4/16/23 to 4/21/23, Duration: 1 week

### Project Evaluation
- Administer Post-Survey: 4/14/23 to 4/21/23, Duration: 2 weeks
- Data Evaluation and Analysis: 4/21/23 to 5/5/23, Duration: 3 weeks
- Present Results to Unit Staff and Staff Developer: 5/9/23 to 5/12/23, Duration: 1 week
Appendix H

Pre-Survey

1. What is your name?
2. What is your education level (certificate, ADN, BSN, MSN etc.)?
3. What positions do you usually assist patients to during the FIRST stage of labor?

<table>
<thead>
<tr>
<th>STAGE 1 LABOR: Describe your confidence level for each position or activity: *</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Not confident at all</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Assisting patients to walk</td>
</tr>
<tr>
<td>Kneeling position</td>
</tr>
<tr>
<td>Lunging position</td>
</tr>
<tr>
<td>Backwards sitting (on a chair)</td>
</tr>
<tr>
<td>Sitting position</td>
</tr>
</tbody>
</table>

4. 
5. What positions do you usually assist patients to during the SECOND stage of labor?

<table>
<thead>
<tr>
<th>STAGE 2 LABOR: Describe your confidence level for each position or activity: *</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Not confident at all</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Hands and knees position</td>
</tr>
<tr>
<td>Assisted squat position</td>
</tr>
<tr>
<td>Sitting position</td>
</tr>
<tr>
<td>Side-lying with peanut ball</td>
</tr>
<tr>
<td>Throne (Semi-sitting)</td>
</tr>
</tbody>
</table>
7. 

8. 
9. (OPTIONAL) Are there specific positions that you would like to increase your confidence in?

10. (OPTIONAL) What current barriers, if any, exist that prevent you from increasing your confidence in maternal positioning?

Prior to delivery and excluding vaginal exams, how often do you place the patient in lithotomy position?

- Less than 25% of the time
- 25-50% of the time
- 50-75% of the time
- More than 75% of the time

11.
Are you familiar with flexible sacrum positions versus non-flexible sacrum positions, and their effects on fetal descent?

- Yes
- No

Have you received off-unit training on maternal positioning? (i.e. Spinning babies class)

- Yes
- No