VIDEO PRESENTATION OF ANESTHETIC OPTIONS, RISKS, AND BENEFITS TO WOMEN AGED (18-40) IN THE PRENATAL CLINIC TO IMPROVE ANESTHESIA EFFICIENCY

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The members of the Committee appointed to examine
The project of Gloria Dullinger-Brown find it
Satisfactory and recommend that it be accepted.

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ABSTRACT

Background: Understanding all options, risks, and benefits of epidural and intrathecal injection for anesthesia procedures is a legal component of informed consent. Problems with the informed consent process are considered one of the top ten reasons medical malpractice claims are filed against hospitals and practitioners (American College of Obstetrics and Gynecology, 2021). Labor and Delivery patients pose a unique challenge to obtaining informed consent because these patients may experience extreme pain which may cause them to consent to procedures without decision-making competence. Because anesthesia providers often lack the time needed to adequately explain anesthetic options, risks, and benefits to these patients, explaining the options during the prenatal period would allow for better knowledge acquisition and clearer decision-making. Improving the process and changing when educational information is provided can improve anesthesia efficiency and may help cut down on the 12 to 345 billion dollars' worth of waste and inefficiencies plaguing the healthcare industry (Ostrem, 2019; *Almost 25% of Healthcare Spending Is Considered Wasteful. Here's Why*, 2023). This research utilizes video education in the prenatal period to improve the anesthesia provider's efficiency during the informed consent process.

Methods: Access to video education on anesthetic options, risks, and benefits, was presented to patients during a scheduled visit for the Glucose Tolerance Test at 23-28 weeks gestation. Time spent obtaining informed consent for anesthesia procedures for patients admitted for active labor was collected for patients who viewed video education and those who did not.

Results: The project's aim was to improve anesthesia provider efficiency by two minutes; the results were higher by 32 seconds, resulting in an improvement in anesthesia provider efficiency by 49.55%.

Conclusions: This project supports the use of video education on anesthetic options prior to active labor, using video education as an adjunct to informed consent in an effort to improve anesthesia provider efficiency. Providing patients with information on anesthetic services prior to active labor impacts the provider, the patient, and the legal components of informed consent. It also allows patients time to think about the anesthetic options and ask questions during the consent process. In addition, video education provides more consistent dissemination of information about anesthetic procedures.

Keywords: Multimedia education, informed consent, decision-making ability.

Project Advisor_____
Dr. Cheryl Fischbach

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Video Presentation of Anesthetic Options, Risks, and Benefits to Women aged (18-40) in the Prenatal Clinic to Improve Anesthesia Efficiency

Inefficiencies in informed consent for patients in active labor negatively impact the patient, provider, and healthcare organization. Streamlining the process can decrease the time providers spend obtaining consent. The use of video education of anesthetic options, risks, and benefits as an adjunct to informed consent prior to active labor can result in improved anesthesia provider efficiency. An additional outcome could be improvement in patient knowledge and active engagement in the consent process, and patient and overall provider satisfaction.

Informed consent is a legal process wherein a healthcare provider educates a patient about the risks, benefits, and alternatives of a given procedure, intervention, or clinical study (Richardson, 2020). Informed consent is an ethical and legal obligation of medical practitioners in the United States. It originates from the patient's right to actively decide what happens to their body. The components of consent involve assessing the patient's understanding, recommendations, and documentation of the agreed-upon procedure. Unique concerns in Labor and Delivery require ethical decisions via the informed consent process. Ethical dilemmas may occur because labor unfolds quickly and unpredictably, and people rely heavily on their providers for guidance during birth (Richardson, 2020). Consent is often obtained while patients are experiencing extreme pain from labor, which significantly impacts a patient's ability to participate in the process of informed consent. Patients' ability to focus, ask questions, or understand the information presented on anesthetic procedures significantly impacts their decision-making ability. For example, Ali et al. (2019) found that patients experiencing pain were afraid and less likely to consent to an epidural. If they received this information when they were not in pain, they were more willing to agree to an anesthetic procedure.

Anesthesia providers often encounter situations where they must obtain informed consent when patients are in active labor, making it challenging to convey critical information about options, risks, and benefits before an anesthetic intervention. However, when patients are in pain, providers may limit or omit the required information or be forced to delay the procedure until all components of consent are

completed. Inconsistency in the anesthesia consent process impacts anesthesia providers' efficiency, healthcare costs, patient care, and outcomes.

Shifting education on anesthetic options, risks, and benefits to the prenatal period allows patients not in pain to calmly process the information and better engage in informed consent, in contrast to when they are admitted to the hospital in active labor. This project aims to use video education on anesthetic options as an adjunct to informed consent during the prenatal period to improve anesthesia provider efficiency.

Background

The informed consent process for anesthetic procedures involves the patient and the provider. Addressing all options, risks, and benefits of epidural and intrathecal injection for anesthesia procedures is a legally required component of informed consent. Attempts have been made to improve the informed consent process at the national, state, and organizational levels. Yet, it is still considered one of the top ten reasons medical malpractice claims are filed against hospitals and practitioners (American College of Obstetrics and Gynecology, 2021). Labor and Delivery patients pose complex issues because labor unfolds quickly and unpredictably. Pain from labor negatively impacts decision-making ability, which increases the risk of consenting to procedures with limited or no engagement in the consent process.

Many other factors also influence informed consent, such as the patients' economic, legal, and educational status; their cultural, interpersonal, and religious influences; and their ability to read and comprehend the informed consent (Kinnersley et al., 2013). Therefore, a signed consent document stating that a patient agrees to the stated procedure and that all aspects of the consent process were addressed does not guarantee that the patient's values and priorities have been considered in a meaningful way, nor that the ethical and legal components of informed consent were met (American College of Obstetrics and Gynecology, 2021).

Cook and Loomis (2012) found that a patient's lack of control while in pain can have a negative or positive experience on a woman's recall and perceived experience of the birth process. In addition, multimedia education has been shown to improve the consent process for research participants, indicating

that patients' knowledge of procedures improved (Jimison et al., 1998). Chill et al. (2019) found that "Visualization of complex ideas, interactive learning, and tailoring the information to fit a patient's needs can significantly impact knowledge and satisfaction of the birth process" (p. 1635). Using multimedia education to present prenatal options can enhance anesthetic procedure knowledge, decrease anxiety, and promote patients' decision-making ability (Cheng et al., 2020; Gesualdo et al., 2021).

Not only patients but also anesthesia providers who work with Labor and Delivery procedures verbalize dissatisfaction with the current process, specifically their inability and lack of time to explain all options, risks, and benefits of the selected anesthesia procedure secondary to patients' desire for pain relief (T. Welty CRNA et al., personal communication). The result is an inconsistent explanation or, in some cases, total omission of anesthetic information necessary for informed consent.

Inefficiencies on the clinical side of the healthcare environment costs an estimated $345 billion a year, including services that provide little to no benefit to patients, have the potential to cause harm, incur unnecessary costs to patients, or waste limited healthcare resources (Almost 25% of Healthcare Spending Is Considered Wasteful. Here's Why. 2023). Improvement in the anesthetic process impacts efficiency, thus impacting healthcare costs.

To better understand the amount of time anesthesia providers spend obtaining informed consent, the project leader observed and timed how long it took to explain informed consent before performing a procedure. The timing began when the anesthesia provider introduced themselves and included an explanation of the anesthetic options, risks, and benefits, and stopped when the patients signed the procedural consent form. The time to obtain informed consent ranged from three to twenty minutes. The time spent was significantly impacted by the amount of pain the patient was experiencing. The provider typically asked patients to rate their pain before the procedure. Providers attempted to provide as much information as possible when the patient's pain was rated from eight to ten, but they struggled to address all options, risks, and benefits secondary to the patient's desire for pain relief. Some providers rapidly provided information during contractions because there was limited time between contractions, whereas other providers waited to explain information because patients were experiencing too much pain from

contractions. It was also noted that patients did not ask questions or ask for clarification information during the consent process, they only signed the consent form. The intensity of pain dictated their response.

Improving the process and changing the timing of when educational information is provided to patients can improve anesthesia efficiency and potentially reduce up to $12 to 345 billion of waste and inefficiencies plaguing the healthcare industry (Ostrem, 2019; Almost 25% of Healthcare Spending is Considered Wasteful. Here's Why, 2023). It would also increase provider efficiency, impact patient knowledge and decision-making, enhance provider satisfaction, and may indirectly improve patient outcomes and population health (Team, 2022).

Problem Statement

Patients admitted to Labor and Delivery in active labor often require immediate pain relief, limiting the anesthesia provider's time to explain the legal components of informed consent. The affected population is patients in active labor between the ages of 18 and 40. The problem lies in the timing of the current process for obtaining informed consent limits patients' ability to engage in decision-making and negatively impacts the anesthesia provider's time to explain the options, risks, and benefits of procedures. After all, the exact time of birth is essentially unpredictable, and patients in extreme pain often consent to procedures without decision-making competence (Richardson, 2020). In addition, consent is often obtained while patients are experiencing extreme pain from labor, which impacts a patient's ability to focus, ask questions, and understand the information presented on anesthetic procedures. Ali et al. (2019) found that patients experiencing pain were afraid of consenting to an epidural, but if they received this information when they were not in pain, they were more willing to consider an anesthetic procedure.

Anesthesia providers often encounter situations where they must obtain informed consent when patients are in active labor and convey critical information about options, risks, and benefits of intrathecal, epidural, and intravenous options before an anesthetic intervention. Patients may consent to a procedure with little knowledge about the risks, whether it is appropriate for them, or if there are possible side effects. According to Cheesman et al. (2009), "Anesthesia-related complications were associated

with a one-day increase in the average length of stay and a 22-fold increase in the risk of maternal mortality" (p. 1174). Understanding the risks of anesthetic procedures is a critical component of informed consent that must include the time necessary to provide this information.

Anesthesia providers' lack of time to adequately address the legal components of consent can result in poor patient outcomes and increased healthcare costs. Inadequate informed consent has resulted in low patient satisfaction, compromised treatment adherence, and litigation against medical practitioners (Sherman et al., 2021). Legal claims of lack of informed consent often include inadequate presentation of procedural information, risks, benefits, and alternatives (Raab, 2004). Providing flexible education to patients during the prenatal period can positively impact anesthesia practice and the healthcare community at large. Information provided before a procedure allows patients time to evaluate the procedure, ask questions about options, and improve the patient's overall care. Engaging patients in healthcare decision-making has significant benefits, including higher satisfaction levels with their care, increased knowledge about conditions, tests, and treatment, more realistic expectations about benefits and harms, reduced decisional conflict and anxiety, and improved health outcomes (Krist et al., 2017).

Nurses must continually strive to improve procedural efficiency because doing so directly impacts healthcare costs and quality of care. Nurses play a critical role in affecting change that begins at the bedside but expands to the care system and even up to the organizational level. This is important because efficiency in health systems is a global problem. Efficiency, effectiveness, and equity are synergistic pillars of a quality healthcare system. Improving efficiency in the health system can reduce rising healthcare expenditures. Reprioritization of the timing and delivery method of anesthetic information increases patients' informed decision-making and can be used to address the efficiency, equity, and effectiveness of care (Kanengoni et al., 2020). The implementation of video education in the prenatal period impacted the informed consent process at a local hospital and may impact processes at the national, state, and local levels by promoting the use of video education to improve efficiency, active decision-making, and quality of patient care.

PICOT

In pregnant women aged 18-40, does using video education on anesthetic options during the prenatal period (23–28 weeks' gestation) affect anesthesia providers' efficiency compared to women in active labor receiving verbal anesthetic options?

The women chosen for this project were over 18 due to the different consent processes necessary for patients younger than 18. Patients over 40 are considered high-risk and may have multiple health disparities that are difficult to include in this quality improvement initiative. In addition, the current video is only available to English-speaking patients. The time frame selected for a video presentation of anesthetic options was 23-28 weeks gestation. This time frame was selected based on the patient's downtime while waiting approximately one hour for a blood draw for a glucose tolerance test (GTT). Patients scheduled for GTT were provided an opportunity to access the video on anesthetic options while waiting in the laboratory area. This removed any pressure so that patients could watch it without anxiety, stress, or external influence. This time frame was also selected because it does not impact workflow in the prenatal period, which has specific tasks assigned for each prenatal visit. The content of the video would be readdressed during the patient's prenatal visit at 36-40 weeks' gestation by the Obstetrics and Gynecology (OB/GYN) physician. The sites chosen to implement this project were a prenatal clinic and a Labor and Delivery unit in a local hospital. An average of 1,400 prenatal patients per year are seen in the clinic, with approximately 80% or 1,120 patients requesting anesthesia services, creating adequate access to the target population.

Evidence Search and Synthesis

Evidenced-based practice requires retrieving, analyzing, and synthesizing the best available evidence to support a practice change. To find and retrieve evidence to support a practice change, a search was conducted using Medline, EMBASE, CINAHL, Web of Science, Pub Med, Ovid, and Scopus databases. Search terms for each database used a combination of *"anesthesia," "multimedia," "informed consent," "labor and delivery," " prenatal, education," "patient satisfaction," " anxiety," "anesthesiologist," " nurse anesthetists," "procedures," " labor and delivery," " obstetrics,"*

"efficiency," and "timing." In addition, the University of South Dakota library services were used to obtain additional articles. The dates of inclusion were 2000-2021 and only articles in English were used.

Research articles were examined for inclusion if they addressed the following: informed consent in Labor and Delivery patients, the education of patients and informed consent, education on anesthetic procedures before surgery, obstetrics and informed consent, the timing of education for anesthetic procedures, multimedia use before surgery and impact on the patient, anesthesia providers' informed consent in Labor and Delivery, the impact of pain in Labor and Delivery and other surgical procedures, the time required for to explain the risks, anesthesia provider efficiency in Labor and Delivery, and the cost of anesthesia for Labor and Delivery. Twenty articles were used from this search.

In a synthesis of seven randomized control studies, Metterlein et al. (2021) evaluated the use of video information given before a pre-anesthetic interview. Their findings showed that video education during the preoperative period immediately before surgery did not impact the patient's knowledge. The authors also discussed providing information before the day of surgery, specifically educating patients during the prenatal period. Lastly, they addressed the negative impact of providing information immediately before a procedure, secondary to providers' time constraints, the duration of a preoperative interview, and patient anxiety. However, the article did not address the depth or quality of the information provided, the length of time providers spent providing information, or the impact on the provider's efficiency. Snyder-Ramos et al. (2005) compared face-to-face interviews, documentary videos, and educational brochures to address patient knowledge and provider and patient satisfaction. Results indicated that video education was better than face-to-face and brochure instructions because patients could recall the information presented, and it could be helpful in patients with language barriers. This research supports the value of video education, yet it does not address a specific time to present information or how this improves anesthesia provider efficiency or process.

Another related option is video-assisted consent, which utilizes interactive media to assess the patient's knowledge during video education, where a digital signature for consent is included. Lin et al. (2018) found that the video-assisted group had higher knowledge scores. The patient's age, injury severity

score, and baseline knowledge scores affected the differences, but overall, video education increased understanding of risks, options, and benefits. Lee et al. (2003) also studied the impact of media, such as video and printed information, on patients' anxiety and knowledge. Their results demonstrated the timing for presenting education was essential to knowledge acquisition, and an increase in knowledge when shown a video; however, satisfaction scores on video use were inconclusive. The results support presenting educational information before the day of a procedure because anxiety impacts knowledge acquisition. The appropriate time before a scheduled procedure was not addressed by Lee et al. (2003), yet their study provided support for presenting educational information before the date of the procedure. Gesualdo et al. (2021) compared the ability of multimedia and non-digital tools to provide patients with understandable information to achieve the informed consent process goals. Interactive multimedia tools gave patients a better understanding of the information presented than non-digital informed consent.

Gesualdo's research supports a change in the current consent process and the positive impact multimedia tools can have on patients' understanding. Still, it does not address the specific time before a procedure to present the information, or the impact pain could have on efficiency. Wada et al.'s (2019) results indicate insufficient evidence of laboring women's ability to give informed consent for epidural anesthesia during labor; thus, the timing of information before a procedure was important. The authors' research addressed the problem of providing patients with information when they are in pain and its impact on the patient's ability to give informed consent. Although their study did not specifically address the provider's efficiency, it did address how changing a current process can improve provider satisfaction, patient quality, and healthcare costs.

Cheng et al. (2020) addressed the impact of education on epidural anesthesia during the prenatal period and before labor begins. The researchers identified higher scores on comprehension, understanding of potential complications, and expectations of epidural anesthetics. They also support utilizing education in the prenatal period, specifically before labor begins. Their research addressed the impact that this could have on healthcare outcomes but did not address the impact on provider efficiency. However, improvement in the process does impact provider efficiency, which can be inferred from this research.

Results from Purcell-Jones et al. (2019) were similar to those of Cheng et al. (2020) in that they showed that video education for patients with language barriers improved knowledge, consent, and the timing of information. The study's conclusions addressed the impact of video education on the quadruple aim (enhancing patient experience, improving population health, improving the work life of healthcare providers, and reducing healthcare costs). Both studies support the positive impact of video education yet lack information on when during the prenatal period to present the material. Provider efficiency utilizing video education was not addressed, but this research provided support for process improvement because a change in process can impact provider efficiency.

Two qualitative studies, one by Jimison et al. (1999) and the other by Ali et al. (2019) provide insight into informed consent's complexities and current issues of inadequate information, literacy, and patient participation. Jimison et al. (1999) conducted one of the first qualitative studies to address informed consent by designing a video tool for clinical trials to enhance the process. Their results indicated better patient understanding with videos as opposed to paper documents. Ali et al. (2019) discussed the perspective of the healthcare worker that provided insight into medical providers' issues regarding knowledge, attitude, and practice of labor anesthesia. It specifically addressed the inconsistencies of information provided to patients when obtaining informed consent. Both studies discussed patient knowledge, consent, and the appropriate time to provide information. They also addressed how video education can be used to provide consistent, understandable information but did not address the impact this may have on providers' efficiency.

Celik and Edipoglu (2018) and the American College of Obstetrics and Gynecology (2021) addressed the positive impact of location and time of providing education before active labor and its effect on decreasing anxiety, increasing operational decision-making, and improving informed consent. Though these studies did not address a specific time before active labor to present information, they supported a similar change in current practice.

Three studies addressed decision-making and the use of multimedia for education, the need to change current practices (Chill et al., 2019; Kelly et al., 2004), and the positive impact on patients'

experiences and philosophies of decision-making (Yuill et al., 2020). These articles addressed the problems with the current practice of informed consent, the need for more consistency among providers in addressing the legal components of consent, and the difficulty of managing informed consent because it involves understanding the individual's beliefs, background, age, and educational level. The information contained in these articles supported changing the current process to one that provides educational information that is understandable, consistent, and meets the legal requirement of informed consent (see Appendix A).

Synthesis: Recommendations for Practice

There are consistent themes in each of the articles reviewed, specifically the need for a change in the informed consent process, the challenge of women in pain giving informed consent, the appropriate timing of procedural information before active labor, and practitioners' inconsistency in providing information on all risks associated with epidural and spinal anesthesia. The use of video education was also supported as a tool to improve knowledge satisfaction and active decision-making. Video education also provided information that was consistent and complete. Collectively, these research articles supported a change in practice for the delivery of anesthetic options, risks, and benefits before active labor.

Research findings also indicated that the time and setting are critical when educating Labor and Delivery patients. The most appropriate time is when patients are not experiencing anxiety or pain. The exact time that is best to present information has not yet been established. Still, research supported providing the information well before patients are scheduled for a procedure (such as during prenatal clinic visits).

Providing information well before a scheduled procedure allows patients time to formulate and ask questions, improves their knowledge retention, and allows them to consider their values and preferences in light of the procedure. In addition, video education has increased patients' knowledge of procedures and provides more consistent presentation of information, including the ability to review the presented information multiple times.

Research findings supported both the need to update the informed consent process for anesthetic options for active labor patients as well as the use of video education well before the onset of labor. Though the research did not explicitly address the impact on healthcare costs, improvement in efficiency and efficacy tends to decrease costs. Changing healthcare processes that improve patient care quality, efficiency, and outcomes impacts healthcare costs (Jones et al., 2019). A change in the process that improves efficiency and quality of care saves time and money by providing a higher quality of service that is quicker, includes fewer errors, improves patient satisfaction and costs less (Process Efficiency: Make Use of Resources & Bull, 2021). Implementing processes that enhance patient knowledge, decision-making, and satisfaction positively impact population health. Improving the current process directly impacts providers' satisfaction because it addresses the time allowed for informed consent, an issue that has plagued anesthesia providers in Labor and Delivery. The process change must begin at the macro level of the health system. The body of evidence presented supports the overall aim and purpose of this project.

Conceptual and Theoretical Framework

Many different conceptual models and theoretical frameworks are available to address change at the healthcare system's micro, meso, and macro levels. Choosing the best fit is critical for successful quality improvement. Microsystems consist of interprofessional team members who provide direct care to the patient; mesosystems link microsystems together to allow them to move from disparate units to those that support patients along their continuum of care; and macrosystems refer to policy or organizational levels (Institute of Health Improvement, n.d.). A conceptual model provides a framework for reflection, observation, and interpretation of phenomena that specifically provides guidelines and guidance for aspects of clinical practice (Vieira et al., 2021). The Plan, Do, Check, Act model (PDCA) is one example that offers a structured experimental learning approach for testing changes. This cycle helps practitioners with three things: first, learning as quickly as possible whether and how an intervention works in a particular setting; second, what adjustments are necessary to increase the chances of delivering and sustaining the desired improvement; and third, whether to stop the intervention and try something else

(Vieira et al., 2021). This model provided the structure and ability to make the necessary adjustments in the prenatal clinic using video education to achieve improvement in anesthesia provider efficiency.

This project was also guided by a strong change model. John Kotter's 1996 eight-step change model includes the following: creating urgency, forming a powerful coalition, creating a vision for change, communicating the vision, removing obstacles, creating short-term wins, building on change, and anchoring the changes in corporate culture (Carson, 1997). Though the specifics of this proposal were developed at the micro and meso level, this organizational model is important for ensuring this project's organizational commitment and sustainability. Organizational commitment is essential to building, implementing and sustaining a project within an organization.

FOCUS-PDCA

The FOCUS-PDCA conceptual model was useful in addressing problems involving multiple care systems. FOCUS is an acronym for finding, organizing, clarifying, understanding, and selecting (see Appendix B). PDCA is an acronym for plan, do, check, and act (Bader, 2003). FOCUS provided structure and clarity of the problem and encouraged staff and healthcare systems input and involvement. PDCA provides a simple and effective approach to solving problems and managing change. It is useful for this project because it allows for testing improvement measures on a small scale that can be adjusted based on feedback before establishing practice change throughout the larger organization. The steps utilized to address the problem started with finding (F) and identifying a problem, followed by (O) organizing a team of stakeholders, (C) clarifying the situation through observation using the information gathered to, (U) understanding the problem and, (S) selecting an appropriate intervention (see appendix C). The following section will describe the plan, do, check, and act steps.

Methodology

This project addresses anesthesia providers' lack of adequate time to explain options, risks, and benefits to patients in active labor. Changes consisted of a shift from explaining aesthetic options in the practice setting to the prenatal clinic when patients were not in pain. The process involved video education as an adjunct to informed consent. The practice change aims to impact anesthesia providers'

efficiency in performing informed consent for invasive pain control interventions for patients in active labor. The objective is to use video education in the prenatal period (23-28 weeks' gestation) to improve anesthesia providers' efficiency in obtaining informed consent by 20 percent (2 minutes) for patients admitted in active labor. Through observation, the estimated time to perform verbal consent in the practice setting discussed in the following section averaged nine minutes; however, this change in the process impacts multiple systems.

Practice Setting

A hospital in northern Minnesota was the location for the quality improvement project. The hospital and clinic, hereto referred to as FL1 is a small clinic and rural hospital within the greater healthcare organization. FL1 is a 60-bed acute care community hospital with outpatient and medical clinics. It is a group practice involving 285 physicians covering 66 specialty areas within the same facility at one location. Currently, FL1 is utilizing Quality Improvement (QI) and evidence-based practice (EBP) projects to promote best practices, increase efficiency, decrease healthcare costs, and improve patient safety and satisfaction (Ali et al., 2022).

The best time to provide information to improve anesthesia efficiency and active patient decision-making is most likely any time before active labor; however, choosing the best time involves understanding the workflow in the prenatal clinic, Labor and Delivery unit, and anesthesia group. Time was spent in each area observing, asking questions, and eliciting feedback. This included gathering patient information about what they wanted for pain relief during labor, knowledge of anesthesia options, perceptions and expectations while waiting for lab draws, and timing how long anesthesia providers spent obtaining informed consent for patients in active labor. The FOCUS model was used to observe, clarify, and understand the process. The project leader spent approximately 80 hours gathering information in the prenatal clinic, Labor and Delivery, and anesthesia prior to the selection of the intervention.

Prenatal Clinic

The prenatal clinic is located within FL1, yet the hospital and clinic interactions are minimal. The clinics are on one side of the facility, and the hospital is on the opposite side. An independent nurse

anesthesia group provides services to the hospital. According to the director of the prenatal clinic, in 2022, the clinic saw more than 2,350 patients, 800 of whom delivered at FL1. Providers at this site bill for Labor and Delivery, while FL1 also charges a facility/technician fee for anesthesia services. An average of 1,400 prenatal patients are seen in the clinic annually for prenatal care; however, not all patients deliver at this site due to bed and nursing shortages. Depending on the care model and insurance, the cost of anesthesia services varies, with $640 being the average cost for labor anesthesia at this site. The average cost for time spent obtaining informed consent is $144, and the time spent obtaining informed consent by anesthesia ranged from three to twenty minutes, resulting in an average time of nine minutes to obtain informed consent by anesthesia providers. Improving anesthesia efficiency by utilizing video education as an adjunct to informed consent can impact anesthesia's time spent on informed consent. For example, a two-minute decrease in the time of the consent process can lower provider costs by an average of $32 per patient. This results in an average cost savings of $25,600 per year for the healthcare organization.

Additional information gathered in the prenatal clinic included how prenatal patients were scheduled and what information was provided to the patient during each visit, including scheduled laboratory tests. Each prenatal visit was scheduled for a specific amount of time. During this time, information was provided, and exams and laboratory visits were completed. The hospital board has established what information should be provided during each prenatal visit. The clinic schedule allows minimal disruption in the current process, with specific time allotted to each patient based on their scheduled prenatal visit.

Several concerns were raised, including whether a change in process would impact the current workflow, the best process to address anesthesia efficiency, and the best time to present information. Team members agreed that it was essential to maintain the current prenatal workflow with minimal disruptions and that a prenatal visit would be the best place to present video education. Based on suggestions made by the nursing assistants and OB/GYN physicians, the time chosen was during a patient's scheduled GTT. This test is done to check for gestational diabetes when patients are 23-28 weeks gestation. Patients scheduled for this visit must wait one hour after drinking a selected glucose drink to

have their blood drawn. Providing patients with video access while waiting for the blood draw allowed them time to view the video during the prenatal visit with minimal disruption in the workflow.

Labor and Delivery Unit

The Labor and Delivery unit comprises five birthing rooms, two triage rooms, and nine postpartum rooms. Staffing fluctuates based on the number of admitted and anticipated patients, and the number of available staff. The process for admittance to Labor and Delivery starts with the patient's call to discuss their current labor symptoms. If the Labor and Delivery nurse decides they should be evaluated, the nurse recommends that they come to the Labor and Delivery unit. Upon arrival, patients are placed in one of two triage rooms for evaluation of labor. Depending on the patients' maternal history, assessment of labor, and laboratory results, patients may be admitted to the Labor and Delivery unit. Once admitted, the nurse must complete an organizational checklist for admittance to Labor and Delivery. The admittance process typically takes one hour, but nurses may rush through this process if the patient is in active labor. Based on the patient's request for pain relief, an anesthesia provider is consulted, who then reviews the patient's medical history, progress in labor, and the best options for pain relief. The provider then proceeds to Labor and Delivery to discuss these options and address the options, risks, and benefits with the patient.

Anesthesia Service

The anesthesia service team provides twenty-four-hour in-house coverage to FL1. One provider is available after 7 pm to cover the operating room, emergency room, and Labor and Delivery unit. Anesthesia's involvement in Labor and Delivery begins with a call from the labor and delivery nurse. The provider then reviews the patient's chart and medical history and proceeds to the Labor and Delivery unit, where they begin the consent process. The consent process is rendered difficult secondary to the amount of pain the patient is in. When patients experience pain from contractions, providers either address the information during a contraction or wait to explain information in between contractions. The time taken to provide this information varies significantly based on the patient's pain and the amount of information provided.

Participants/Sampling

Based on the identified problem, patients selected to participate were women aged 18-40 planning a Labor and Delivery experience within the hospital setting at FL1. Patients who met the age requirement and were scheduled for a GTT at 23-28 weeks gestation were selected to receive access to a video on anesthetic options, risks, and benefits. OB/GYN physicians also reinforced access to this information during patient's prenatal visits at 36-40 weeks gestation. The minimum number of participants decided on was 50 in each group. There would be two groups: those who viewed the video marked as a Yes (viewed the video on the anesthesia provider checklist) and No (did not view the video marked on the anesthesia provider checklist) for a total of 100 participants. According to Bullen (2013), a good maximum sample size is usually around 10% of the population, which allows for a better analysis of the differences between groups. A total of 110 patients participated in the project with 66 in the No group and 44 in the Yes group. Patient participation was voluntary and based on the patient's desire to view information on anesthetic options. Race and education demographic characteristics were not part of the selection process.

Eight nursing assistants and six OB/GYN physicians participated in the process change in the prenatal clinic. One lead OB/GYN physician and one lead nursing assistant were champions for the project and served as the primary contact for the project leader. All ten members of the anesthesia department participated in the process, with the project leader, a nurse anesthetist, serving as the primary contact within the anesthesia department.

Institutional Review Board

The protection of human rights and privacy of healthcare information was submitted to the Institutional Review Board (IRB), which approved study 00017965 and classified it as exempt. The IRB reviews and monitors research involving human subjects (Institutional Review Boards (IRBs) and Protection of Human Subjects in Clinical Trials, 2019). All research involving human subjects must be reviewed to determine whether the research qualifies as no risk or minimal risk to subjects and is exempt from most of the requirements of the Federal Policy for the Protection of Human Subjects (What Does the Term “exempt” Actually Mean in Human Subjects Research?, 2023). A completed social template

protocol (HRP-580) was necessary to receive an exemption from IRB. This form includes research design, participants, risks to patients, Health Information and Privacy Compliance (HIPPA), confidentiality, and consent process. Pregnant patients are considered vulnerable, therefore, a clear depiction of the clinical process and confidentiality was necessary for approval. IRB approval and exemption was granted from the project implementation site (see Appendix D). In addition, it was also necessary to have a letter of support for this project from the FL1 organization as part of the IRB process (see Appendix E). The degree-seeking institutions also granted IRB approval and exemption for the project listed (see Appendix F).

This project focused on only English-speaking prenatal patients. Patients could freely decide whether to view the information during the prenatal period, and all patients who met the project guidelines for inclusion were provided with video information. No patient identifiers were used to indicate whether patients viewed this information or were included on the anesthesia provider checklist. Although there are no patient or provider identifiers on the checklists, the completed forms were stored in a locked anesthesia cart after the procedure. The timing of the informed consent process by anesthesia providers using verbal consent without video started before the project's scheduled start date to ensure an adequate number of participants and the previous historical approach was captured in this group. All members involved in the consent process change treated patients with cultural sensitivity, high ethical standards, and professional integrity as established by the guidelines for practice within the healthcare organization (Fairview Health System Code of Conduct, 2023).

Intervention and Data Collection

To design a project that impacts multiple healthcare providers from the bedside to the organizational level, it was necessary to address how the process would move from one system to another. It is important to discuss the impact the project would have on the organization and the possible obstacles that may be encountered during intervention and data collection. This step required an aerial view of the project to plan an intervention that would be successful and sustainable in the chosen practice location.

Planning

Planning, the first step in the PDCA model, began with the formation of a project team that included the project leader, chief of anesthesia, OB/GYN physician, lead nursing assistant in the prenatal clinic, and Labor and Delivery manager. Members were selected based on their role within each service area, and their role within the organization. Creating buy-in and support from each system was essential to project success. Members of the project team provided insight into protocols, workflow, and Electronic Health Record (EHR) use.

Team members designed a process that utilized current protocols, the electronic health record, and information gathered from observation and interactions to visually depict the project's workflow to clarify the problem (see Appendix G). The project leader performed a literature review, organizational needs assessment, developed a logic model, a project budget with cost-benefit analysis, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, and designed a tool to evaluate anesthesia provider efficiency.

A needs assessment was completed to understand the project's impact on the site selected for implementation. This included an examination of the organization's mission, which addressed safety, continuous quality improvement, and quality of care. The healthcare organization also focuses on inefficiencies in processes that impact organizational costs. The organization's vision focuses on collaborative teams that promote organizational change in efficiency, improved patient outcomes and satisfaction, and decreased healthcare costs. Improving inefficiencies and process improvement aligned with this project. A logic model that can be found on page 82 was utilized to address the resources required for project success.

Logic models are helpful for program planning, implementation, management, evaluation, and reporting. They help define a program's intended impact and goals, the sequence of intended effects, which activities are to produce which effect, and where to focus outcome and process evaluations (Légaré & Witteman, 2013). The logic model addresses the inputs, including the costs necessary for project implementation, specifically personnel time, organization support, funding, materials, and impact on

community and parturient groups. Activities were then developed to address these areas, including checklists, flowcharts, communication processes, and partnerships within the organization and with the community. The logic model also included the training of staff and the tools to be used for evaluation. The outputs included the results of the activities that featured video use in the clinic, an assessment of the workflow process, the collaborative teams in the clinic, and the anesthesia group's use of the process. The short-, intermediate-, and long-term outcomes established a vision for the project's sustainability (see Appendix H). A project budget was developed based on the information gathered from the logic model on page 82.

Budget

The project budget addressed the direct and indirect costs of project development, including a cost-effective analysis (CEA) and cost-benefit analysis (CBA). The CBA evaluated the benefits of a new process or project to the cost of the process or project. The project included a CEA to compare the current processes and evaluate whether a change in the process can be achieved utilizing an alternative method for a lower cost. In addition, the budget included the initial costs of implementation and project sustainability (see Appendix I).

The budget explicitly addressed video production, educational training, and projected hourly personal and personnel costs. The information gathered in the organizational assessment addressed the potential yearly cost savings for improved anesthesia efficiency. This information was then used to perform a CBA that demonstrated progressive improvement in the cost-benefit ratio over time, supporting the sustainability of this project. The CEA also shows progressive improvement, providing further support for this project.

Although the cost for project implementation was high, over $13,800, the estimated cost savings will continue to increase from $25,600 in year one to $29,382 in year two. These calculations included an estimated inflation rate of 7.7% per year. These findings provided additional support for project sustainability, as well as the implementation of this process within the larger FL1 organization, a long-term goal of this project. The next step was to address the organization's readiness for change

Resources

To assess the strengths, weaknesses, opportunities, and threats to this project, a SWOT analysis was utilized to assess the internal and external factors influencing or affecting the implementation of this project (see Appendix J). A SWOT analysis is a tool that can help analyze what an organization currently does best and helps devise a successful future strategy.

The organization's strengths included experienced providers and an established workflow process in the prenatal clinic and in Labor and Delivery unit. In addition, staff members in the prenatal clinic and in Labor and Delivery provided support for change in the current process. The weaknesses include costly video production, multiple organizational systems (hospitals and clinics), previous failed prenatal clinic initiatives, and difficulty identifying the appropriate time to present the information. However, the strengths of experienced providers and established workflow provided insight into how these can be used to address and correct the current weaknesses of this project.

Although video production was costly, the CBA allowed stakeholders to view the sustainable benefits of this project utilizing the attached budget. The initial cost for the project reflected the hours required for initial implementation. However, these costs decrease the longer the process remains established within the clinic and hospital setting. The benefits of the project (cost savings) increase over time, resulting in a decrease of healthcare costs. In addition, analyzing past failed clinic initiatives provided insight into establishing a sustainable project. Specifically, dot phrases provide a written indicator in the medical record during a prenatal visit, instructing the nursing assistant and provider to address specific information. (Dot phrases are commonly used chunks of the text inserted into patient notes by typing a period (the dot) followed by a short user-generated phrase.) Such reminders are critical in establishing and maintaining process change.

The organization’s opportunities include optimized timing of education that leads to a process that reduces costs, operational decision-making by patients resulting in higher satisfaction scores, decreased litigation, improvement in patient decision-making, and better patient outcomes. Allowing patients to utilize a QR code at home and sharing access to video information with other patients can

improve patient and community knowledge. In addition, video education explaining anesthetic and surgical procedures may improve patient understanding, decision-making, and outcomes.

Organizational threats include process change that may be blocked by informed consent litigation, especially because informed consent has historically been a controversial topic. Although electronic consent forms are utilized within the organization, multimedia use as an adjunct to informed consent has limited use. The larger FL1 organization may want to produce a video that its legal department would review for compliance. This threat was addressed by creating a video via an independent group that contracts with the healthcare organization, thereby limiting litigation to the organization.

Another threat was anesthesiologists, who may block implementation of the project due to competitive roles and political conflicts between Certified Nurse Anesthetists (CRNAs) and Medical Doctors of Anesthesia (MDA). However, this was addressed by changing the video's content to include terminology inclusive of both specialties. Additionally, the current organizational initiatives for vaginal births may create educational conflicts with project implementation, but the video also provides information for patients wanting to experience a natural birth process. The parent healthcare organization of FL1 was considering a merger with another powerful healthcare organization during project planning and implementation that could have blocked process change due to organization restructures; however, the merger did not occur. The SWOT analysis was useful in planning a project that impacted multiple systems within FL1 and the greater organization. The next step was addressing the prenatal clinic and anesthesia workflow.

Workflow

A plan for prenatal workflow was developed, including how the prenatal staff would provide patients with the information and how patients would access the information (see Appendix K). The prenatal team suggested the use of dot phrases. Physicians would also use the dot phrase during the patient's prenatal visit at 36-40 weeks to remind patients to review the information. The nursing assistants would complete a checklist that included a suggestion that the video be viewed while waiting for the GTT

blood draw (see Appendix L). The completed checklist would then be placed in a folder on the lead nursing assistant's desk. At the end of each day, the folder was locked in the desk of the lead nursing assistant.

A quick response (QR) code and Uniform Resource Locator (URL) were available in each prenatal care room so patients could access the video (see Appendix M). The YouTube platform was chosen to access the video because of its ease of access, ability to access the site using a smartphone, and ability to keep the video private so that only patients who were given access had the ability to access the video with the designated URL and QR code. Keeping the video private would allow the project leader the ability to track the number of YouTube video views each week. A QR code is a machine-scannable image that can instantly be read using a smartphone camera. When a smartphone scans this code, it translates that information into a web link so users can access a site without needing to type out the URL (Pagin, n.d.). A URL is a unique identifier that can be used to locate a resource online. A URL would allow patients easy access to the educational video on the YouTube platform. Patients were given a handout with this information and instructed to save the link to their iPhone favorites or Android bookmarks. The process began with nursing assistants presenting the QR code, asking patients to save it to their favorites or bookmarks, and directing them to watch a video while awaiting the blood draw. For patients who did not have access to a smartphone, an iPad was available in the clinic provided by the project lead and OB/GYN lead physician.

A checklist for anesthesia providers was developed to capture the time spent in the consent process for patients receiving video education versus those who had not received this information (see Appendix N). This allowed for easy comparison of time spent in obtaining the consent between the two groups when implementing the video education during the prenatal period. Anesthesia providers utilized the Anesthesia Provider Checklist and a stopwatch to document the start time, which was when the anesthesia provider met the patient, and the end time, when the patient signed consent. A stopwatch was available on the anesthesia cart and was used to accurately log the time spent by anesthesia providers. The specific wording anesthesia providers used to ask whether the patient viewed the video was available on

the anesthesia provider checklist, specifically, “Did you review the anesthetic options, risks, and benefits during the prenatal period?” Next, anesthesia providers checked the response on the anesthesia checklist. If “Yes,” providers inquired into and addressed any patient questions, reviewed the information in the video, and documented specific questions on the checklist. If “No,” anesthesia providers proceeded with a verbal discussion of anesthetic options. Once questions were answered, the provider obtained informed consent. The consent process was considered complete after the patient signed the consent form. Finally, when anesthesia providers completed the procedure, they returned the completed form to a folder labeled “completed anesthesia checklist,” which was then locked in the anesthesia provider’s transport cart.

A script was developed and approved by the anesthesia department. An educational video was produced that presented options available during Labor and Delivery. Members of the anesthesia service participated as actors in the educational video and the project leader provided the narration. The video provided a visual and verbal presentation of anesthetic options. It included epidural, intrathecal injection, intravenous, and nitrous oxide risks and benefits, and included a description of the procedure, and showed what was done with a “patient.” The video was uploaded to a private YouTube channel that allowed easy access to the video using a QR code or URL web address. Because the video was private, this allowed the project lead to more accurately track the number of video views.

Before implementation, educational sessions were scheduled with staff members in the prenatal clinic, Labor and Delivery unit, and anesthesia group. These sessions were presented by the project leader. A timeline for the project was presented, followed by a presentation of the video, the process that would be followed in the prenatal clinic, admittance to Labor and Delivery and to anesthesia. This process included the checklists that would be used in the prenatal clinic and by anesthesia, as well as where the checklists would be placed upon completion. In addition, the project leader presented what data would be collected, the number of weeks the project would be implemented and the projected number of participants. The project leader's e-mail and telephone number were also included in the presentation in the case of any problems or questions. Individuals not available for this presentation would receive an electronic copy of the video presentation and information presented during these educational sessions.

Anesthesia providers were instructed to utilize the stopwatch available on the anesthesia cart, so each provider utilized the same instrument to address the time spent in the consent process. Each week, anesthesia providers received a reminder to complete the checklist. In addition, the project leader met with providers in the prenatal clinic to answer questions and collect completed checklists on the Friday of each week. One-on-one sessions were implemented with anesthesia providers to elicit concerns, answer questions, and encourage the completion of anesthesia checklists throughout implementation. The schedule for the project is included (see Appendix O). The project duration was nineteen weeks.

Data Collection Tool

The anesthesia provider's checklist was used to gather information on whether the patient did or did not view the video in seconds. It included the time (in seconds) that providers spent on the consent process. Although the tool utilized for data collection has not been identified as valid or reliable, time can be used to evaluate efficiency. Time can be used to evaluate the impact of doing the same task as before but completing it faster (How to Maximize Your Time Efficiency, 2022). A stopwatch was used to calculate the time. Stopwatches and timers can be used to measure time intervals and are considered valid tools for measuring time (Cyndi, 2004). However, human reaction times can vary from 0.1 to 0.3 seconds with an uncertainty of at least ±0.2 seconds (How to Estimate the Uncertainty in a Stopwatch Measurement?, n.d.); therefore, it is not considered a reliable tool. The total time spent performing informed consent was collected and placed in a Microsoft Excel spreadsheet to be statistically analyzed.

Measures

The three process measures necessary for successful project implementation included the processes within the prenatal clinic, completion of the anesthesia provider checklist, and the number of educational video views. These served as checkpoints for monitoring the implementation of the process necessary for this project's completion. The first checkpoint was in the prenatal clinic, where nursing assistants provided patients with the video. The nursing assistants documented on the checklist whether patients received this information. To evaluate the process measures, the project leader collected the data at the end of each week to check for completeness and the number of patients seen for GTT. Any

concerns with the established process were discussed with the prenatal clinic staff at that time. The second checkpoint was the anesthesia providers' use of the process listed on the checklist, including whether the anesthesia provider asked the patient if they had reviewed the video information and the provider recorded the time spent obtaining informed consent. Anesthesia checklists were gathered weekly and evaluated for documentation or incomplete lists. The final checkpoint compared the number of patients seen in the prenatal clinic for GTT, the number of educational video views, and the number of patients who reported video access. The information gathered each week was used to track the implementation of a new process and its impact on anesthesia provider efficiency. The information obtained each week was placed in an Excel spreadsheet for statistical analysis.

The number of educational video views may reflect more views than the number of patients seen in the clinic because patients may elect to view this information more than one time. However, comparing the number of educational video views to the number of patients seen in the clinic using statistical analysis can be used to address the successful implementation of the project.

The outcome of using these process measures will provide the information necessary to evaluate the overall time spent by anesthesia providers providing informed consent after the implementation of video education. These processes will also evaluate if the steps of implementation are being followed by the interprofessional team to improved anesthesia efficiency.

Project Timeline

The timeline for the DNP project began with approval of the DNP in December 2022. A preceptor and clinical site for project implementation was secured in January 2023. This was followed by completion of Collaborative Institutional Training Initiative (CITI), a web-based program designed to provide training on human subject research and what is required for various research projects. It is also a requirement for investigators who submit applications for IRB approval.

The project was then submitted and received IRB approval in March of 2023. Video production started in February 2023 and was completed in April 2023. Planning the first step in the PDCA model was also completed in April 2023. Implementation and data collection began in May 2023 and ended

nineteen weeks later in September. At the conclusion of implementation, the data was analyzed and utilized for the written project, and the final presentation to the committee took place in March 2024.

Implementation

The next step of the PDCA model was “Do,” which involved implementing the process within the prenatal clinic and with the anesthesia providers to determine which modifications must be made. Implementation of the video and process change spanned nineteen weeks. After approximately three weeks into implementation, prenatal staff and OB/GYN physicians stated that they were presenting the information to patients at 36-40 weeks gestation. Although the plan was to present the information to patients during their GTT, it did not address when physicians would begin reinforcing it. Therefore, the process was modified so that physicians continued to present this information during these visits because it was done before active labor.

Completed prenatal checklists were gathered on Friday of each week. The total number of completed checklists was then added to a Microsoft Excel spreadsheet. The prenatal clinic lead nursing assistant scheduled meetings with the prenatal staff and OB/GYN physicians during weeks four, eight, twelve, and nineteen.

The completed anesthesia checklists were also gathered weekly and placed in a folder. The total time in consent found on each checklist was added to a Microsoft Excel spreadsheet. The project leader was a member of the anesthesia group, and therefore, was able to have frequent one-on-one meetings that encouraged staff to complete the checklists. The project leader was also able to track when patients were admitted to Labor and Delivery, as a normal part of the anesthesia providers' role. During the first weeks of implementation, the project leader sent out group text messages reminding the staff assigned to service Labor and Delivery to complete the anesthesia checklist, use the stopwatch to track time in the consent process, and ask the patient whether they watched the video on anesthetic options, risks, and benefits. Comments made by deidentified patients were also added to the spreadsheet.

Monthly updates were provided to the anesthesia staff during early morning meetings. Breakfast meals were provided to encourage their participation and to thank them for their support. During the last

eight weeks of project implementation, weekly updates were sent to the anesthesia group on the total number of participants and encouragement to continue completing the anesthesia checklists.

Labor and Delivery nurses were updated monthly on the status of the project. During implementation, nurses servicing the Labor and Delivery unit were asked to provide the QR code to patients being admitted for induction of labor if the patients did not view the video during the prenatal period. Although the patients were not in active labor when admitted, it was felt that this was not consistent with the newly established process but would be considered after project completion. Each Friday the number of educational video views was recorded on Microsoft Excel spreadsheet. The total number of views for each week was calculated by taking the total views observed each Friday and subtracting that number from the previous weeks' totals. Implementation was completed after nineteen weeks (beginning May 9th and ending September 29th) with a total of 110 completed anesthesia provider checklists, 156 completed prenatal checklists, and 386 YouTube video views.

Analysis

The data gathered was analyzed utilizing the recommendations of a statistician and online consultation from Intellectus Statistics, a company designed to assist with data analysis. The project aim was improvement in anesthesia provider efficiency by two minutes. The time spent obtaining informed consent was the outcome measure analyzed.

Descriptive statistics were also used to evaluate the process change. The number of educational video views and the number of completed checklists were used to indicate providers' use of the established process based on the number of completed checklists per week. The length of time between participants viewing the educational video during their GTT and admission to labor and delivery was not tracked; therefore, anesthesia providers' completed checklists could not be correlated with the number of patients seen in the clinic.

The outcome measure results were "Checked," as part of the PDCA model utilizing descriptive statistics. Descriptive statistics can be used to describe and summarize data, including examining the variable before inferential statistics. They also summarize the data and are used to answer descriptive

research questions (Intellectus Statistics [Online Computer Software], 2023). Descriptive statistics were used to evaluate the time spent on the informed consent process and the process change checkpoints.

Descriptive statistics that included the mean (M), sample minimum (Min), percentage (%), sample maximum (Max), sample size (n), standard deviation (SD), and standard error of the mean (SE m) were calculated for the outcome measure. Frequencies and percentages were calculated for each nominal variable ("No" did not watch the video and "Yes" watched video). Lastly, descriptive statistics were also used to compare the observed number of completed prenatal checklists and the observed number of educational video views per week to evaluate process change.

In addition to descriptive statistics, and an Independent sample t-test were used to determine if there was a significant difference between the two groups. Welch's t-test was used to compare the time spent in the consent process. Welch's t-test is considered a better test than the student's t-test when the sample size and variances are unequal, and it gives statistically the same results when the sample sizes and variances are equal. The sample size for this project was uneven, with 60 participants in the "No" group and 40 participants in the "Yes" group.

Results

The project was guided by output and process measures with each type being statistically analyzed. Thus, each are reported and discussed in the subsequent sections.

Output Measures

The outcome measure for this project was consent time. The process measures were the number of watched educational videos and completed prenatal checklists. The results included 110 participants. All participants were English-speaking and between the ages of 18 and 40. Additional demographic data was not collected on the participants. The intervention was evaluated by comparing the anesthesia provider's time obtaining informed consent in seconds for Labor and Delivery patients who viewed the educational video on anesthetic options versus those who did not.

Descriptive Statistics

The observations for Time spent in the consent process had an average of 220.01 (*SD* = 139.04, SE_M = 13.26, Min = 30.00, Max = 720.00, Skewness = 1.02, Kurtosis = 1.07). Kurtosis measures the tail behavior of a distribution. When the kurtosis is greater than or equal to 3, the variables distribution is different than a normal distribution in its tendency to produce outliers, which is not indicated by this data. Skewness is a measure of symmetry in the distribution of a variable. When the skewness is greater than 2 in absolute value, the variable is asymmetrical about its mean (Westfall & Henning, 2013). The data indicate that the distribution is symmetrical. A symmetrical distribution occurs when variable values exist at predictable frequencies and the mean, median, and mode is all present at the same time. The summary statistics appear in Table 1.

Table 1

Summary Statistics Table for Interval and Ratio Variables

VARIABLE	*M*	*SD*	*N*	SE_M	MIN	MAX	SKEWNESS	KURTOSIS
TIME SPENT IN CONSENT PROCESS	220.01	139.04	110	13.26	30.00	720.00	1.02	1.07

Two-Tailed Independent Samples t-Test

A two-tailed independent samples *t*-test was conducted to examine whether the mean Time spent in the consent process significantly differed between the "No" and "Yes" categories of watched video. An Independent sample t-test was used to determine if there was a significant difference between the two groups.

Welch's t-Test

Welch's t-test was used, which has higher statistical power than the student's t-test when the two samples have unequal variances and unequal sample sizes (Ruxton, 2006). Welch's t-test is considered a better test than the student's t-test when sample size and variances are unequal and statistically gives the same results when the sample sizes and variances are equal. The two-tailed independent samples t-test result was significant based on an alpha value of .05, $t(107.73) = 6.43$, $p <$

.001, indicating the null hypothesis can be rejected. An alpha of 0.05 means there is less than a 5% chance that the data being tested could have occurred under the null hypothesis (Which Alpha Value Should I Use?, n.d.).The finding suggests the mean of Time spent in consent process significantly differed between the N and Y categories of watched video. Frequency analysis of the outcome measure of watched video revealed 60% of the 110 participants indicated “yes” that they had watched the video.

The mean time spent in consent for patients not viewing the video was 275.77 seconds, whereas the meantime for patients viewing the video education was 136.36 seconds. Cohen's d is designed for comparing two groups. It takes the difference between the two means and expresses it in standard deviation units. Cohen’s d for this project is 1.20 (Bhandari, 2020). The degree of freedom was 107.73. Degrees of freedom typically relate to the size of the sample. Higher degrees of freedom mean more power to reject a false null hypothesis and find a significant result (Degrees of Freedom, 2015). The results are presented in Table 2.

Table 2

Two-Tailed Independent Samples t-Test for Time spent in consent process by watched video

	N			Y					
Variable	*M*	*SD*	*n*	*M*	*SD*	*n*	*t*	*p*	*D*
Time spent in consent process	275.77	139.35	66	136.36	87.87	44	6.43	< .001	1.20

Note. N = 110. Degrees of Freedom for the *t*-statistic = 107.73. *d* represents Cohen's *d.*

The mean time spent obtaining consent utilizing verbal information was 275.77 or four minutes fifty-nine seconds, whereas the mean time spent when video education was provided during the prenatal was 136.36 seconds or two minutes, twenty-seven seconds. The time spent in consent for patients receiving video education decreased by two minutes and thirty-two seconds. Descriptive statistics were also used to analyze the process measures. This included number of video views, number of prenatal checklists completed, and the number of video views by prenatal

checklists weekly. Data contained in the Microsoft Excel worksheet was utilized for this analysis and were used to address process change.

Process Measures

The number of patients seen in the prenatal clinic weekly was compared to the number of educational video views. The number of completed prenatal clinic checklists, anesthesia provider checklists, and educational video views was used to monitor and track the implementation and evaluation of the process change. The process measures were monitored weekly to ensure that the outcome measure of improved anesthesia provider efficiency was achieved.

Descriptive statistics were conducted to analyze the number of video views, number of prenatal checklists completed, and the number video views by completed prenatal checklists noted by participants on the weekly prenatal checklist excel spread sheet. Although descriptive statistics are not typically used for process measures, they provide information that can be used to address successful implementation of the process within the prenatal clinic, Labor and Delivery and anesthesia.

The observations for the number of educational video views had an average of 20.32 (*SD* = 6.52, Min = 8.00, Max = 34.00). The observations for the Number of prenatal checklists completed had an average of 8.21 (*SD* = 3.05, Min = 3.00, Max = 15.00). The observations for the Number of YouTube Views by Prenatal Checklists completed weekly had an average of 2.78 (*SD* = 1.28, Min = 1.09, Max = 6.25). The number of views each week was significantly higher than the number of checklists completed indicating that patients were viewing the video but may have viewed the video multiple times. It could also indicate that patients who had received the video access during an earlier visit had elected to view the information again.

The number of video views and the number of prenatal checklists completed weekly were also tracked and compared weekly. Weeks eleven and thirteen showed a significant increase in views. Week eleven had 34 views and week thirteen had 29 views. The reason for this increase

could have been due to FL1 system-wide leadership viewing the video following the project leader's presentation to the greater FL1 organization's Labor and Delivery directors. Another reason may be patients reviewing or viewing the video multiple times as they approached delivery.

The number of completed anesthesia provider checklists were also tracked weekly with a mean of 4.5, that indicated anesthesia providers were using the process. Although the number of completed checklists varied depending on the number of patients admitted in active labor each week the completion of the checklist indicated the process was being utilized.

Patient comments obtained on the anesthesia checklist were also gathered from the anesthesia provider checklist. Although this was not a process measure, it was used to indicate patient engagement in the consent process. Comments when patients viewed the video were: "the video was really good," "I am glad I watched it because I planned a natural delivery but changed my mind," "It was a little long, but I watched the epidural portion," "I am glad I watched it because I planned a natural delivery but changed my mind," "I wish I could have seen this with my first baby; I had a terrible experience with anesthesia and the video help me," " I wanted an epidural but was afraid before I watched the video, it helped my anxiety," and "I don't have any questions; it was really good." Comments when patient did not view the video were "I didn't watch the video; I have had one before," "I really don't want to know anything," and " I was not offered the video."

Discussion

Reprioritization of the timing and delivery method of anesthetic information increases the likelihood of patients making informed decisions and can be used to address the efficiency, equity, and effectiveness of care (Kanengoni et al., 2020). The purpose of this project was to address providers' lack of time to explain anesthesia options, risks, and benefits to patients in active labor by using video education during the prenatal period to impact anesthesia providers'

efficiency. The practice change aims to impact anesthesia providers' efficiency in performing informed consent for invasive pain control interventions for patients in active labor. The objective was to use video education in the prenatal period (23-28 weeks' gestation) to improve anesthesia providers' efficiency in obtaining informed consent by 20 percent (2 minutes) for patients admitted in active labor. A 20 percent improvement in anesthesia provider efficiency was achieved. Data analysis based on the amount of time anesthesia providers spent in the consent process indicates that video education on anesthetic options during the prenatal decreased the amount of time anesthesia providers spent obtaining informed consent by two minutes and thirty-two seconds that meets the objective of this project. The average cost of obtaining informed consent is sixteen dollars per minute or twenty-six cents per second, a cost savings of thirty-six dollars and twenty-four cents per patient. Based on FL1's 800 deliveries each year, the cost savings to the organization would be $28,997, which highlights the clinical significance of this project.

The project's aim was to use video education on anesthetic options as an adjunct to informed consent during the prenatal period to improve anesthesia provider efficiency. Anesthesia provider efficiency during consent required a change in the current process. The outcome measure was a two-minute or 20% decrease in the time providers spend in the consent process. The results were slightly higher by 32 seconds, resulting in significant cost savings and an improvement in anesthesia provider efficiency by 49.55%. Improving the process and changing the timing of when educational information was provided to patients improving anesthesia efficiency, consistent with Ostrem's (2019) discussion of the impact and cost savings of improving inefficiencies. When the process change was analyzed, it indicated a slight positive trend. This was an important finding indicating that the process was implemented in the prenatal period, and patients viewed the video, impacting anesthesia provider efficiency. In addition, the patients' comments: "The video was really good," "I am glad I watched it because I planned a natural

delivery but changed my mind," and "I wish I could have seen this with my first baby; I had a terrible experience with anesthesia and the video helped me," " I wanted an epidural but was afraid before I watched the video, it helped my anxiety," and " I don't have any questions, it was really good" are consistent with Sultan et al.'s (2019) findings on the impact of pain on decision-making and Cheng et al.'s (2020) and Gesualdo et al.'s (2021) use of multimedia education, which enhanced anesthetic procedure knowledge, decreased anxiety, and promoted patients' decision-making ability and the impact of providing education before the patient experience pain. These comments provided additional support for implementing video education in the prenatal period as an adjunct to informed consent before active labor.

Anesthesia providers verbalized support for the process change, specifically patients' understanding of the anesthesia service performed and patient knowledge of the risks associated with the procedure. Similar feedback was received from nurses in Labor and Delivery, who expressed their desire to offer the video to patients who were admitted for elective induction of labor and did not view the video in the prenatal period.

Strong support was received from OB/GYN physicians who felt that the video provided patients with information on anesthetic options and, therefore, patients were better prepared and had time to think about the possibilities. They also felt that the video was a valuable adjunct for them when discussing anesthetic options as patients approached delivery.

The change in process is clinically significant, resulting in improved anesthesia provider efficiency. The positive results, combined with strong support from organizational leaders, providers, and patients, allowed this change to be discussed within the greater FL1 organization. The impact of providing video education prior to anesthetic procedures as an adjunct to informed consent has the potential to change the consent process at the local, state, and national levels. This process allows patients the ability to examine the procedure, understand the options, risks, and benefits, and actively engage in the consent process prior to a procedure.

Limitations

Implementing the process in the prenatal clinic was successful, but the video's English-language narration limited its audience to English-speaking patients only. Closed captions in multiple languages could be more inclusive and provide otherwise overlooked or excluded patients with educational attainment and physical and psychological capabilities. More patients might have viewed the video if it had been available in multiple languages. Although patients were asked to add the QR code and URL address to their phones, there was no way to track whether they viewed this information during the GTT. Patients may have waited to view the information or were not interested in watching the video if they had prior experience with anesthetic services available for labor. Several of the comments made on the anesthesia checklist for not viewing the video were: "I didn't watch the video; I have had one before," " It was a little long, but I watched the epidural portion," " I forgot to view it, but they did provide me with access to the video," "I don't want to know anything" and " I was not offered the video." Although these patients did not view the video before active labor, their comments provided insight into why they did not and how these could be addressed to ensure the sustainability of the process.

Another problem encountered in the prenatal clinic was the ability to track whether OB/GYN physicians reinforced the video as patients approached delivery. A dot phrase served as a reminder for physicians to do this, yet this information was not tracked and may have had a significant impact on the number of educational video views and whether the information was fresh in patients' minds. The number of previous pregnancies and whether the patients had received an anesthesia service may have also impacted whether patients viewed the video.

Another limitation was the situation where patients refused to watch the video because it was not consistent with their birth plan or expectations. In those situations, some may change their mind when their pain threshold is exceeded and want labor analgesia. An unintended consequence and barrier are they will need to give consent while in pain.

The project leader chose to time the consent process before implementing the video. This was done to mitigate concern that there would not be enough participants in the "No" group, which was not the case. Although the aim was to have an equal number of participants in each group, the total number of participants was different, with 20 more patients in the group that did not view the video. However, the unequal numbers did not appear to impact the time in consent.

Although an anesthesia provider checklist was available on the anesthesia cart, not all providers utilized the checklist. Some of the reasons for not completing the checklist were: they were too busy providing other services throughout the hospital, they forgot to do the checklist, or they completed the checklist but forgot to turn it in. Weekly meetings, emails, and one-on-one sessions were essential for checklist completion.

The video was made based on input from anesthesia providers at FL1, however, including system leaders in Labor and Delivery may have provided further support for project sustainability. Each healthcare system within the larger FL1 organization utilizes an array of medications during labor. These may have been incorporated into the video before video production. The inclusion of Labor and Delivery staff and organizational leaders before video production can aid in producing a video that contains medical use, offers versions in multiple languages, and gender-neutral family units.

Another limitation that isn't addressed is anesthesia reimbursement and this is a double-edged sword. The efficiency created by implementing this process clearly saves money for the organization in terms of labor costs. However, it also decreased the amount of revenue that can be billed since labor analgesia at FL1 is billed on base units and time units. Typically, this has a

maximum cap or charge for commercial payors. Therefore, by spending less time with the patient could impact how much time the anesthesia group or hospital can bill. However, the benefit of reducing labor costs, and potential legal exposure still outweighs the reduction in time units reimbursed by insurance companies. Furthermore, patient education and patient satisfaction are key drivers in the market share for OB services.

Kotter's Change Theory

Kotter's (1996) Change Theory was utilized to address the steps necessary for change at the organizational level within the healthcare facility chosen for this project (see Appendix P). Change Theory provides the steps that were used to establish buy-in at the organization and systems level. Kotter's (1996) theory which begins with "creating urgency," was initiated by addressing the need for change in the consent process and used evidence-based research to support this process. This included involving stakeholders and gathering champions at every level of the organization (building a coalition). This coalition consisted of multiple interdisciplinary teams, including the clinic, labor and delivery, and anesthesia. Engaging members of each group built collaboration and support. The vision for improved efficiency and process change was established, and project goals and strategies for implementation and evaluation were addressed. Communicating the vision was initiated by email, phone calls, and direct contact with stakeholders to promote enthusiasm, elicit feedback, and encourage transparency in the project.

For this project's success, obstacles and barriers were addressed by the project leader at the individual and organizational levels. Presenting the benefits and potential gains of the project during weekly (system) and monthly (executive) meetings was essential in gaining and maintaining support and motivation for the project's success. Frequent contact was essential in building trust and developing relationships with providers within each system of care. It was also crucial in maintaining the momentum for the project's success. During project implementation, the number of completed prenatal checklists decreased in weeks eight and seventeen. Scheduling

a meeting the following week with treats provided encouragement and support for their role in the project.

In addition, presenting this project at multiple system meetings helped build additional support from other healthcare team members and provided insight and expertise in project formation, implementation, and evaluation. Establishing collaboration is an essential step in changing and sustaining a process within a complex healthcare system. The final step in Kotter's Change Theory addresses project sustainability by demonstrating a process that improves anesthesia proficiency and can improve provider and patient satisfaction and healthcare outcomes.

Project sustainability or Act is the last step in the PDCA model that involves meetings with organizational leaders, OB/GYN system leaders, prenatal clinic, Labor and Delivery, and Anesthesia staff to present the findings from the process change and the impact on anesthesia provider efficiency. Continuing the process at the local level involved a commitment by the project leader to check in with the prenatal clinic staff and anesthesia providers to sustain the change in the process. It also involved system leaders' engagement and a strategy for implementation of the process change within the larger FL1 organization.

Project Leadership

This project involved multiple interprofessional and interdisciplinary team members. The members included OB/GYN physicians, prenatal nursing assistants, Labor and Delivery nurses, nurse managers from the Labor and Delivery unit and prenatal clinic, and anesthesia providers. Everyone played a critical role in the success and implementation of this project. Nursing assistants were essential in selecting the patients who would receive video education, while OB/GYN physicians reinforced the video at 36-40 weeks’ gestation, and nurse managers and Labor and Delivery nurses were essential in supporting the process and sustaining this project. The team also included staff who work directly with these patients allowing this video to be utilized for patient education before C-sections because it contained information on two of the

anesthetic options commonly utilized for these procedures. It also allowed labor and delivery nurses the ability to provide information on anesthesia procedures to patients who may not have had access to this information during a scheduled induction of labor. Anesthesia providers were essential for gathering and documenting information that could impact efficiency and sustain this project after completion.

Comprehending the complexity of a major healthcare organization and systems at the macro, meso, and micro levels requires an understanding of organizational leadership. Changing a process within a healthcare organization requires leadership that must address the resources and support necessary at each level. Change within a healthcare organization requires support from the administration, multi-professional groups, and front-line workers. Gaining this support required leaders to communicate clearly, utilize evidence to support this change, and create buy-in at every level. Essential information was gathered by developing relationships, attending organizational meetings, and being physically present. It also provided information on which groups and individuals would be included in the project and the leadership and communication style to use within each group.

To develop trust, it was critical for the project leader to be visible and interact in systems and group meetings in order to develop trust. Visibility included transparency about the project, the potential impact, and explaining the processes necessary for implementation. Transparency included presentations, emails, texts, and meetings with multiple interprofessional groups, and established the importance of various forms of communication to address the numerous collaborative groups. Weekly meetings that included meals, cookies, and flowers helped keep the project's momentum moving forward. This was particularly true during week ten when there was a noticeable drop in completed prenatal checklists until providers received a reward for work well done, and the response rate increased. After project completion, the number of patients receiving

information increased, indicating that the process changes continued and would be sustainable in the future.

By utilizing strong leadership skills, multiple relationships were developed that were invaluable in promoting sustainable and continuous change within the healthcare organization. As a nurse leader, being self-aware, knowledgeable, and sensitive to cultural differences has to be handled with empathy, compassion, and leadership that promotes an inclusive culture.

I have established myself in anesthesia as an educator, provider, and leader in independent nurse anesthesia practice, yet instituting a process change required me to assume a new role and expand my professional identity. This role required new leadership skills that included the ability to build trust, and to learn how to correctly use knowledge to implement change.

Future Work

This project focused on anesthesia provider efficiency, whereby the process change impacted both the provider and patient satisfaction and the process of informed consent. It also affected patients' knowledge and their ability to engage in the decision-making process to make well-informed decisions. Further research is necessary to address the impact this project has on the process of informed consent, patient satisfaction scores, knowledge of anesthetic options, risks, and benefits, as well as providers' satisfaction with the process change

Incorporating video education on Cesarean section and anesthesia during the prenatal period is another area that could impact OB/GYN provider efficiency, patient knowledge, and active decision-making. Patients' ability to participate in the decision to proceed to cesarean section when in active labor may benefit from video education during the prenatal period, or video education may be provided as part of the decision-making process when labor progress fails.

Dissemination

Upon completion, this information will be presented to organizational leadership and stakeholders, and it will also be delivered during the monthly OB/GYN and anesthesia meetings to promote the sustainability of this project. The results of this project will be submitted to the American Association of Nurse Anesthesiologists (AANA) for publication. The AANA is the official scholarly journal for nurse anesthesia research, which is published monthly and disseminated to all active and inactive members of the nurse anesthesiology community. As a member of the AANA, information on anesthesia efficiency and improvement in the informed consent process must be shared to encourage further research in this area. This project touches on many areas of informed consent that can be further examined, including improvement in patients' knowledge, active decision-making of patients, and the impact on the provider and patient satisfaction.

Alignment to Professional Standards

Understanding and incorporating all the DNP essentials during the quality improvement project is an essential component of this project, (see Appendix Q). The project utilized the DNP essentials to build a project based on evidenced-based research using research and the PDCA conceptual work to evaluate the change in process and the impact on anesthesia provider efficiency. Building relationships and collaboration with organizational and systems leadership were essential for project success. Technology was a critical component of this project, from video production, patient use, and the ability to track the number of prenatal, anesthesia checklists completed, and number of YouTube videos utilized.

Process change in efficacy impacts patient care at the national, state, and local levels. Improvement in process not only impacts patient efficiency but also impacts patients' ability to actively engage in the informed consent process, a legal component of the informed consent process. Improvement of the process begins at the bedside and expands to the multiple systems

involved in healthcare. These changes impact population health, and improvement of our nation's health, resulting in betterment of and advancement in nursing practice.

Conclusions

This project supports the use of video education prior to active labor to improve anesthesia provider efficiency. Such a change impacts the provider, the patient, and the legal components of informed consent. The use of multimedia education prior to procedures can improve providers' efficiency not only in Labor and Delivery but also prior to scheduled surgical procedures. The use of video education allows providers to reference video content during the consent process and allows patients to ask questions prior to signing consent.

Video education prior to procedures may also aid the preoperative process because it provides patients with a visual depiction of what to expect. Although video production is a major expense, the benefits of using video education can result in decreased healthcare costs. Improved efficiency addresses one aspect of the quadruple aim of healthcare. Further research is necessary to evaluate the impact video education can have on patient and provider knowledge and satisfaction. Research focusing on the intersection of informed consent video education and patient engagement can positively impact consent processes at the local, state, a

References

1.3.5.10. Levene test for equality of variances. (n.d.). National Institute of Standard and Technology. https://www.itl.nist.gov/div898/handbook/eda/section3/eda35a.htm#:~:text=Levene%27s%20test%20(%20Levene%201960)%20is,used%20to%20verify%20that%20assumption

Abuzied, Y., Alshammary, S., Alhalahlah, T., & Somduth, S. (2023). Using focus-pdsa quality improvement methodology model in healthcare: Process and outcomes. *Global Journal on Quality and Safety in Healthcare*, *6*(2), 70–72. https://doi.org/10.36401/jqsh-22-19

Ali, M., Sultan, S., Kumar, A., & Ghouri, N. (2019). Knowledge, attitude and practices of labor analgesia amongst healthcare workers and patients: A single center cross sectional study. *Pakistan Journal of Medical Sciences*, *36*(1). https://doi.org/10.12669/pjms.36.icon-suppl.1715

Ali, M., Sultan, S., Kumar, A., & Ghouri, N. (2022). *Continuous Quality Improvement*. MN Department of Health. https://www.health.state.mn.us/communities/fhv/cqi.html

Almost 25% of healthcare spending is considered wasteful. Here's why. (2023, April 3). Peter G. Peterson Foundation.

Almost 25% of healthcare spending is considered wasteful. Here's why. *Peter G. Peterson Foundation*. https://www.pgpf.org/blog/2023/04/almost-25-percent-of-healthcare-spending-is-considered-wasteful-heres-why#:~:text=Inefficient%20spending%2C%20which%20focuses%20on,or%20waste%20limited%20healthcare%20resources

American College of Obstetrics and Gynecology. (2021). *Informed consent and shared decision-making in obstetrics and gynecology* (Number 819) [Committee opinion]. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2021/02/informed-consent-and-shared-decision-making-in-obstetrics-and-gynecology

Bader, M. K. (2003). Using a focus-pdca quality improvement model for applying the severe traumatic brain injury guidelines to practice: Process and outcomes. *Evidence-Based Nursing*, *6*(1), 6–8. https://doi.org/10.1136/ebn.6.1.6

Bhandari, P. (2020, December 22). *What is effect size and why does it matter? (examples)*. Scribbr. https://www.scribbr.com/statistics/effect-size/#:~:text=Cohen%27s%20d%20is%20designed%20for,lie%20between%20the%20two%20means.%26text=The%20choice%20of%20standard%20deviation,depends%20on%20your%20research%20design

Bullen, P. B. (2013, October 17). *How to choose a sample size (for the statistically challenged) - tools4dev*. tools4dev. https://tools4dev.org/resources/how-to-choose-a-sample-size/

Carson. (1997). Leading change. John P. Kotter, 1996, Harvard business school press, Boston, MA, 187 pages; 24-95. *Competitive Intelligence Review*, *8*(2), 96–97. https://doi.org/10.1002/cir.3880080221

Celik, F., & Edipoglu, I. S. (2018). Evaluation of preoperative anxiety and fear of anesthesia using APAIS score. *European Journal of Medical Research*, *23*(1). https://doi.org/10.1186/s40001-018-0339-4

Cheesman, K., Brady, J. E., Flood, P., & Li, G. (2009). Epidemiology of anesthesia-related complications in labor and delivery, New York State, 2002-2005. *Anesthesia & Analgesia*, *109*(4), 1174–1181. https://doi.org/10.1213/ane.0b013e3181b2ef75

Cheng, W.-J., Hung, K.-C., Ho, C.-H., Yu, C.-H., Chen, Y.-C., Wu, M.-P., Chu, C.-C., & Chang, Y.-J. (2020). Satisfaction in parturients receiving epidural analgesia after prenatal shared decision-making intervention: A prospective, before-and-after cohort study. *BMC Pregnancy and Childbirth*, *20*(1). https://doi.org/10.1186/s12884-020-03085-6

Chill, H. H., Dior, U., & Shveiky, D. (2019). Use of multimedia during informed consent: Novelty or necessity. *International Urogynecology Journal*, *30*(10), 1635–1637. https://doi.org/10.1007/s00192-019-04046-0

Cohen, J. (2016). *Statistical power analysis for the behavioral sciences* [PDF]. https://www.utstat.toronto.edu/~brunner/oldclass/378f16/readings/CohenPower.pdf

Conover, W. J., & Iman, R. L. (1981). Rejoinder. *The American Statistician*, *35*(3), 132–133. https://doi.org/10.1080/00031305.1981.10479330

Cook, K., & Loomis, C. (2012). The impact of choice and control on women's childbirth experiences. *The Journal of Perinatal Education*, *21*(3), 158–168. https://doi.org/10.1891/1058-1243.21.3.158

Correlation confidence interval calculator. (n.d.). Statistics Kingdom. https://www.statskingdom.com/correlation-confidence-interval-calculator.html#:~:text=The%20correlation%20confidence%20interval%20is,exact%20value%20of%20the%20correlation

Cyndi. (2004). *3-stopwatchcolorver.pmd* [PDF]. National Institute of Standards and Technology. https://tf.nist.gov/general/pdf/1930.pdf

Degrees of freedom. (2015). SOS Statistics online support. https://sites.utexas.edu/sos/degreesfreedom/#:~:text=Depending%20on%20the%20type%20of,and%20find%20a%20significant%20result

Fairview Health system code of conduct. (2023). fairview.org. https://www.fairview.org/_/media/Fairview/PDFs/Business-Partners/Fairview---Code-of-Conduct-Policy-5-6-21.ashx?la=en

Gesualdo, F., Daverio, M., Palazzani, L., Dimitriou, D., Diez-Domingo, J., Fons-Martinez, J., Jackson, S., Vignally, P., Rizzo, C., & Tozzi, A. (2021a). Digital tools in the informed consent process: A systematic review. *BMC Medical Ethics*, *22*(1). https://doi.org/10.1186/s12910-021-00585-8

Gesualdo, F., Daverio, M., Palazzani, L., Dimitriou, D., Diez-Domingo, J., Fons-Martinez, J., Jackson, S., Vignally, P., Rizzo, C., & Tozzi, A. (2021b). Digital tools in the informed consent process: A systematic review. *BMC Medical Ethics*, *22*(1). https://doi.org/10.1186/s12910-021-00585-8

Graham. (2011). *Microsoft word - mannwhitneyhandout 2011.doc* [PDF]. http://users.sussex.ac.uk/~grahamh/RM1web/MannWhitneyHandout%202011.pdf

How to estimate the uncertainty in a stopwatch measurement? (n.d.). Tutorchase. https://www.tutorchase.com/answers/ib/physics/how-to-estimate-the-uncertainty-in-a-stopwatch-measurement#

How to maximize your time efficiency. (2022, November 7). Timely. https://timelyapp.com/blog/time-efficiency#:~:text=Time%20efficiency%20is%20doing%20the,get%20it%20done%20in%20one

Institute of health improvement. (n.d.). *Clinical microsystems assessment tools*. Institute for healthcare improvement. Retrieved 2023, from https://www.ihi.org/resources/Pages/Tools/ClinicalMicrosystemAssessmentTool.aspx#:~:text=A%20clinical%20microsystem%20is%20a,embedded%20in%20a%20larger%20organization

Institutional Review Boards (IRBs) and protection of human subjects in clinical trials. (2019, September 11). U.S. food and drug administration. https://www.fda.gov/about-fda/center-drug-evaluation-and-research-cder/institutional-review-boards-irbs-and-protection-human-subjects-clinical-trials#:~:text=Under%20FDA%20regulations%2C%20an%20Institutional,approval)%2C%20or%20disapprove%20research.

Intellectus statistics [Online computer software]. (2023). Intellectus Statistics. https://analyze.intellectusstatistics.com/projects/147204/analyses

Jimison, H. B., Sher, P. P., Appleyard, R., & LeVernois, Y. (1998). The use of multimedia in the informed consent process. *Journal of the American Medical Informatics Association*, *5*(3), 245–256. https://doi.org/10.1136/jamia.1998.0050245

Jones, C., Finkler PhD CPA, Steven A., Kovner, C. T., & Mose, J. (2019). *Financial management for nurse managers and executives* (5th ed.). Saunders.

Kanengoni, B., Andajani-Sutjahjo, S., & Holroyd, E. (2020). Improving health equity among the african ethnic minority through health system strengthening: A narrative review of the new zealand healthcare system. *International Journal for Equity in Health*, *19*(1). https://doi.org/10.1186/s12939-020-1125-9

Kelly, G., Blunt, C., Moore, P., & Lewis, M. (2004). Consent for regional anaesthesia in the united kingdom: What is material risk? *International Journal of Obstetric Anesthesia*, *13*(2), 71–74. https://doi.org/10.1016/j.ijoa.2003.08.002

Kinnersley, P., Phillips, K., Savage, K., Kelly, M. J., Farrell, E., Morgan, B., Whistance, R., Lewis, V., Mann, M. K., Stephens, B. L., Blazeby, J., Elwyn, G., & Edwards, A. (2013). Interventions to promote informed consent for patients undergoing surgical and other invasive healthcare procedures. *Cochrane Database of Systematic Reviews*. https://doi.org/10.1002/14651858.cd009445.pub2

Krist, A. H., Tong, S. T., Aycock, R. A., & Longo, D. R. (2017). Engaging patients in decision-making and behavior change to promote prevention. *Information Services & Use*, *37*(2), 105–122. https://doi.org/10.3233/isu-170826

Lee, A., Chui, P., & Gin, T. (2003). Educating patients about anesthesia: A systematic review of randomized controlled trials of media-based interventions. *Anesthesia & Analgesia*, 1424–1431. https://doi.org/10.1213/01.ane.0000055806.93400.93

Lin, Y.-K., Chen, C.-W., Lee, W.-C., Cheng, Y.-C., Lin, T.-Y., Lin, C.-J., Shi, L., Tien, Y.-C., & Kuo, L.-C. (2018). Educational video-assisted versus conventional informed consent for trauma-related debridement surgery: A parallel group randomized controlled trial. *BMC Medical Ethics*, *19*(1). https://doi.org/10.1186/s12910-018-0264-7

Looney, S. W., & Hagan, J. L. (n.d.). *Section 3.3: Independent t-test assumptions, interpretation, and write up – statistics for research students*. University of Southern Queensland. https://usq.pressbooks.pub/statisticsforresearchstudents/chapter/independent-t-test-assumptions/#:~:text=If%20Levene%27s%20test%20is%20significant,condition%20of%20equal%20variances%20assumed

Looney, S. W., & Hagan, J. L. (2018). *Mann-whitney u test in spss statistics*. Laerd Statistics. https://statistics.laerd.com/spss-tutorials/mann-whitney-u-test-using-spss-statistics.php#:~:text=The%20Mann%2DWhitney%20U%20test,continuous%2C%20but%20not%20normally%20distributed

Metterlein, T., Wobbe, T., Brede, M., Möller, K., Röder, D., Krannich, J., Kranke, P., Tannert, A., & Broscheit, J. (2021). Effectiveness of pre-anesthetic video information on patient anxiety and economical aspects. *Saudi Journal of Anaesthesia*, *15*(2), 127. https://doi.org/10.4103/sja.sja_968_20

Ostrem, H. The staggering cost of inefficient systems in healthcare. *Pulsara*. https://www.pulsara.com/blog/the-staggering-cost-of-inefficient-systems

Pagin, S. (n.d.). *Guide to qr codes for print & how they work*. Creative Marketing by fast print. https://www.fastprint.co.uk/blog/quick-response-codes-what-are-they-and-how-do-they-work.html

Process efficiency: Make use of resources & bull. (2021, October 31). Checkify. https://checkify.com/blog/process-efficiency/

Purcell-Jones, J. A., Haasbroek, M., Van der Westhuizen, J. L., Dyer, R. A., Lombard, C. J., & Duys, R. A. (2019). Overcoming language barriers using an information video on spinal anesthesia for cesarean delivery. *Anesthesia & Analgesia*, *129*(4), 1137–1143. https://doi.org/10.1213/ane.0000000000004243

Raab, E. L. (2004). The parameters of informed consent. *Transactions of the American Ophthalmological Society, 102*, 225–232. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1280103/

Razali, N., & Wah, Y. (2011). Power comparisons of shapiro-wilk, kolmogorov-smirnov, lilliefors and anderson-darling tests. *Journal of statistical modeling and analytics*, *2*, 21–33. https://www.scirp.org/reference/ReferencesPapers?ReferenceID=2050949

Richardson, A. (2020, February 19). *Can bedside consent apps improve informed consent during childbirth?* Bill of Health examining the intersection of health, law biotechnology and bioethics. https://blog.petrieflom.law.harvard.edu/2020/02/19/can-bedside-consent-apps-improve-informed-consent-during-childbirth/

Ruxton, G. D. (2006). The unequal variance t-test is an underused alternative to student's t-test and the mann–whitney u test. *Behavioral Ecology*, *17*(4), 688–690. https://doi.org/10.1093/beheco/ark016

Sherman, K. A., Kilby, C., Pehlivan, M., & Smith, B. (2021). Adequacy of measures of informed consent in medical practice: A systematic review. *PLOS ONE*, *16*(5), e0251485. https://doi.org/10.1371/journal.pone.0251485

Snyder-Ramos, S. A., Seintsch, H., B??ttiger, B. W., Motsch, J., Martin, E., & Bauer, M. (2005). Patient satisfaction and information gain after the preanesthetic visit: A comparison of face-to-face interview, brochure, and video. *Anesthesia & Analgesia*, *100*(6), 1753–1758. https://doi.org/10.1213/01.ane.0000153010.49776.e5

Team, C. (2022, April 11). *What is process improvement: Definition, importance & benefits*. Comidor Low-code Automation Platform. https://www.comidor.com/knowledge-base/business-process-management-kb/what-is-process-improvement/#:~:text=An%20effective%20process%20improvement%20strategy,change%20of%20the%20end%20product

Venngage Editor. (n.d.). Venngage. https://infograph.venngage.com/edit/71d3203a-bf56-4ea6-b143-0876b3d308cf

Vieira, J. V., Deodato, S., & Mendes, F. (2021). Conceptual models of nursing in critical care. *Critical Care Research and Practice*, *2021*, 1–6. https://doi.org/10.1155/2021/5583319

Wada, K., Charland, L. C., & Bellingham, G. (2018). Can women in labor give informed consent to epidural analgesia? *Bioethics*, *33*(4), 475–486. https://doi.org/10.1111/bioe.12517

Westfall, P., & Henning, K. S. (2013). *Understanding advanced statistical methods*. Chapman and Hall/CRC. https://doi.org/10.1201/b14398

What does the term "exempt" actually mean in human subjects research? (2023). UC Santa Barbara Office of Research. https://www.research.ucsb.edu/news/human-subjects-research-integrity/what-does-term-exempt-actually-mean-human-subjects-research#:~:text=Human%20subjects%20research%20that%20is,review%20for%20an%20exemption%20determination

What's the alpha level? (n.d.). Physiotutors. https://www.physiotutors.com/wiki/alpha-level/#:~:text=The%20alpha%20level%20is%20typically,t)%20in%20the%20long%20term

Which alpha value should i use? (n.d.). Scribbr. https://www.scribbr.com/frequently-asked-questions/which-alpha-value-to-use/#:~:text=The%20alpha%20value%2C%20or%20the,occurred%20under%20the%20null%20hypothesis

Yuill, C., McCourt, C., Cheyne, H., & Leister, N. (2020). Women's experiences of decision-making and informed choice about pregnancy and birth care: A systematic review and

meta-synthesis of qualitative research. *BMC Pregnancy and Childbirth*, *20*(1). https://doi.org/10.1186/s12884-020-03023-6

APPENDIX A

EVIDENCE TABLE

Source	Level of Evidence	Reliability	Validity	Types of Evidence	Sources of Evidence	Quadruple Aim	Summary of evidence	Quality rating
Metterlein, T., Wobbe, T., Brede, M., Möller, K., Röder, D., Krannich, J., Kranke, P., Tannert, A., & Broscheit, J. (2021). Effectiveness of pre-anesthetic video information on patient anxiety and economical aspects.	Level of Evidence I Strong evidence	The tool utilized was a condensed version of a validated tool, therefore the results may not be reliable.	The original tool used to address the use of a video to reduce patient anxiety and increase patient satisfaction was valid	Randomized control studies	Multiple articles and Databases were searched. Inclusion of articles was based on level of evidence	The goal was to improve patients' experience by specifically satisfaction that can lead to improved patient emotional health, leading to a reduced cost of mental health and wellbeing. I believe this leads to increased	The utilization of video education can reduce patients' anxiety but may not impact patient satisfaction because there are multiple components that impact patient satisfaction that including	Good Evidence results

						satisfaction by the provider that can significantly affect the emotional health of the provider,	patients' ethnic, religious, geographic, age, cultural, and healthcare beliefs.	
Snyder-Ramos, S. A., Seintsch, H., B??ttiger, B. W., Motsch, J., Martin, E., & Bauer, M. (2005). Patient satisfaction and information gain after the preanesthetic visit: A comparison of face-to-face interview, brochure, and video. *Anesthesia & Analgesia*, *100*(6), 1753–1758	Level of evidence I Strong	This was an older study that utilized a tool developed by the researchers that may not be reliable or valid to address knowledge and satisfaction.	This was a new tool developed by the researcher to address knowledge and satisfaction	This study used previous randomized control studies.	The researcher provides multiple past research articles o knowledge and satisfaction scores for this study	This is an excellent research article that does address patient care/patient experience improvement, population health improvement, healthcare cost	This research is of good evidence but has conflicting results secondary to tool used for knowledge and the inconclusive satisfaction scores.	Good evidence but conflicting results

						reduction, and. provider satisfaction (professional wellness)		
Lin, Y.-K., Chen, C.-W., Lee, W.-C., Cheng, Y.-C., Lin, T.-Y., Lin, C.-J., Shi, L., Tien, Y.-C., & Kuo, L.-C. (2018). Educational video-assisted versus conventional informed consent for trauma-related debridement surgery: A parallel group randomized controlled trial. *BMC Medical Ethics*, *19*(1	Level of Evidence I Strong	Video and questionnaire were developed by a panel of experts in the field. May not be a reliable tool to assess knowledge and satisfaction.	Tool utilized was develop by experts but may not be a valid tool to assess knowledge and patients' satisfaction	Randomized control trials (RCT) and quasi-experimental studies including expert opinion.	Multiple articles were used that focused on RCT and Level of Evidence I and II	Informed consent affects every aspect of healthcare from the patient to the provider. The impact of true informed consent and changing how it is addressed is crucial to the patient,	Excellent research that provides insight in the use of video education as a means of presenting options, risks, and benefits for a procedure. The ability to assess	Good evidence for knowledge but conflicting results for patient satisfaction.

						and provider satisfaction as well as decreasing the cost of litigation and healthcare outcomes.	satisfaction scores was limited.	
Lee, A., Chui, P., & Gin, T. (2003). Educating patients about anesthesia: A systematic review of randomized controlled trials of media-based interventions. *Anesthesia & Analgesia*, 1424–1431	Level of Evidence I Strong	The questionnaire was developed utilizing multiple valid sources. A pilot study was also utilized to test reliability	Validity was established utilizing a pilot study	Evidenced included RCT, quasi-experimental and expert opinion	Multiple databases searched looking for articles done within the last five years	Educating patients utilizing current technology is critical to healthcare and we must look beyond what we are currently doing to change the quality of healthcare	Media based education is critical to providing essential information prior to any procedure. The use of technology can impact consent and education	Strong and compelling evidence that can impact every aspect of healthcare.

							of patients.	
Gesualdo, F., Daverio, M., Palazzani, L., Dimitriou, D., Diez-Domingo, J., Fons-Martinez, J., Jackson, S., Vignally, P., Rizzo, C., & Tozzi, A. (2021). Digital tools in the informed consent process: A systematic review. *BMC Medical Ethics*, *22*(1	Level of Evidence I Strong	A systematic review of digital tools utilized for informed consent in research that critically appraised current technology. This research provides a reliable tool to appraise current digital tool used for informed consent	The research review utilized PRISMA guidelines to structure this review and is a valid tool for a systematic review of evidence.	A review of RCT, quasi-experimental and current opinion.	Multiple databases were utilized that found articles that provided support for this review,	Digital use of informed consent has changed the process of informed consent. It changes many aspects of informed consent. Signing a digital consent does not guarantee that patients receive adequate information for informed consent. The use of technology	This research specifically addresses the limitation of consent and how these tools can be used to improve informed consent.	This is based on strong quality evidence and can produce organizational change.

						can be used as an adjunct to the consent process. This addresses the quadruple aim.		
Wada, K., Charland, L. C., & Bellingham, G. (2019). Can women in labor give informed consent to epidural analgesia? *Bioethics*, *33*(4), 475–486	Level of Evidence I	There were inconsistent results drawn from the research and tools utilized may not be reliable	Survey tools varied and may not be a valid tool to assess women's ability to give informed consent.	Thematic analysis of surveys on informed consent	Multiple database searches on labor and delivery patients.	Researchers specifically address the importance of informed consent to epidural analgesia when they are in pain. This study again addresses the quadruple aim in healthcare. The impact of informed	Although the surveys varied in content and tools may not be valid tool, the literature supports the findings of this research.	

						consent affects every aspect of healthcare from patient satisfaction, provider satisfaction, organizational outcomes and the cost of healthcare.		
Cheng, W.-J., Hung, K.-C., Ho, C.-H., Yu, C.-H., Chen, Y.-C., Wu, M.-P., Chu, C.-C., & Chang, Y.-J. (2020). Satisfaction in parturients receiving epidural analgesia after prenatal shared decision-making intervention: A prospective, before-and-after cohort study. *BMC Pregnancy and Childbirth*, *20*(1).	Level of Evidence I	A before and after study parallel-group randomized control trial	The questionnaire was developed from past valid and reliable forms and piloted prior to use and considered valid and reliable	Study based on extensive literature review and need to evaluate timing and comprehension prior to active	Research supported previous quantitative reviews	Study could change the practice of when education is presented	Results indicate support for providing knowledge of epidural anesthesia during the prenatal period. Impact on pain is	

				labor			also addressed as a component of decision-making.	
Purcell-Jones, J. A., Haasbroek, M., Van der Westhuizen, J. L., Dyer, R. A., Lombard, C. J., & Duys, R. A. (2019). Overcoming language barriers using an information video on spinal anesthesia for cesarean delivery. *Anesthesia & Analgesia*, *129*(4), 1137–1143.	Level of Evidence II Good Quality	The tool was utilized in other systematic reviews; however, the video was developed for the purpose of this review and may not be reliable.	Video validity has not been established, experts in the field developed this video, and should be considered valid.	This study is based the information from past systematic reviews and RCT.	Systematic reviews are excellent sources for valid tools and reliability of instruments. Utilizing video is difficult because it must be based on expert opinion and consensus	Video use can be instrumental in addressing the quadruple aim in healthcare. It provides and adjunct for information and has been shown to impact patient knowledge.	The quality of evidence is good and consistent with past and recent research.	
Ali, M., Sultan, S., Kumar, A., & Ghouri, N. (2019). Knowledge,	Level of Evidence	The questionnair	The tool utilized	Evidence for	The article did not	Healthcare workers'	This article	This was a low-

attitude and practices of labor analgesia amongst healthcare workers and patients: A single center cross sectional study. *Pakistan Journal of Medical Sciences*, *36*(1	III Low Quality	e utilized could not be located based on the resources provided and cannot be considered reliable	could not be located and may not be a valid tool to address attitudes of knowledge and practice.	support was minimal and the articles were not current.	address the sources used for this resource and in the evaluation of the articles they included opinion and consensus.	knowledge and practice are essential in understanding the impact of a change in approach. This was not a valid and reliable research article but addressed an aspect of healthcare that is often under looked.	addressed healthcare workers' impact and issues on informed consent in labor patients. It does address organizational and the professionals' impact on the quadruple aim.	quality research article but added insight into beliefs held by healthcare professionals. It provides little or no evidence, yet it provides insight into healthcare professionals beliefs,
Jimison, H. B., Sher, P. P., Appleyard, R., & LeVernois, Y. (1998). The use of multimedia in	Level of Evidence III of good	This is an older study that utilized	The questionnaire was	Articles used for this	The literature review was	Developing a video affects	This was an older study, but	Good evidence in

the informed consent process. *Journal of the American Medical Informatics Association*, *5*(3), 245–256.	quality	interviews for the development of a multimedia tool for informed consent. This may be a reliable tool for gathering information	developed by the researchers and may have included researcher bias. Validity of tool was questionable	research were qualitative studies on knowledge and comprehension.	extensive on informed consent and multimedia use. Multiple databases were used for article retrieval. Provide strong support for use of a video for informed consent. Sources are greater than 10 years old	patient knowledge and satisfaction. This could decrease healthcare costs, through a decrease in litigation secondary to lack of informed consent.	I believe of good quality. It addressed the need to change the verbal informed consent process because of reading levels, patient understanding, and satisfaction	current research that supports multimedia use.
ACOG Committee Opinion. (2021). *Informed consent and shared decision making in Obstetrics and Gynecology* (Number 819) [Committee Opinion]. American	Level of Evidence IV -Good Quality	The Committee Review and opinion are by leaders in Obstetrics	The Committee specifically addresses the components	Systematic reviews, national guidelines, and quantitati				

College of Obstetricians and Gynecologists Committee on ethics		and Gynecology and is a reliable	of Informed consent and the need for shared decision-making and how this is achieved. This is a valid tool.	ve and qualitative studies were used for this opinion.				
Celik, F., & Edipoglu, I. S. (2018). Evaluation of preoperative anxiety and fear of anesthesia using APAIS score. *European Journal of Medical Research*, *23*(1	Level of Evidence IV -Good Quality	Utilized the APAIS tool to assess patient anxiety. This is a reliable tool.	The APAIS has been used as a valid tool for evaluating patient anxiety	Extensive research on tools to measure anxiety.	RCT, quantitative studies, qualitative studies	Decreasing patient anxiety can impact patient outcomes and hospital costs. Using a tool to evaluate patients' anxiety in the preoperative setting may change how healthcare providers	This was an excellent tool to assess anxiety, but future research will be needed to address the approach that should be utilized when patients are	Strong and Compelling evidence with consistent results.

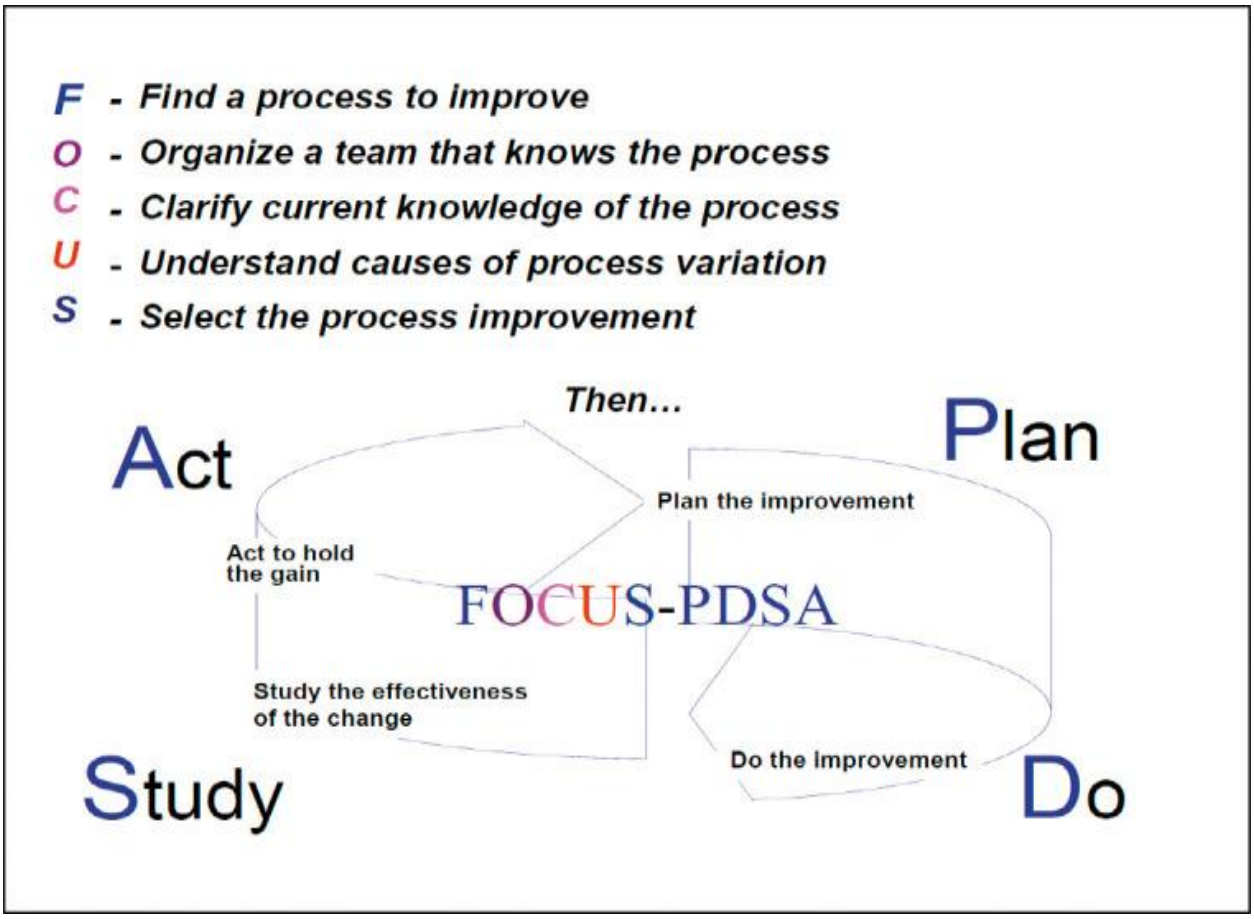
						approach the patient	anxious. Strong and compelling evidence for APAIS use.	
Yuill, C., McCourt, C., Cheyne, H., & Leister, N. (2020). Women's experiences of decision-making and informed choice about pregnancy and birth care: A systematic review and meta-synthesis of qualitative research. *BMC Pregnancy and Childbirth*, *20*(1).	Level of Evidence V Good quality	I believe the meta-synthesis researchers used to obtain the themes and theories of learning are reliable.	I believe the tools used to extract the themes and address learning theories are valid	Qualitative studies (37) included after reviewing 97 multiple levels of evaluation	Multiple qualitative studies utilizing interviews, observation, and surveys making extraction of themes difficult.	The topic of decision-making is addressed at the organizational level because it impacts patient satisfaction and control. This also impacts the healthcare provider and their ability to clearly present	This was an excellent study with good evidence but some conflicting results	Good evidence but conflicting results secondary to the difficulty comparing study methods.

						information that incorporates both the patient and provider.		
Chill, H. H., Dior, U., & Shveiky, D. (2019). Use of multimedia during informed consent: Novelty or necessity. *International Urogynecology Journal*, *30*(10), 1635–1637	Level of Evidence V Poor	Limited research not reliable	Expert in field cannot address validity	Qualitative studies, Joint Commission standards.	Outdated articles.	Addresses the importance of exploring alternative tools to increase patients' knowledge.	Could address quadruple aim	Low Quality
Kelly, G., Blunt, C., Moore, P., & Lewis, M. (2004). Consent for regional anesthesia in the United Kingdom: What is material risk? *International Journal of Obstetric Anesthesia*, *13*(2), 71–74.	Level of Evidence V with Good quality	Could be a reliable tool at the institution but may not be reliable in other organizations.	A valid tool was not utilized.	Quality Improvement project that utilized Standards of Informed coset, Evidence on complicati	The sources used did address healthcare and legal concerns. Used complications of epidural from a prospectiv	Utilized this Quality improvement project to change the practice of what risks should be included when obtaining consent for epidural and	Addresses the quadruple aim	Good overall quality

				ons associated with epidurals and spinals	e two-year study.	spinal anesthesia		

APPENDIX B

FOCUS CONCEPTUAL MODEL



FOCUS-PDSA processes, Abuzied et al., (2023)

APPENDIX C

PDCA CONCEPTUAL MODEL

Venngage Editor, (n.d.)

Bader, M. K. (2003)

APPENDIX D

EXEMPTION DETERMINATION AT PROJECT SITE

On 3/2/2023, the IRB reviewed the following submission:

Type of Review: Initial Study	
Title of Study:	Multimedia education in the prenatal period to improve anesthesia provider efficiency.
Investigator: Gloria Dullinger -Brown	
IRB ID: STUDY00017965	
Sponsored Funding: None	
Grant ID/Con Number: None	
Internal UMN Funding: None	
Fund Management Outside University:	None
IND, IDE, or HDE: None	
Documents Reviewed with this Submission:	• Social Template, Category: IRB Protocol; • 97542204-517c-4971-ab34-647157bc2759.pdf, Category: Consent Form; • FRA Letter of support, Category: Letters of Support / Approvals (Location); • Power point, Category: Other; • 51cc5776-d725-49ab-b1c6-ded3eafcd1e7.pdf, Category: Consent Form; • Consent form, Category: Consent Form; • Epidural narrative, Category: Other; • 4008d508-c02d-4bbf-b59e-571efd67f819.pdf,

Driven to Discover℠

Category: Consent Form:

The IRB determined that this study meets the criteria for exemption from IRB review. To arrive at this determination, the IRB used "WORKSHEET: Exemption (HRP-312)." If you have any questions about this determination, please review that Worksheet in the HRPP Toolkit Library and contact the IRB office if needed.

This study met the following category for exemption:

• (2) Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: (ii) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation

Ongoing IRB review and approval for this study is not required; however, this determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities impact the exempt determination, please submit a Modification to the IRB for a determination.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the HRPP Toolkit Library on the IRB website.

For grant certification purposes, you will need these dates and the Assurance of Compliance number which is FWA00000312 (Fairview Health Systems Research FWA00000325, Gillette Children's Specialty Healthcare FWA00004003).

Sincerely,

Jeffery Perkey, CIP, MLS Senior IRB Analyst

APPENDIX E

FL1 ORGANIZATIONS LETTER OF SUPPORT

University of Minnesota
Institutional Review Board
McNamara Alumni Center - Suite 350-2 200 Oak St. SE
Minneapolis, MN 55455

February 22, 2023

Dear UMN IRB:

Regarding the proposed study submitted by Gloria Dullinger -Brown entitled:

STUDY00017965: Multimedia education in the prenatal period to improve anesthesia provider efficiency.

Fairview Research Administration has reviewed and finds acceptable this research proposal within the context of M Health Fairview involvement.

Please note it is the researcher's responsibility to verify that patients have not opted out of having their records used for research purposes. This review and letter do not replace an IRB or human subjects' protection review.

Sincerely,

Hija Mwadini
Fairview Research Administration Fairview Health Services

APPENDIX F

IRB APPROVAL DEGREE SEEKING INSTITUTION

From:

To:
Subject: Date: Attachments:

do-not-reply@cayuse.com

Fischbach, Cheryl L; Dullinger-Brown, Gloria IRB-23-118 - Initial: Exempt Approval Thursday, May 4, 2023 2:37:10 PM ATT00001.png

ATT00002.png ATT00003.png ATT00004.png

Date: May 4, 2023

University of South Dakota 414 E. Clark Street Vermillion, SD 57069

PI: Cheryl Fischbach
Student PI: Gloria Dullinger-Brown
Re: Initial - IRB-23-118 *Multimedia education in the prenatal period to improve anesthesia provider efficiency.*

The University of South Dakota Institutional Review Board has rendered the decision below for this study. Because this study is exempt, its approval does not expire. Please submit a closure form to the IRB when this study is complete.

Decision: Exempt
Category: Category 2.(ii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording). Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation.

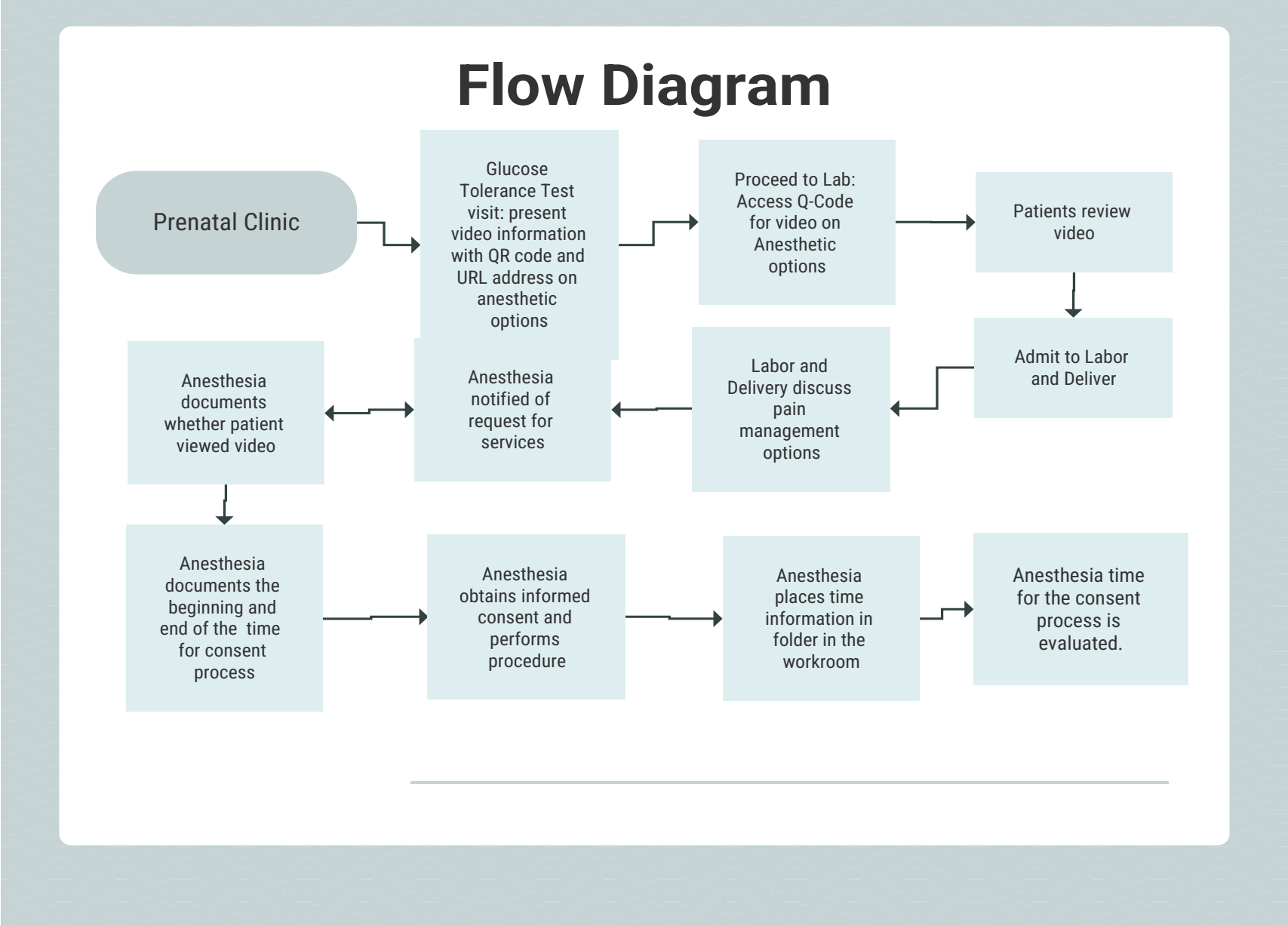
Research Notes: UMN IRB determined this study exempt, but no reliance agreement

Dear Cheryl Fischbach,
The proposal referenced above has received an exempt review and is approved according to the procedures of the University of South Dakota Institutional Review Board.
Annual continuing review is not required for this exempt study. However, two years after this approval is issued, on about May 3, 2025, we will contact you to request an update on the status of this study.
When the study is complete, you must submit a closure form to the IRB. You may close your study when you are finished collecting data, no longer have contact with the subjects, and the data have been de-identified. You may continue to analyze the existing data on the closed project. Please promptly report to the IRB any proposed changes or additions (e.g., protocol amendments/revised informed consents. site changes, etc.) in previously approved human subjects research activities BEFORE you put those changes into place.
Any modifications to the approved study must be submitted for review through Cayuse IRB. All approval letters and study documents are located within the study details in Cayuse IRB.
If you have any questions, please contact: irb@usd.edu or (605) 658-3743.
Sincerely,
University of South Dakota Institutional Review Board

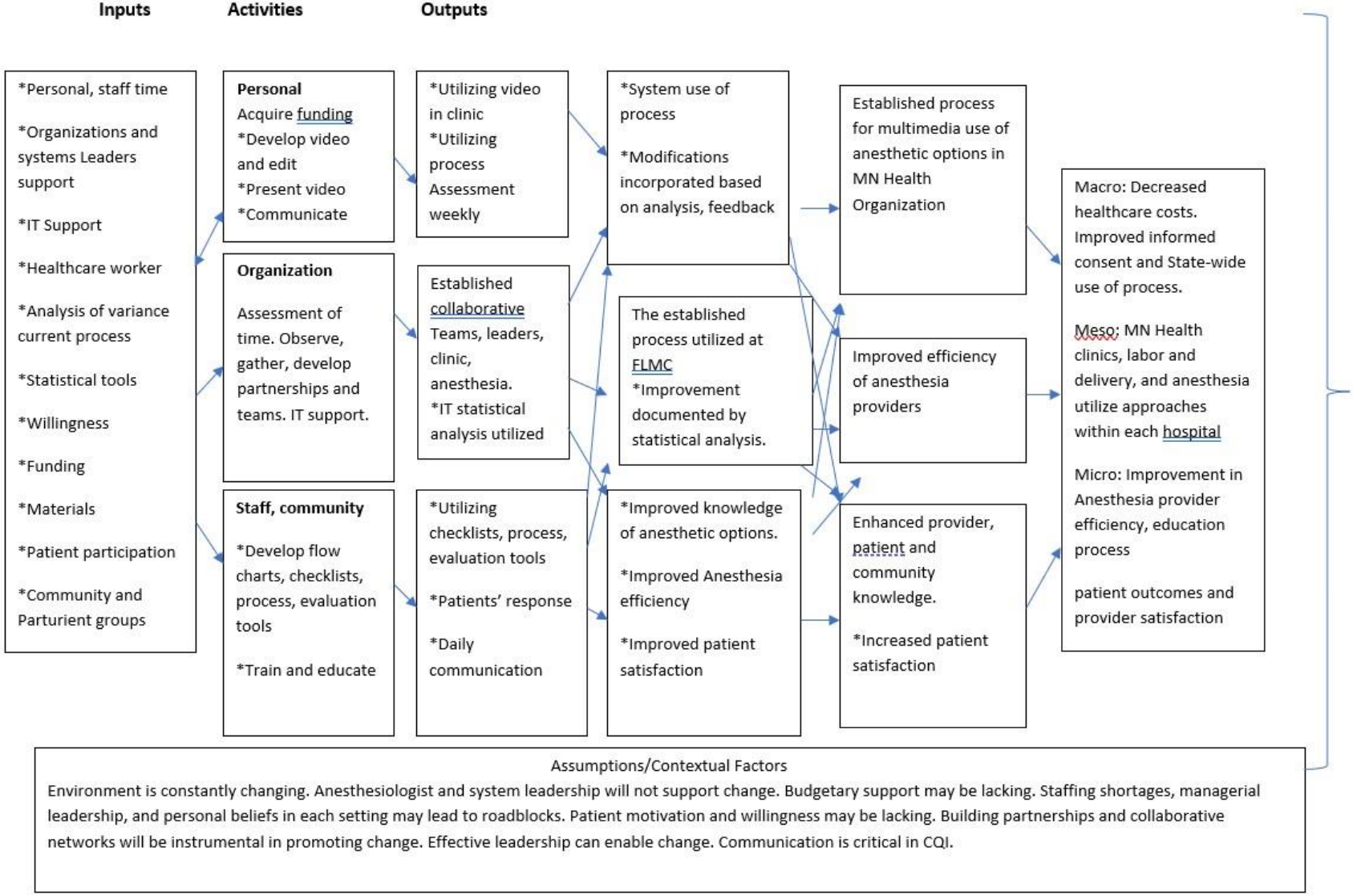
Marc Guilford, J.D.
Director, Office of Human Subjects University of South Dakota
(605) 658-3767

APPENDIX G

PROJECT FLOW DIAGRAM



LOGIC MODEL


Inputs
Activities
Outputs
*Personal, staff time
*Organizations and systems Leaders support
*IT Support
*Healthcare worker
*Analysis of variance current process
*Statistical tools
*Willingness
*Funding
*Materials
*Patient participation
*Community and Parturient groups
Personal
Acquire funding
*Develop video and edit
*Present video
*Communicate
Organization
Assessment of time. Observe, gather, develop partnerships and teams. IT support.
Staff, community
*Develop flow charts, checklists, process, evaluation tools
*Train and educate
*Utilizing video in clinic
*Utilizing process Assessment weekly
Established collaborative Teams, leaders, clinic, anesthesia.
*IT statistical analysis utilized
*Utilizing checklists, process, evaluation tools
*Patients' response
*Daily communication
*System use of process
*Modifications incorporated based on analysis, feedback
The established process utilized at FLMC
*Improvement documented by statistical analysis.
*Improved knowledge of anesthetic options.
*Improved Anesthesia efficiency
*Improved patient satisfaction
Established process for multimedia use of anesthetic options in MN Health Organization
Improved efficiency of anesthesia providers
Enhanced provider, patient and community knowledge.
*Increased patient satisfaction
Macro: Decreased healthcare costs. Improved informed consent and State-wide use of process.
Meso: MN Health clinics, labor and delivery, and anesthesia utilize approaches within each hospital
Micro: Improvement in Anesthesia provider efficiency, education process
patient outcomes and provider satisfaction
Assumptions/Contextual Factors
Environment is constantly changing. Anesthesiologist and system leadership will not support change. Budgetary support may be lacking. Staffing shortages, managerial leadership, and personal beliefs in each setting may lead to roadblocks. Patient motivation and willingness may be lacking. Building partnerships and collaborative networks will be instrumental in promoting change. Effective leadership can enable change. Communication is critical in CQI.

APPENDIX I

BUDGET

Project Expense	**Initial Implementation**	**Year 1**	**Year 2**	**Sustainability**
Indirect Cost				
Meeting Room use	3 hours $10 x3 = $30	$0	$0	
Direct/Capital costs				
Video production	$2,300	0	0	0
Editing	$300	0	0	0
u-Tube site	$45			0
Copy right	$170	Renewal $100	0	
Production team	$300	0	0	
Meetings with organization, Labor and Delivery, and anesthesia to	20 hours $2,400	8 visits $960	4 visits $520	2 visits $260

establish support				
Meals to gain support for project	$200	$215	$216.55	0
Lunch for education on the implementation of project	Presentation of video x3 groups 140 (3) $420	$420	$420	
Salary and wages for implementation				
Project Leader	130x50 hours $6500	130x50 hours $6500	130x12 hours $1560	Cost to present to other providers 130 x10 $1300
Nursing assistants	1 hour education x 8 assistants Average salary $19/hour $152	.37 cent /min (average 3 min) x800 pts $256	.40 cents/min $320	

Supplies				
Paper	$24	0	$24	
Laminated products	$44			
Stopwatch	$11	0	0	
Poster for DNP			$147	
Zoom payment	$32	$32	$32	
Statistical Analysis		$50	$50	
Cost Related to Sustainability		5 hours project leader costs $650	Update video? $2,300, 5 project leader hours $2950 total	
Total Cost	$13,880	$9,183	$6207.55	$1,560
Professional support from project	$0	Unknown	unknown	Positive impact with large support
AANA Support	$0	$0	$0	Positive may utilize video?
Fairview Auxiliary	$0	$0	$0	$0

Cost - Effectiveness analysis Estimated cost of verbal consent to consent with video	$144 x 800 patients $115,200 verbal alone- $89,600 verbal with video = $25,600			
Estimated cost savings with video	$32 x 800 25,600	Estimate inflation and change in volume	Estimate inflation and change in volume	Estimate inflation and change in volume
Cost/benefits Analysis (ratio)	$25,600/$13,880=1.84	$27,417/$9183=2.98	$29,382/$6207.55=4.73	$31,644/$1560=20.28
Total Revenue	$25, 600	$25,600 x .7.7%=1817.60 Total: 27,417	$29,382 (7.7% inflation)	$31,644.41(7.7% inflation)

APPENDIX J

SWOT ANALYSIS

SWOT ANALYSIS
IMPROVE ANESTHESIA PROVIDER'S EFFICIENCY IN OBTAINING INFORMED CONSENT FOR PATIENTS IN ACTIVE LABOR UTILIZING VIDEO EDUCATION OF ANESTHETIC OPTIONS, RISKS, AND BENEFITS PRESENTED TO PARTURIENTS DURING PRENATAL VISITS AT 23-28 WEEKS GESTATION

STRENGTHS

- Experienced, consistent anesthesia providers
- Established processes for prenatal clinic and labor and delivery workflow
- OB/GYN physicians, Labor and Delivery nurses, and Anesthesia providers support process change.
- A culture of CQI initiatives within MN Health
- Organizational support for CQI initiatives
- Highly-skilled prenatal clinical staff
- Leader of the project committed to project
- An established organizational communication system (huddles, team meetings, systems meetings.

WEAKNESSES

- Video production is costly, and lack of organization financial commitment secondary to financial constraints
- Multiple MN Health Systems are involved (hospital and clinic) with different cultures, rules, and policies complicating implementation.
- EPIC technology varies between clinics and hospitals, leading to communications issues
- New leadership in prenatal with little experience or knowledge
- The timing of information may be too early for the patients to recall information
- Difficulty obtaining EPIC support for dot phrases as reminders for video due to the lengthy MN Health

OPPORTUNITIES

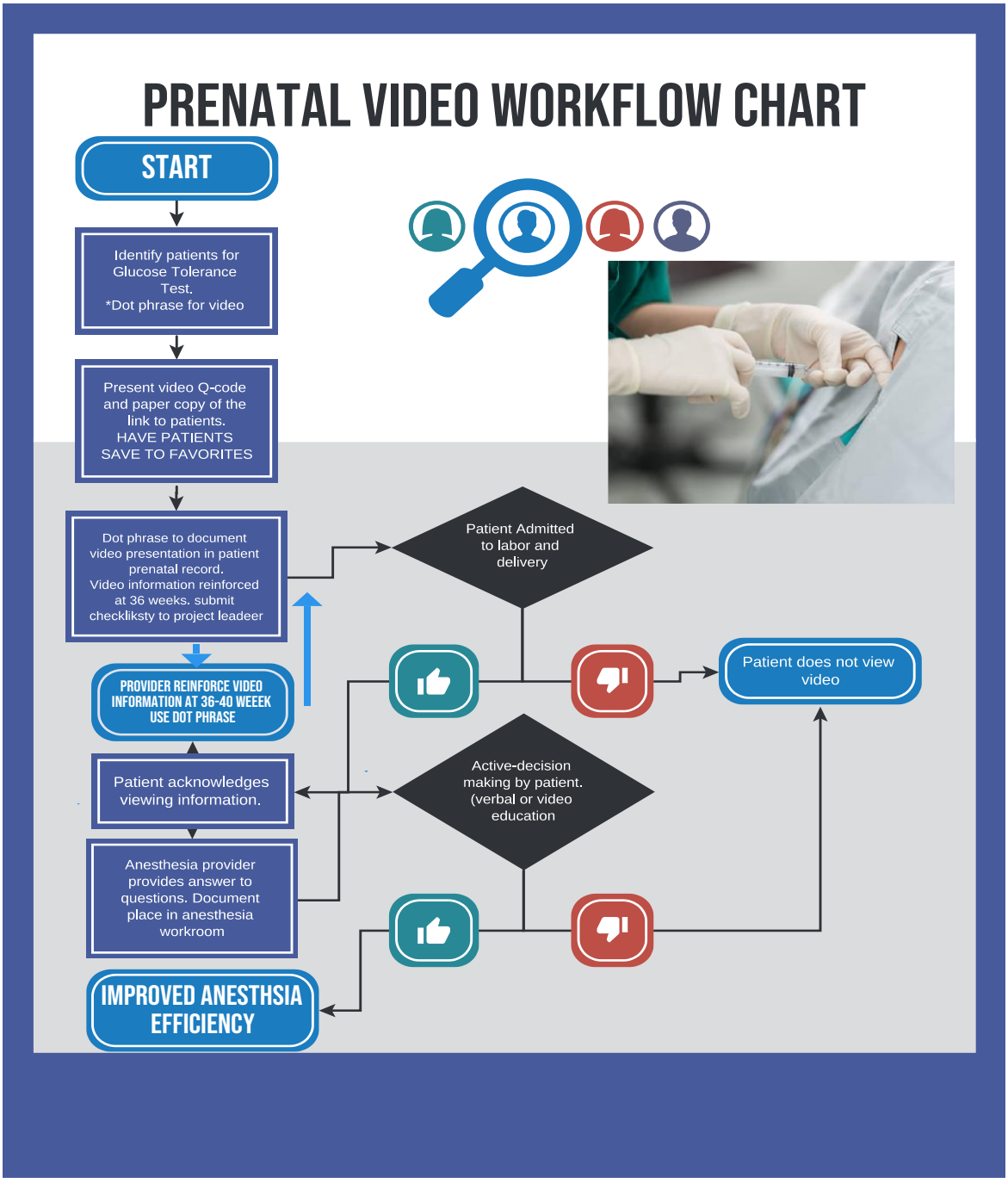
- Optimized timing of education leads to a process that reduces costs and is established throughout MN Health hospitals/clinics.
- Operational decision-making by parturients results in higher patient satisfaction scores, decision-making, and patient outcomes.
- Patients utilize Q-code at home and share information with other parturients improving patient and community knowledge and support.
- Utilization of video education for other anesthetic and surgical procedures before the scheduled surgery date

THREATS

- Constantly changing leadership in prenatal clinics and labor and delivery leads to a lack of interest in implementing new changes in the process.
- Anesthesiologists may block the implementation due to competitive roles for CRNA/MDs in labor and delivery.
- Prenatal community educators may not support video information.
- Current organizational initiatives for vaginal births (CQI) may impact project implementation.
- MN Health's merger with Sanford may block process change.

APPENDIX K

PRENATAL WORKFLOW

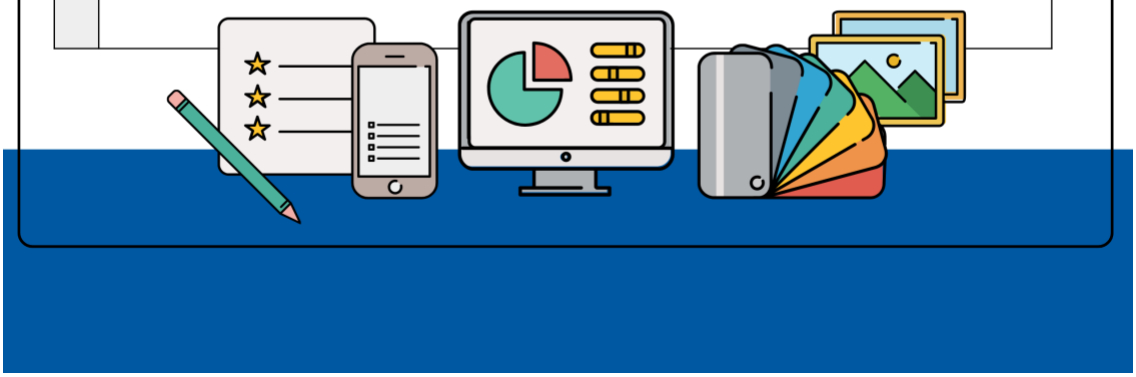


APPENDIX L

PRENATAL CHECKLIST

Checklist In Prenatal Clinic

	Nursing Assistant
☐	Daily: Check for patients admitted For GGT. Date: ***Use one checklist per patient
☐	Complete visit requirements
☐	Present Video information utilizing the following statement: A video is available to provide knowledge of anesthetic options, risks, and benefits. You can access this information utilizing a Q-code or the indicated web-access site.
☐	**A paper copy of the Q-code and website are provided to the patient.**
☐	**Conclude by stating: This is a short video that can be viewed while you wait for your blood draw.** **In nursing, notes use dot s to document "pain relief during labor".**
☐	At the conclusion of the video: Patients will be directed to address any questions concerning anesthetic options to anesthesia providers when admitted to labor and delivery. *Place completed checklist in folder "labeled" completed checklist
	Notes to project leader:



APPENDIX M

QR-CODE

QR-Code

Access to YouTube video on Anesthetic Options, Risks, and Benefits

https://youtu.be/y3Lfokof42w

APPENDIX N

ANESTHESIA PROVIDER CHECKLIST

APPENDIX O

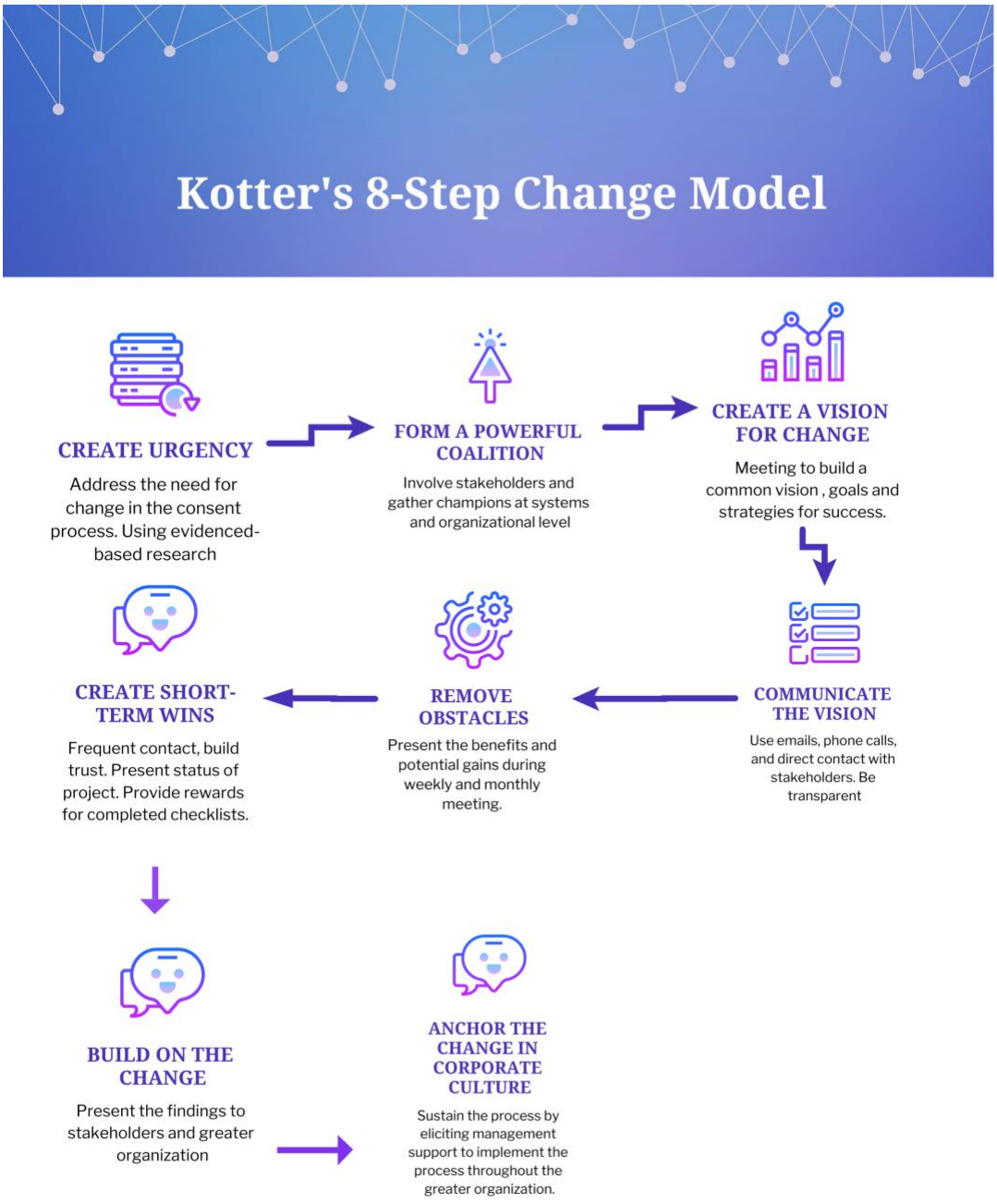
PROJECT SCHEDULE

Task	**Start**	**Duration/Target /completion**
Project start	July 2021	April 2025
Proposal Development	July 2021	December 2022
Written Proposal	November 2022	March 2023
Proposal Presentation	October 2022	December 2022
IRB Approval (Clinical site and USD)	October 2022	April 1st, 2023
Data Collection	May 1st, 2023	September 30th, 2023
Data Analysis	September 30th, 2023	October 2023
Final written Project	October 2023	March 2024

Final presentation and dissertation	April 9, 2024	April 15, 2024

APPENDIX P

KOTTER'S CHANGE THEORY



Kotter, (1996)

Vennage, (n.d)

APPENDIX Q

ALIGNMENT OF PROFESSIONAL STANDARDS

DNP Essentials	Project alignment	AONL	ANCC
Essentials I: Scientific underpinnings for Practice.	The review of literature (efficiency and informed consent), integration of research and the understanding of conceptual framework (PDCA).	2,3,4	I, III, IV
Essentials II: Organizational and Systems Leadership for Quality Improvement.	Initiating a needs assessment to improve efficiency, patient care and the collaboration with multiple leaders within the multiple systems of healthcare and the organization.	1,2,3,5	II, IV
Essentials III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice.	Application of evidence-based practice was utilized to change practice within the workplace. Information technology was utilized to implement a change in practice. This practice involved the use of EHR, dot phrases, evidenced based practice.	1,2,5	I, II, IV
Essentials IV: Information Systems/Technology and Patient care Technology for the improvement and Transformation of Healthcare.	Patient care technology was utilized to developed to analyze workflow, process and EHR can be utilized for process change.	2,3,4	II, IV

DNP Essentials	Project alignment	AONL	ANCC
Essentials V: Healthcare Policy for Advocacy in Healthcare.	Advocating for provider satisfaction, safety, and the rights of patients. Establishing change in informed consent at the national, state, and patient level. Utilizing change in process to implement change that impacts the standard of practice for patients in active labor.	1,2,3,4,5	I, II, III, IV
DNP Essential VI: Inter-Professional Collaboration for Improving Patient and Population Health Outcomes.	Improvement in collaborative teams utilizing transformational leadership skills of trust and communication to build teams within multidisciplinary teams.	1,2,5,6	III, IV
DNP Essential VII: Clinical Prevention and Population Health for improving the Nation's Health.	Utilizing video education in the prenatal period to change the process of informed consent for patients in active labor impact patients at the national, state and local level.		
DNP Essentials VIII: Advanced Nursing Practice.	Discussions and receiving feedback from the OB/GYN physician lead, Lead Anesthesia provider and leaders within FL1 supporting a change in practice.		