Evidence-Based Practice Project: Elective Induction of Labor

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Abstract

Non-medically indicated elective labor inductions are quickly becoming the standard for childbirth. Evidence suggests that there are no benefits to the mother or the baby from an elective induction, but that there are several increased risks, such as cesarean delivery and maternal and neonatal complications. Evidence has shown that there is a decreased rate of elective inductions in women who receive induction risk education compared with those who did not. Evidence –based guidelines recommend offering induction education to reduce the number of non-medically indicated inductions of labor. The purpose of this paper is to discuss the implementation of prenatal education regarding induction of labor, and the effect it has on a woman's chosen method of childbirth. This practice was put into action over a two month period. The target population included all pregnant women eligible for an elective induction of labor in a chosen obstetrical clinic. At the participants first post-partum clinic appointment they were asked to complete a survey containing questions regarding the decision to either electively induce labor, or allow spontaneous labor. It was concluded that implementing prenatal education regarding the potential adverse outcomes associated with elective induction of decreased patient requests for elective inductions of labor and the rate of spontaneous vaginal deliveries increased.

Introduction

According to the 2010 National Vital Statistics final report using the United States Standard Certificates for Live Births, the rate of induction of labor has increased by 140% between 1990 (9.5%) and 2007 (22.8%) for all births. It has been thought that the increase in induction of labor is attributed to the practice of elective inductions, an intervention that is not medically necessary. Elective induction of labor is defined as stimulating uterine contractions during pregnancy for non-medical reasons before labor begins on its own. While a successful labor induction will lead to a vaginal delivery, a non-successful induction could lead to adverse outcomes for both the mother and neonate (Van Der Ham et al., 2012). The rate of inductions is rising faster than the rate of pregnancy-related complications, suggesting that the increase might be attributed to the practice of elective induction of labor excluding a medical indication. The practice of elective induction is cited as being responsible for the increase in the number of cesarean births (Jonsson, Cnattingius, & Wikström, 2013.)

Many pregnant women request that their obstetrician schedule early elective inductions for reasons of convenience, such as ease of scheduling or to avoid the uncomfortable last weeks of pregnancy, and many providers try to appease patient requests as well as maintain a reasonable lifestyle by scheduling elective inductions (Simpson, Newman, & Chirino, 2010). Women who deliver before 39 weeks gestational age tend to have longer and more complicated deliveries, and their babies face greater risk of admission to the neonatal intensive care unit and medical complications such as respiratory disorders, elevated bilirubin levels, jaundice, and feeding disorders. Because of this, the American College of Obstetricians and Gynecologists and the American Academy of Pediatrics (AAP) both recommend against elective induction of labor, especially before 39 weeks gestation (Van Der Ham et al., 2012).

According to the Centers for Disease Control and Prevention, after almost twenty years of increase in the number of elective labor inductions, a decline was finally seen in 2011 with 23.7 percent of deliveries being elective inductions, which was slightly lower than the all-time high in 2010 of 23.8 percent. Decreases in inductions were also seen across all maternal ages and from 35-38 weeks gestation. These decreases may stem from changes in practice, and better educated patients, as research has shown greater mortality among 35-38 week deliveries than deliveries past the 38-week gestational age (Osterman & Martin, 2014).

In contrast, the cesarean section rate increased for the 13th sequential year in 2009, a record high of 32.9 percent. According to the World Health Organization, this is more than double the desired rate, and denotes an increased risk of maternal and neonatal outcomes. It is the most common surgery performed in U.S., and in 2007 nearly one in three mothers (31.8 percent) gave birth by C-section. The increasing rate of labor inductions does indeed contribute to the rise in cesarean sections, but adequate patient education may help alleviate this phenomenon (Osterman & Martin, 2014). A study performed by Simpson, Newman, & Chirino (2010), demonstrated that there was a decreased rate of elective inductions in women who attended induction risk classes compared to those who did not.

PICO Question

The chosen PICO question is as follows: In pregnant women considering an elective labor induction, does receiving prenatal induction education regarding the risks and benefits of elective induction compared with not receiving prenatal induction education decrease the rate/ incidence of elective labor inductions among those women?

The patient population (P) of interest is pregnant women who are considering an elective induction of labor, rather than allowing themselves to go into labor naturally. This population

includes all women capable of bearing children, no matter their ethnicity, age, or background, who are eligible for an elective labor induction.

The intervention (I) of interest is prenatal education outlining the different methods, processes, risks, benefits, and possible outcomes of an elective labor induction. If women were educated on the risks of cesarean section, would they still choose an elective induction? This education would be available in presentation form in the prepared childbirth classes as well as the physician's office through brochures and one-on-one discussions with the physician. Both forms of education will be offered to patients of all gestational ages, as well as women seeking to become pregnant.

The comparison (C) would be receiving no or limited prenatal induction education throughout the pregnancy. The patient does not attend the prepared childbirth classes, discuss the different methods of induction available with her physician, or any risks or benefits associated with those methods, or accept the educational brochure from the physician's office.

Lastly, the outcome (O) of interest is the decreased rate or incidence of elective labor inductions. The desired outcome would be for the pregnant patient to make a more informed decision, and hopefully decide against an elective induction unless medically indicated, therefore reducing their risk of adverse outcomes related to elective inductions for themselves and their neonate.

Evidence-Based Practice Framework

The Johns Hopkins Evidence- Based Practice (JHNEBP) model is a suitable model to facilitate the implementation of evidence-based practice in the education on and management of elective labor inductions. This model was developed by nurses and other interdisciplinary team members of the John Hopkins University School of Nursing (Melnyk & Fineout-Overholt,

2014). The JHNEBP model is built upon three foundations of nursing: practice, education, and research. It recognizes that clinical decisions and practices are based on both research and non-research based evidence, and that both internal and external factors need be taken into account when implementing practice changes (Baker, 2008).

Elective induction of labor is becoming a more prominent practice internationally, and research has shown that labor inductions carry a higher risk of needing obstetrical interventions and carry an increased risk of adverse maternal and neonatal outcomes. There are numerous induction methods, some of which have proven to be less likely to require obstetrical interventions (Jonsson et al., 2013). Because the JHNEPB model allows for the integration of both research and non-research evidence, and internal and external factors, it is useful in the determination and implementation of the best method for elective labor induction education (Melnyk & Fineout-Overholt, 2014).

The JHNEPB model can be broken down into three phases, which is referred to as the PET approach. PET stands for Practice question, Evidence, and Translation. Identification of an answerable question is phase one, followed by review and synthesis of research and non-research evidence in phase two, and applying the practice change and measurement of the outcomes comprise phase three (Curtin, 2008). These three phases can be further divided into eighteen guiding steps to facilitate the implementation of evidence into clinical nursing practice and education (Melnyk & Fineout-Overholt, 2014).

The JHNEBP model- designed by nurses, specifically for nurses, is an ideal model for the facilitation of evidence-based practice in the education of labor inductions. It encourages interdisciplinary teamwork and critical thinking, which are both fundamental in the implementation of new practices (Baker, 2008). The JHNEPB model is user-friendly, easy to

follow, and has numerous tools and resources available to guide the application of best practice in a variety of settings.

Intermountain Healthcare utilized the JHNENP model in the implementation of a care processes to ensure that pregnant women undergo early elective inductions only when medically necessary. Key program elements included the following: a guideline regarding elective induction, a standardized process for scheduling elective inductions, electronic flags and provider notification for inappropriate induction, and patient education. They adopted a modified version of the ACOG guideline stating that obstetric providers should not electively induce a patient before the baby reaches 39 weeks, except when approved clinical indications exist (Harwood, 2001).

Only labor and delivery charge nurses, who are assumed less likely to be swayed by a physician request, could schedule inductions whereas unit clerks could before. An electronic system alerted labor and delivery charge nurses when medical indications do not support early elective induction, who then contacted the providers to notify them that the induction could not be scheduled. For patient education, providers were encouraged to provide written and verbal education regarding the risks of early elective inductions, highlighting the potential for poorer health outcomes for mother and baby (Osterman & Martin, 2014).

All Intermountain obstetric providers received educational brochures to distribute to pregnant women that outlined the risks of early elective inductions. A health plan titled Select Health educated pregnant women about the risks of early induction as part of its care management activities. The health plan distributed educational materials to pregnant women about safe labor and delivery, covered the topic of elective inductions in regular childbirth education classes, and instructed perinatal care managers to discuss appropriate and

inappropriate induction with high-risk patients. The results of this practice change included fewer early inductions (a twenty percent decrease), shorter labors, fewer newborn complications, a twelve percent decreased use of C-sections, as well as a cost savings of 1.7 million dollars over five years (Zhang et al., 2016).

Review of Literature

CINAHL, AHRQ, Cochrane, MEDLINE (EBSCO), and PubMed were the databases of choice for this project. A close review of several types of articles with various designs and sampling facilitated development of this evidence based project. CINAHL held the most extensive information regarding education related to elective labor inductions. During the initial search for evidence, it was found that finding reliable research on this topic proved to be much more difficult than imagined. There are a limited number of studies conducted to identify the effectiveness of prenatal education in reducing elective inductions, but through the initial searches eight articles were discovered that could be used in the development of this project.

The literature reviewed in regards to the risks of and education on labor inductions were systematic reviews, randomized controlled trials (RCTs), observational studies, case-controlled studies, and cohort studies. The studies reviewed identified their participants in various ways, but most participants were between 37 and 42 weeks gestation at the time of delivery. During the initial literature review, level I, level II, and level IV research evidence provided the justification for practice changes that will help close the gap between research and practice related to education regarding elective inductions of labor.

Maternal and Neonatal Complications

The first article reviewed concerning elective labor inductions was a level I systematic review by Caughey et al. (2009). The authors reviewed a combination of eleven RCTs and 25

observational studies. The various studies reviewed by the authors reported maternal and neonatal outcomes for women who had induction of labor without a specific indication during the term period of pregnancy (37-42 weeks gestation). The main purpose of the article was to compare the benefits and harms of elective induction and expectant management of pregnancy. The outcomes measured were elective induction of labor and cesarean delivery rates and maternal and neonatal morbidity. The observational studies reviewed found that there was a consistently lower risk for cesarean delivery among women who underwent spontaneous labor than those who had elective inductions of labor. From the RCTs included in the review, expected management of pregnancy was associated with a 22 percent increase in cesarean delivery compared to elective induction of labor. The key findings of this systematic review is that the likelihood of cesarean delivery appears to be equivalent or lower in women who were electively induced compared with those who were expectantly managed. The finding of a reduced cesarean rate among women who are electively induced contradicts the commonly held opinion that induction of labor increases the risk for cesarean delivery (Caughey et al., 2009).

A level II RCT study completed by Van Der Ham et al. (2012) set out to test the hypothesis that induction of labor (IoL) reduces neonatal sepsis without increasing the assisted delivery rate as compared to expected management (EM) in women with premature rupture of membranes (PROM) between 34 and 37 weeks of gestation. Eight academic and 52 non-academic hospitals in The Netherlands participated. Women with a singleton or twin pregnancy with PROM between 34 and 37 weeks of gestation who were not in labor within 24 hours after ROM were eligible to participate. Patients allocated to IoL were induced within 24 hours of randomization. Labor was induced with either prostaglandin or oxytocin. Patients randomized to EM were monitored until spontaneous delivery. When an EM patient reached 37 weeks

gestation, labor was induced, or labor was induced prior to 37 weeks if there were clinical indications to do so. The study revealed that in pregnancies complicated by PROM between 34 and 37 weeks gestation, IoL does not substantially reduce the risk of neonatal sepsis compared to EM. IoL increased the risk of respiratory distress syndrome, hypoglycemia and hyperbilirubinemia, and the number of cesarean sections was comparable in the IoL and EM groups. These findings suggest that in women whose pregnancy is complicated by late PROM, neither this trial nor the meta-analysis indicates that IoL substantially improves pregnancy outcomes compared with EM (Van Der Ham et al., 2012).

Baud, Rouiller, Hohlfeld, Tolsa, & Vial (2013) conducted a retrospective cohort study to compare the adverse neonatal and maternal outcomes after medically indicated and elective labor induction. The sample included 13,971 women with live, cephalic singleton pregnancies who delivered at term (from 1997 to 2007). Labor onset was separated into spontaneous and induced labor. The latter group was then divided into medically indicated and elective induction of labor. Adverse maternal and neonatal outcomes were compared between women who underwent an induction of labor in the presence and absence of standard medical indications. Among 5,090 patients with induced labor, 2,059 (40.5%) underwent elective labor inductions. Risks of cesarean or instrumental delivery, prolonged maternal hospitalization, admission in neonatal intensive care unit (NICU) and prolonged NICU hospitalization were similar between nulliparous who underwent elective and medical labor induction. All the above mentioned risks were significantly increased after induction in comparison to spontaneous labor. For nulliparous and multiparous women in this study, postpartum hemorrhage rate was significantly increased after both elective and medically indicated induction in comparison to spontaneous labor. This study suggests that elective induction of labor carries similar obstetrical and neonatal risks as a

medically indicated labor induction. Thus, elective induction of labor should be strongly discouraged (Baud et al., 2013).

Harwood (2001) conducted a retrospective cohort study in order to determine are there adverse maternal and neonatal outcomes associated with induction of labor when there is no well-accepted indication? A sample of births in Washington State from 1989 to 1993 was obtained using birth certificates and linked hospital discharge data. A random sample of women who underwent induction was compared with a random sample of women with spontaneous onset of labor. A sample of 2,886 low-risk obstetric patients who underwent induction of labor without a medical or obstetric indication was compared with 9,648 women with spontaneous labor. The outcomes measured were the risk of cesarean or instrumental delivery (forceps or vacuum extraction) associated with elective induction of labor compared with spontaneous onset of labor. Harwood (2001) discovered that nulliparous women who were electively induced without an indication per ACOG guidelines were more likely to have a cesarean delivery than those women with spontaneous onset of labor, and that the risk of instrumental vaginal delivery was slightly increased for women with induced labor. There was also an increase in the incidence of shoulder dystocia in the induction group. These data may be useful to women and clinicians during the decision-making process when considering an elective induction (Harwood, 2001).

These studies have discovered that as compared with spontaneous labor, elective labor induction is independently associated with more intrapartum interventions, more cesarean deliveries and longer maternal length of stay. There is also a fivefold increased risk of hysterectomy among women who undergo elective labor inductions as well as an increased need for anesthesia. The medication commonly used to induce labor is oxytocin, a high-alert

medication, making pregnant women and their fetuses a vulnerable population. Spontaneous labor triggers hormones that are very beneficial to the labor process. They offer natural pain relief and facilitate normal detachment of the placenta, enhance breastfeeding, clear fetal lung fluid, and ensure the transfer of maternal antibodies to the fetus, making the fetus less susceptible to infections (Osterman & Martin, 2014).

Education

In the level IV case-control study completed by Simpson, Newman & Chirino (2010), they tested test an educational intervention in the context of prepared childbirth classes to decrease the rate of elective labor induction among nulliparous women at a community hospital. 1,694 women who delivered from November 2006 to May 2007 were eligible for the study. A standardized 40-minute educational session was developed regarding risks and benefits of elective induction for those who attended prepared childbirth classes. After participants delivered their babies, they were invited to participate in a survey that explored the basis behind their decision whether or not to have an elective induction of labor. Content validity of the survey was determined through a review and revision process by obstetricians, childbirth educators, labor nurses, and patients. 82% (n= 1,349) of eligible women completed the survey. Their study found that after standardized education was added, class attendees were less likely to have elective induction (27.9%, $n = 239$) than non-attendees (37%, $n = 292$, $p < .00$). Sixty-three percent of women who attended the classes and did not have elective induction indicated that the classes were influential in their decision. The significance of this study was that it showed education regarding elective induction offered during prepared childbirth classes was associated with a decreased rate among nulliparous women who attended classes when compared to those

who did not attend, and that patient education may be beneficial in reducing elective inductions (Simpson et al., 2010).

A level IV IRB- approved prospective study by Tong, Mackeen, & Berghella (2012) was the final article reviewed. Their purpose was to determine if standardized counseling regarding methods and risks of induction of labor improved patient knowledge, and secondarily, to determine which details about induction of labor were deficient from our patients' knowledge. Women with term singleton gestations were recruited from two obstetric practices in Philadelphia, Pennsylvania. Sixty-six patients were enrolled in this study: 23 in Group A and 43 Group B. Group A received standardized counseling in the resident clinic; Group B received non-standardized counseling, in the resident clinic or private practice. The standardized counseling group received questionnaires before and after standardized counseling; the non-standardized counseling group received questionnaires after non-standardized counseling. Group A showed statistically significant improvement in knowledge after standardized counseling (17.1%), and group A also scored significantly better on the post counseling test than Group B (84.7% vs. 64.6%). This is significant for this project because standardized counseling improves patient knowledge about induction of labor. In the future, this information can be used to appropriately direct patients' expectations and improve satisfaction with the induction process (Tong et al., 2012).

Summary of Review

Studies comparing labor induction versus spontaneous labor as well as studies regarding induction education implementation are limited and often times contradict one another. Therefore, there is a need for more studies regarding the risks and/or benefits of induction of labor versus spontaneous onset of labor. There is also a need for more research studies regarding

prenatal education about the labor induction process and all that it could possibly entail and lead to, and the effects it has on a mother's decision to induce her labor.

Critical Appraisal of Evidence

The literature reviewed was composed of similar studies. The majority of the studies were level IV cohort studies conducted by Baud (2013), Harwood (2001), Simpson et al. (2010), and Tong et al. (2012). A systematic review by Caughey et al. (2009), and an RCT conducted by Van Der Ham et al. (2012) were also reviewed. Each of the articles provides a clear concise reason for the completion of their study. All studies done were to determine either the safety of labor induction, or the effectiveness of education on a woman's decision to induce her labor. The literature review results reveal evidence for this project, both contradictory and in agreement with the PICO question.

Under the topic of maternal and neonatal complications, two level IV studies supported the theory that elective inductions increase the risk of cesarean sections as well as increase the risk of fetal complications. The level IV cohort studies performed by Harwood (2001) and Baud et al. (2013) found that cesarean delivery rates were higher among induced deliveries when compared with spontaneous delivery. Their studies found that women who were induced were more likely to have a cesarean delivery, instrumental vaginal delivery, postpartum hemorrhage, prolonged maternal and fetal hospitalization, and there was also an increase in the incidence of shoulder dystocia for these induced deliveries (Harwood, 2001; Baud et al., 2013).

In contrast, the level I systematic review by Caughey et al. (2009) and the level II RCT performed by Van Der Ham et al. (2012) found that there was not an increased risk of cesarean delivery for induction of labor versus spontaneous labor. While the observational studies in the systematic review did report a lower risk for cesarean delivery among women who underwent

spontaneous labor, the RCTs contradicted that and found that spontaneous delivery was associated with a 22 percent increase in cesarean delivery compared to induction of labor (Caughey et al., 2009). Van Der Ham et al. (2012) did find that induction of labor increased the incidence of neonatal adverse outcomes, but that the number of cesarean sections was comparable to spontaneous labor.

The literature review unsubstantially answers the question regarding whether education concerning the adverse effects of labor induction influences the patient's decision to induce labor. The level IV cohort studies performed by both Simpson et al. (2010) and Tong et al. (2012) showed that prenatal induction education can in fact influence the decision as whether or not to induce labor. Simpson et al. (2010) concluded that education regarding elective induction offered during prepared childbirth classes was associated with a decreased rate among nulliparous women who attended classes when compared to those who did not attend, and Tong et al. (2012) concluded that standardized patient counseling improved patient knowledge about induction of labor. In combination, these two interventions can be used to appropriately educate patient regarding the pros, cons, risks, and process of induction of labor.

Recommendations

It can be seen through the literature discussed in this paper that induction of labor is not without its risks to both mother and neonate. Based on reviewing the literature, the following recommendations can be made.

Grade C *(Evidence level IV)*

All women eligible for induction of labor should be provided education through childbirth classes regarding the risks and benefits of induction.

Simpson et al. (2010) states that education about risks of elective labor induction during childbirth classes is identified as one possible way to minimize patient requests for elective labor induction by their physician. The childbearing woman is a key member of the perinatal team; providing as much accurate information as possible to assist with her decision-making regarding elective induction is consistent with patient advocacy as supported by the Association of Women's Health, Obstetric and Neonatal Nurses and ACOG, and is a component of patient education standards from the Joint Commission (Simpson et al., 2010).

Grade C *(Evidence level IV)*

Physicians should not offer the option of elective induction to patients who are eligible for a spontaneous vaginal delivery and do not have a medical indication per ACOG guidelines for a labor induction.

Simpson et al. (2010) found that the physician is a powerful influence, and it is possible that patients perceive the offer of the option for elective induction as a recommendation that they actually have the procedure, particularly if they are told they are due now, overdue, or their baby is getting too big. When the option for elective induction was offered by their physician, women were significantly more likely to choose elective induction than when the option was not offered. Offering the option in the absence of patient request, especially before cervical readiness has been achieved, may lead to unnecessary elective inductions with the associated increased risk of cesarean birth and increased healthcare costs (Simpson et al., 2010).

Needs Assessment

Since the discovery of the uterine effects of oxytocin in 1906 and prostaglandin F2 in 1964, pharmacological induction of labor (either alone or in combination with mechanical methods) has steadily become more widespread. Elective induction of labor may be appealing to

women, families, and health providers. However, despite the growing use of elective labor inductions globally, critical questions remain on safety, risks, benefits, and cost-effectiveness. A cautious approach to the use of elective labor induction seems most practical and it should be performed only in the context of informed consent, access to comprehensive emergency obstetric care services, and appropriate monitoring and supervision (Tong et al., 2012).

In 2010, labor induction accounted for 23.4 percent of deliveries in the United States. Zhang et al. (2016) analyzed US population data and reported an increase in induction from 9.5% in 1989 to 19.4% to 1998, with substantial variations at the subnational level—some New York counties increased from 6.5% to 53.2%. Rates increased for both nulliparous and multiparous mothers and all gestational ages. Labor induction is not without risk to both mother and fetus and should only be used ‘‘in circumstances in which the risks of waiting for the onset of spontaneous labor are judged by clinicians to be greater than the risks association with shortening the duration of pregnancy” (Zhang et al., 2016, p. 7).

Clinical Setting Assessment

This project will focus on educating women of child bearing ability about the risks and benefits associated with elective induction of labor. For this project, the clinical setting is Obstetrics and Gynecology practices that are comprised of Doctors of Medicine (M.D.), physician assistants (PA), certified registered nurse practitioners (CRNP), and other healthcare workers. The practices offer a wide range of women’s health services, including: high-risk, comprehensive, and family-oriented obstetrics, vaginal birth after cesarean section (VBAC), obstetrical ultrasound, breast and pelvic exams, preconception counseling, PAP smears, laparoscopic and laser surgery, and infertility services. The primary patient population that these practices serve is women ages 16-65, both pregnant and non-pregnant. They see anywhere from

30- 175 patients per day, and also average 30-85 deliveries per month. Key stakeholders for this project include the project liaison- a clinical leader at one of the practices, and the author of this paper. Other stakeholders include the remaining medical staff within the practices as well as their patients with child bearing ability.

These OBGYN practices are constantly seeking ways to reduce the cesarean section rate and increase the incidence of spontaneous, term labors in order to be in compliance with ACOG recommendations. Currently, the practices average approximately 50% of deliveries being either elective or medically necessary inductions, 20% cesarean sections, and only 30% spontaneous deliveries. The project liaison believes that based on current evidence, implementing more prenatal educating regarding elective inductions and limiting the number of women offered the option of an elective induction, unless the patient requests it on their own, or there is a medically necessary indication for an induction of labor, would be beneficial to the patients and their practices.

Implementation Plan

From 1992 to 2002, the mean gestational age for singleton births in the United States decreased from 40 weeks to 39 weeks, in part related to the rise in medical procedures such as labor induction and cesarean births, with approximately one half to two thirds of labor inductions performed for nonmedical indications (Simpson, Newman, & Chirino, 2010). That statistic is one of the many reasons education regarding labor inductions was chosen for this evidence-based practice project along with the fact that ACOG and The AAP both recommend against elective induction of labor.

Selected Intervention

It is recommended that all women eligible for induction of labor should be provided education through childbirth classes regarding the risks and benefits of induction, and that physicians should not offer the option of elective induction to patients who are eligible for a spontaneous vaginal delivery and do not have a medical indication per ACOG guidelines for a labor induction (Simpson et al., 2010). This EBP project aims to implement these two guidelines/interventions in the clinical setting, and assess whether labor induction education does indeed decrease the rate of elective labor inductions. The goal of this implementation is to decrease the rate of elective inductions and ultimately cesarean sections, and to increase to incidence of spontaneous vaginal deliveries within OBGYN practices.

Implementation Process

The implementation of this project can be broken down into five key action steps, using the Simpson et al. (2010) study as a guide. First, an educational brochure will be created that outlines the risks of early elective inductions. The project liaison will hand this out to all pregnant patients eligible for an elective induction of labor within the practice. If the women agree to be included in this study, they will sign a consent form, and will have follow-up post-partum. Simpson et al. (2010) states that education about risks of elective labor induction during childbirth classes was identified as one possible way to minimize patient requests for elective labor induction by their physician, so the next step is to create an educational slide show regarding the risks of elective inductions that can be included in the prepared childbirth classes offered by the local hospital every month.

The content of the slide presentation and written materials will be based on current evidence and recommendations regarding appropriate candidates and timing for elective

induction as well as associated risks of the procedure from ACOG guidelines. Potential participants will be obtained at childbirth classes and at the OBGYN offices. Simpson et al. (2010) also found that the physician is a powerful influence, and it is possible that patients perceive the offer of the option for elective induction as a recommendation that they actually have the procedure. Step three will involve in-office counseling, which is more dependent on the physician. The physician will be requested that unless medically necessary or requested by the patient, not offer the option of elective induction of labor. The fourth step will be distributing the post-partum surveys to women who agreed to participate in the study. The survey is derived from the Simpson et al. (2010) study, and contains questions regarding the decision to either electively induce labor, or allow spontaneous labor (Appendix B). The survey will be distributed by the project liaison at the women's first post-partum appointment. The fifth and final step will be collecting and measuring the data.

Facilitators and Barriers

Facilitators to this project include the OBGYN practices' willingness to participate in this project, as well as the resources allocated by the Simpson et al. (2010) study, including the educational brochure and postpartum survey. Barriers include patients not willing to participate as well as being unable to follow-up with patients due to time constraint. Childbirth classes are offered so infrequently, that this is seen as a barrier as well. In order to help alleviate the time constraint and infrequency of classes offered, all pregnant patients in the practices, no matter their weeks of gestation, will be offered the induction education pamphlet and ability to participate in this project. According to the Simpson et al. (2010) study, standardized education regarding elective induction of labor did discourage some women from choosing elective induction for their labor. This EPB project hopes to discover similar findings.

Resources

Since the childbirth classes are already provided, the resource needs for this project will be a supplemental PowerPoint for the classes regarding elective inductions, as well as a pamphlet to be given to pregnant women at the OBGYN office, and the post-education surveys. The budgetary requirements would be the cost of supplies, such as paper, ink and printing costs for the pamphlet and the post-partum surveys.

Evaluation

Expected short-term outcomes of this project are to have a sufficient number of willing participants (approximately 100 pregnant women), adequately educate those participants regarding the risks and potential adverse outcomes of elective labor induction though childbirth class and pamphlets, have them participate in the post-partum surveys, and ultimately receive feedback as to whether or not the education influenced their decision whether or not to electively induce labor. The short-term goal for this project is at least a 5-10 percent decrease in the rate of elective labor inductions within participating practices in 1-2 months of implementation. Expected long-term outcomes for this project include all of the expected short-term outcomes, with a few additions. Within 6-12 months of implementation, it is expected that the rate of elective labor inductions among patients will be decreased by at least 25 percent, and that additional obstetrical offices will adopt these implementation changes into their practices. An increase in the number of childbirth classes offered will potentially allow the recruitment of more participants.

Descriptive population data will be obtained throughout the duration of this project. While the gender will always be female, attributes such as age, ethnicity, gravidity, parity, insurance plan, level of education, socioeconomic status, and health history will be important

information to collect for this project. Data will be obtained through both self-reporting, and office records, if consents are signed allowing that information to be accessed. The population data will be helpful in determining any disparities among age groups, ethnicities, education levels and socioeconomic statuses.

Pre-post implementation data measurement will be compared among different groups. The pre-implementation data is being derived from the rate of elective inductions among all women in participating practices who delivered from October 10, 2016- December 15, 2016, while the post implementation data will be obtained only from willing, consenting participants who deliver after the education has been implemented. In order to determine if this project is successful, the current rate of elective inductions (from existing medical records/ data) for each practice will be compared to the rate of elective labor inductions in each OBGYN practice after the education has been implemented. The post-partum surveys (self-reported) and delivery records (medical records) will be used to determine the rate of elective inductions of labor after implementing the education. The survey- derived from the Simpson et al. (2010) study, will assess whether the education regarding elective inductions had any influence on the participant's decision to have an elective induction of labor or allow labor to happen spontaneously (Appendix B).

After implementation of the project it will be vital to accurately track outcome measurement data. In order to do this, the liaison and the author will communicate on a weekly basis. The communication will be to ensure that an adequate number of patients have agreed to participate in the survey and that they are either attending the childbirth classes or being given the educational pamphlet at their prenatal appointments. As the project progresses,

communication will be to ensure that after delivery, the participants are completing the post-partum surveys at their first post-partum appointment.

The project liaison for each practice will collect the post-partum surveys and the author will compile the results. The evaluation of the process improvement change in elective labor induction education within the OBGYN practices will be performed to summarize the data about the population and provide information on the effectiveness of the change in education on delivery type outcomes among the practice's patients. Data on Group 1, patients who do not receive the prepared elective induction education in childbirth class or the OBGYN office, as well as data on Group 2, patients who do receive the prepared education in class or the office, will be assembled. Data will be collected on the descriptive and demographic variables of age, ethnicity, number of viable pregnancies and whether or not they were a previous labor induction. Outcome variables collected will include class attendance, education effectiveness and delivery type. All data will be entered into an Excel spreadsheet by the author and then imported into the Statistical Package for the Social Sciences (SPSS) and descriptive and inferential statistical analyses will be conducted. Following descriptive analysis by group where frequencies are obtained and compared between groups, each group's data will be analyzed for improvement. Once implementation time is complete, the rate of elective induction before project implementation will be compared to the rate of elective labor inductions after implementation to see if there was in fact a decrease in this statistic.

Discussion of Small Test of Change (STOC)

The purpose of this small test of change was to further evaluate the implementation of education regarding induction of labor and the effect it has on the mother's decision whether to induce her labor or allow spontaneous labor to occur, among a condensed population. The

project began with the author seeking approval for project implementation at a local OBGYN practice. Ladies First Obstetrics and Gynecology was the obstetrical clinic chosen for project implementation. Ladies First consists of three offices that serve the suburban Wiregrass area. They have 5 Physicians, 3 CRNPs, 1 PA and many other nursing and office staff. They serve both pregnant and non-pregnant women ranging in age from 12-75. Each office sees approximately 50-75 patients a day, and they are responsible for approximately 30-50 deliveries per month.

The STOC target population included all pregnant women eligible for an elective induction of labor within the obstetrical clinic. Group 1 included all deliveries within the obstetrical clinic from October 10, 2016- December 15, 2016 (n= 53). Group 2 included all eligible patients within the obstetrical clinic whom consented to participate and delivered from January 10, 2017- March 15, 2017 (n= 27). An educational brochure was created by the author, outlining the risks of elective inductions. During a routine OB appointment, between 34-40 weeks gestation, patients were given the brochure via the project liaison, whom is a CRNP employed by Ladies First, and asked if they were willing to participate in the STOC. If the patient did consent to participate, at their first post-partum appointment they completed a survey containing questions regarding the decision to either electively induce labor, or allow spontaneous labor.

Seeing as the timeline for STOC implementation was 8 weeks and most women do not have their post-partum appointment until 6 weeks after delivery, time is considered a major barrier for this STOC and one possible reason for the low number of Group 2 participants. For any women who had not been to their first post-partum appointment, but had agreed to participate, they were given the opportunity to complete the follow-up survey via telephone with

the author. Another barrier to the STOC implementation was that no childbirth classes were offered during this time frame, so participants were not able to be recruited from or educated through the classes.

STOC Results

Descriptive statistics were used to describe the patient population, education received, and patient decision. Pre-post implementation data was compared among both groups. All data was entered into an Excel spreadsheet and then imported into the Statistical Package for the Social Sciences (SPSS) and descriptive and inferential statistical analyses were conducted. The rate of elective induction before project implementation (Group 1) was then compared to the incidence of elective induction of labor after education implementation (Group 2). 27 eligible females consented to participate, average age of 25 years old (sd- 4.7 years). 0 % of group 1 received induction education, while 100% of group 2 received induction risk education. 66.7% of group 2 allowed spontaneous labor to occur, while 33.3% of group 2 opted to electively induce their labor. Within the obstetrical clinic, the mean elective induction rate decreased from 60.4% before project implementation to 33.3 % after induction education was introduced, significantly ($p=<0.05$).

Application to Overall Project

Through the STOC, implementing prenatal education regarding the potential adverse outcomes associated with elective induction of labor decreased patient requests for elective inductions of labor, and the rate of spontaneous vaginal deliveries increased. Decreasing the rate of non-medically indicated labor inductions through education implementation is achievable at this obstetrical setting and further implementation of the project is warranted. Recommendations for changes to this project include a longer time frame for implementation of education, as well

as an assessment of cesarean delivery rates after project implementation. It is also recommended to offer this education in childbirth classes. It was learned that flexibility and back-up plans are key in project implementation.

If time and resources were amplified, the next steps for this project would include recruiting more OBGYN practices and patients, and integrating induction education into the prepared childbirth classes. It would also be interesting assess other factors that are thought to be influenced by the elective induction of labor rate, such as is an increased cesarean section rate in direct correlation with an increased elective induction rate?

Conclusions

In conclusion, the STOC revealed that prenatal induction education can in fact decrease the elective induction of labor rate. Based off of the data, it was determined that education plays a vital role in the childbirth method decision. Key learning experiences the author experienced include discovering how to plan an intervention for a small test of change and implement the outlined education. Also, being able to utilize SPSS to determine if the small test of change was effective was beneficial to the author as well for future use. The author was also able to refine skills in effectively teaching patients not only about elective inductions of labor, but about the childbirth process as a whole.

For an advanced practice nurse, one must be able to research data, interpret the data, and then ultimately incorporate any changes needed into practice. By doing this, the advanced practice nurse will stay up to date on the most current evidence-based practice recommendations, allowing the patients to have the best healthcare outcomes. To conclude, this project enhanced the author's abilities in research and implementation and proved to be effective within the

STOC. The EBP project proved to be a successful learning experience for the author as well as the key stakeholders for the STOC.

Appendix A

Evidence Grid: Elective Labor Inductions: Incidence, Risks, and Education				
Article citation in APA format **Level of evidence**	**Purpose of study/research questions**	**Research elements:** **- Design** **- Sampling method** **- Sample size** **- Brief description of methods/interventions** **- outcomes measured**	**Major findings relevant to project**	**Critique of validity, bias and significance for your project**
Caughey, A. B., Sundaram, V., Kaimal, A. J., Gienger, A., Cheng, Y. W., McDonald, K. M., & Bravata, D. M. (2009). Systematic review: Elective induction of labor versus expectant management of pregnancy. *Annals of Internal Medicine, 151*(4), 252-263. **Level of Evidence: I**	**Purpose:** To compare the benefits and harms of elective induction of labor and expectant management of pregnancy.	• **Design**: Systematic Review • **Sampling method**: Databases such as MEDLINE, Web of Science, CINAHL, Cochrane Central Register of Controlled Trials were searched. Bibliographies of included studies, and previous systematic reviews were included as well. Only experimental and observational studies that reported maternal and neonatal outcomes for women who had induction of labor without a specific indication during the term period of pregnancy, at or after 37 weeks and before 42 weeks of gestation were included. Articles that only compared different methods of induction of labor were excluded. • **Sample Size**: 36 studies (11 RCTs and 25 observational studies.)	• The observational studies reported a consistently lower risk for cesarean delivery among women who underwent spontaneous labor than those who had elective inductions of labor. • From the RCTs included in the review, expected management of pregnancy was associated with a 22% increase in cesarean delivery compared to elective induction of labor. • The key findings of this systematic review is that the likelihood of cesarean delivery appears to be equivalent or lower in women who were	• The review question and purpose of the review was clear, concise, relevant and explicitly stated. • The literature search was comprehensive, effective, and appropriate- including literature from both RCTs and observational studies. • Experimental and observational studies of elective induction of labor were assessed for inclusion in the review. Of the 6117 potentially relevant articles, 36 met the reported inclusion criteria. • The studies were critically appraised and independently reviewed by two authors, and findings from the individual studies was synthesized. When the reviewers disagreed on the data abstracted, a third reviewer abstracted the data as well and the resolution was agreed upon by all 3 reviewers. • Summary of finding is

		• **Interventions:** Induction of labor • **Outcomes Measured**: Elective induction of labor and cesarean delivery rates and maternal and neonatal morbidity.	electively induced compared with those who were expectantly managed. • The finding of a reduced cesarean rate among women who are electively induced contradicts the commonly held opinion that induction of labor increases the risk for cesarean delivery.	provided as well as limitations of the review. • There are concerns about the findings translating into actual practice, and suggests that future studies should examine elective induction of labor in settings where most obstetric care is provided.
Van Der Ham, D. P., Vijgen, S. C., Nijhuis, J. G., Van Beek, J. J., Opmeer, B. C., Mulder, A. M., & Kars, M. E. (2012). Induction of labor versus expectant management in women with preterm prelabor rupture of membranes between 34 and 37 weeks: A randomized controlled trial. *Plos Medicine, 9*(4), 1-16. doi:10.1371/journal.pmed.1001208 **Level of Evidence: II**	**Purpose:** To test the hypothesis that induction of labor (IoL) reduces neonatal sepsis without increasing the assisted delivery rate as compared to expected management (EM) in women with premature rupture of membranes (PROM) between 34 and 37 weeks of gestation.	• **Design:** Randomized Controlled Trial • **Sampling Method/ Size:** Eight academic and 52 non-academic hospitals in The Netherlands participated. Women with a singleton or twin pregnancy with PROM between 34 and 37 weeks of gestation who were not in labor within 24 hours after ROM were eligible to participate. The randomization sequence was created using a block size of four, stratified for center and parity in a 1:1 ratio for immediate IoL versus EM. 268 women were allocated to the IoL group and 268 women were allocated to the EM group. • **Interventions:** Patients	• In pregnancies complicated by PROM between 34 and 37 weeks gestation. IoL does not substantially reduce the risk of neonatal sepsis compared to EM. • IoL increased the risk of respiratory distress syndrome, hypoglycemia and hyperbilirubinemia. • The number of cesarean sections was comparable in the IoL and EM groups.	• **Weaknesses:** • Two patients were excluded from each group because after completion of the trial it was clear that their gestational age was over 37 weeks. • In the EM group, labor had to be induced in 94 women. 38 women in the IoL group went into labor spontaneously. • The study proved to be underpowered. They hypothesized a decrease in sepsis rate of 7.5%to 2.5% but found a difference of only 1.5%. • **Strengths:** • Baseline characteristics were comparable between the 2 groups. • Findings were in line with the results of the TERMPROM trial, which compared IoL with EM in

		allocated to IoL were induced within 24 hours of randomization. Labor was induced with either prostaglandin or oxytocin. Patients randomized to EM were monitored until spontaneous delivery. When an EM patient reached 37 weeks gestation, labor was induced. Labor was induced prior to 37 weeks if there were clinical indications to do so. • **Outcomes measured:** Primary outcome was neonatal sepsis. Secondary outcomes were neonatal respiratory distress syndrome, wet lung, meconium aspiration, pneumothorax, asphyxia, late onset neonatal sepsis, hypoglycemia, and length of hospital stay.		5041 women with PROM at term (37-41 weeks gestation). • **Significance for my project:** In women whose pregnancy is complicated by late PROM, neither this trial nor the meta-analysis indicates that IoL substantially improves pregnancy outcomes compared with EM.
Zhang, L., Zhang, H., Zhang, J., Zhang, J. W., Ye, J. F., & Branch, D. W. (2016). Preventive induction of labor for non-urgent indications at term and maternal and neonatal outcomes. *Reproductive Health*, *13*, 46. http://doi.org/10.1186/s12978-016-0 **Level of Evidence: II**	**Purpose:** To investigate the effects of preventive induction of labor (IOL) for non-urgent indications at term on maternal and neonatal outcomes.	• **Design**: Prospective randomized trial • **Sampling method**: The subjects were from the Consortium on Safe Labor, a study of over 200,000 births from 19 hospitals across the US from 2002 to 2008. • **Sample Size**: 12 clinical centers (with 19 hospitals) across 9 districts. The study included 228,562 deliveries with 233,730	• Preventive IOL was associated with increased risks of adverse neonatal outcomes at 37 weeks' gestation. A longer maternal hospital stay was found among all women with preventive IOL.	• **Weaknesses**: • Due to the nature of the observational study, non-documented factors that can influence the likelihood of preventive induction of labor may not have been included in the model. • **Strengths:** • The finding that preventive induction at 37 weeks may increase the risk of adverse neonatal outcomes is consistent with the results

		newborns in 2002–2008; All births at ≥23 weeks in these institutions were included. • **Interventions:** Stratified analyses, comparing the incidence of adverse outcomes between the induction and expectant groups separated by the level of propensity score, gestational age and parity. • **Outcomes Measured**: Maternal and neonatal outcomes were compared between women with preventive IOL at 37–39 weeks of gestation and women with ongoing pregnancy (expectant management). Outcome measures include: cesarean delivery, maternal and neonatal complications, admission to neonatal intensive care unit, and duration of maternal hospital stay.		from recent HYPITAT-II trial • **Significance for my project:** • Preventive IOL for non-urgent indications may be associated with a decreased risk of cesarean delivery at early term but increased risks of adverse neonatal outcomes at 37 weeks. It also results in a longer hospital stay than expectant management.
Baud, D., Rouiller, S., Hohlfeld, P., Tolsa, J., & Vial, Y. (2013). Adverse obstetrical and neonatal outcomes in elective and medically indicated inductions of labor at term. *Journal of Maternal-Fetal & Neonatal Medicine*, *26*(16), 1595-1601. doi:10.3109/14767058.2013.795533	**Purpose:** To compare the adverse neonatal and maternal outcomes after medically indicated and elective labor induction.	• **Design:** Retrospective cohort study • **Sampling method:** From January 1997 to December 2006, 19,554 births were recorded in the Maternity Hospital of the Centre Hospitalier Universitaire Vaudois (CHUV) in Lausanne, Switzerland, of which 13,971 term deliveries of live, cephalic	• Among 5090 patients with induced labor, 2059 (40.5%) underwent elective labor inductions (inductions without any medical or obstetrical indication). Risks of cesarean or instrumental	• **Weaknesses**: • Women from elective induction group were more likely to be multiparous, Caucasian and to have a body mass index (BMI) 430 than women in the medically indicated induction group. • **Strengths:** • For nulli- and multiparous in this study, postpartum hemorrhage rate was

Level of Evidence: IV		singleton babies. • **Sample Size:** 13 971 women with live, cephalic singleton pregnancies who delivered at term (from 1997 to 2007). • **Interventions:** Labor onset was dichotomized into spontaneous and induced labor. The latter group was then divided into medically indicated and elective induction of labor. • **Outcomes measured:** Adverse maternal and neonatal outcomes were compared between women who underwent an induction of labor in the presence and absence of standard medical indications.	delivery, postpartum hemorrhage, prolonged maternal hospitalization, admission in neonatal intensive care unit (NICU) and prolonged NICU hospitalization were similar between nulliparous who underwent elective and medical labor induction. All the above mentioned risks were significantly increased after induction in comparison to spontaneous labor.	significantly increased both after elective and medically indicated induction in comparison to spontaneous labor without significant difference between the two types of induction. This is consistent with a study based on the Norway birth registry showing that postpartum hemorrhage was increased after elective induction of labor • **Significance for my project:** Elective induction of labor carries similar obstetrical and neonatal risks as a medically indicated labor induction. Thus, elective induction of labor should be strongly discouraged.
Harwood, M. I. (2001). Are there adverse maternal and neonatal outcomes associated with induction of labor when there is no well-accepted indication?. *Journal of Family Practice*, *50*(2), 106. **Level of Evidence: IV**	**Purpose:** To determine are there adverse maternal and neonatal outcomes associated with induction of labor when there is no well-accepted indication?	• **Design:** Retrospective cohort model • **Sampling method:** A sample of births in Washington State from 1989 to 1993 was obtained using birth certificates and linked hospital discharge data. A random sample of women who underwent induction was compared with a random sample of women with spontaneous onset of labor. • **Sample Size:** A sample of 2886 low-risk obstetric patients who underwent induction of labor without	• Nulliparous women who *were* induced were more likely to have a cesarean delivery than those women with spontaneous onset of labor • The risk of instrumental vaginal delivery was slightly increased for women with induced labor • There was also an increase in the incidence of shoulder dystocia in	• **Weaknesses**: • Retrospective design • Birth certificates and discharge data are often not complete with reference to the full hospitalization record. Because the charts from the birth hospitalization were not reviewed, a misclassification bias may have occurred, In addition, there are often unmeasured characteristics that influence the decision to induce labor that are not recorded on birth certificates or discharge data. • **Significance for my project:** this study found that women

		a medical or obstetric indication were compared with 9648 women with spontaneous labor. • **Interventions:** Elective induction of labor • **Outcomes measured:** The risk of cesarean or instrumental delivery (forceps or vacuum extraction) associated with elective induction of labor compared with spontaneous onset of labor.	the induction group	undergoing elective induction without an indication per ACOG guidelines are at a slightly increased risk for instrumental delivery. In particular. Nulliparous women undergoing elective induction without a clear medical or obstetric indication are at increased risk for a cesarean delivery. These data may be useful to women and clinicians during the decision-making process when considering an elective induction
Jonsson, M., Cnattingius, S., & Wikström, A. (2013). Elective induction of labor and the risk of cesarean section in low-risk parous women: A cohort study. *Acta Obstetricia Et Gynecologica Scandinavica*, *92*(2), 198-203. doi:10.1111/aogs.12043 **Level of Evidence: IV**	**Purpose:** To estimate the association between elective induction of labor and cesarean section in low-risk parous women, and to assess whether the association is influenced by induction method	• **Design**: Cohort study • **Sampling method**: Parous women with a singleton pregnancy at 37–41 completed gestational weeks during the years 2004–2010 at Uppsala University Hospital in Sweden. Excluded pregnancies that met one or more of the following criteria: prior CS, scheduled CS in the present pregnancy, fetuses in breech position and stillbirth, pre-labor rupture of mem-branes, and pregnancies with pregnancy complications. • **Sample Size**: 8167 births of 7299 women. • **Interventions:** Information was collected from a local database	• Among 7973 pregnancies that fulfilled the inclusion criteria, 343 (4%) had an elective induction of labor. Electively induced labor more than doubled the risk of cesarean section compared with spontaneous labor onset and this risk was more than tripled when cervical ripening was used.	• **Weaknesses**: • Limited by the ability to assess and control for additional potential confounding factors such as maternal height and body mass index, which may be associated with an increased risk of emergency CS in induced labor, both in studies of nulliparas and studies of nulli- and multiparas • **Strengths:** • Size of the cohort • All births took place at the same clinical unit, ensuring uniformity of labor management. Used a database where the onset of labor was highly consistent with records. • **Significance for my project:** • In low-risk parous women, electively induced labor has

		containing prospectively entered antenatal and delivery data. Odds ratios for cesarean section were calculated using generalized estimating equations logistic regression and adjusted for parity, maternal age, gestational length, birthweight, use of epidural anesthesia and year of birth. • **Outcomes Measured**: Emergency cesarean section.		an increased risk of emergency cesarean section compared with spontaneous onset labor. This risk increase is more pronounced if cervical ripening agents are required. Women need to be counseled about these risks before elective induction of delivery is decided.
Simpson, K., Newman, G., & Chirino, O. (2010). Patient Education to Reduce Elective Labor Inductions. *MCN: The American Journal of Maternal Child Nursing*, *35*(4), 188-196 9p. doi:10.1097/NMC.0b013e3181d9c6d6 **Level of Evidence: IV**	**Purpose:** To test an educational intervention in the context of prepared childbirth classes to decrease the rate of elective labor induction among nulliparous women at our community hospital.	• **Design:** Case-control Study. • **Sampling method:** 1,694 of 5,309 birth from November 2006- May 2007 met inclusion criteria. Women were invited to participate in the survey from June 2007- January 2008. 82% (n= 1,349) of eligible women completed the survey. • **Sample Size:** 3,337 nulliparous women. • **Interventions:** A standardized 40-minute educational session was developed regarding risks and benefits of elective induction for those who attended prepared childbirth classes • **Outcomes measured:** Elective induction rates	• After standardized education was added, class attendees were less likely to have elective induction (27.9%, n = 239) than nonattendees (37%, n = 292, p < .00). • Sixty-three percent of women who attended the classes and did not have elective induction indicated that the classes were influential in their decision.	• **Weaknesses**: • Patients were not randomly selected for prepared childbirth class attendance. • Among patients who participated in the survey, class attendees were slightly older and had a higher level of education than those who did not attend. • **Strengths:** • Classes were provided by 15 Lamaze certified childbirth educators who all attended meetings to review the content and emphasize the importance of presenting the information in a standardized objective format. • One investigator attended selected class sessions over the course of the 7 months to monitor consistency and objectivity in presentation of

		between class attendees who were exposed to the education and nonattendees who did not receive the education over a 7-month period. These rates were also compared for class attendees and nonattendees using the prior 7-month period as a baseline.		the information. • **Significance for my project:** Education regarding elective induction offered during prepared childbirth classes was associated with a decreased rate among nulliparous women who attended classes when compared to those who did not attend. Patient education may be beneficial in reducing elective inductions.
Tong, C., Mackeen, A., & Berghella, V. (2012). The effect of standardized counseling on patient knowledge about induction of labor. *Journal of Maternal-Fetal & Neonatal Medicine*, *25*(12), 2700-2703 4p. doi:10.3109/14767058.2012.703726 **Level of Evidence: VI**	**Purpose:** To determine if standardized counseling regarding methods and risks of induction of labor improved patient knowledge. Secondarily, to determine which details about induction of labor were deficient from our patients' knowledge.	• **Design:** IRB-approved prospective study • **Sampling method:** conducted at Thomas Jefferson University Hospital in Philadelphia, Pennsylvania, from October 2010 to June 2011. Women with term singleton gestations were included. Patients were recruited from two obstetric practices, either the resident physician clinic, which serves an underinsured population, or the attending physician private office. • **Sample Size:** Sixty-six patients were enrolled in this study: 23 in Group A and 43 Group B. • **Interventions:** Two groups of patients were evaluated: Group A received standardized counseling in the resident	• Group A showed statistically significant improvement in knowledge after standardized counseling (17.1%, $p \leq 0.01$). • Group A also scored significantly better on the post counseling test than Group B (84.7% vs. 64.6%, $p \leq 0.01$). •	• **Weaknesses**: • Researchers were unable to obtain pre-counseling assessments of patients in Group B. Therefore, they could not assess any changes in knowledge based on non-standardized counseling. • **Strengths:** There were no significant differences between the groups in terms of age, parity, prior induction, prior cesarean, level of education, or ethnicity. There were also no significant differences between groups regarding perception of being counseled or delivery method. • Patients in Group A served as their own controls. Their knowledge was assessed prior to the intervention of standardized counseling as well as at a later date when their knowledge would have

		clinic; Group B received non-standardized counseling, in the resident clinic or private practice. The standardized counseling group received questionnaires before and after standardized counseling; the non-standardized counseling group received questionnaires after non-standardized counseling. • **Outcomes measured:** The questionnaire assessed maternal demographics and included seventeen questions in a true/false format, to assess patient knowledge about the timing and method of induction, as well as risks of complication and failure. The primary outcome was the mean difference in percentage correct between pre- and post-standardized counseling. Secondary outcomes were the mean differences in percentage correct between post-standardized and non-standardized counseling and determination of which specific details regarding induction were deficient from patients' knowledge as well as whether this was improved after		impacted their experience. • Additionally, the prospective assessment of the intervention limits recall bias. • **Significance for my project:** Standardized counseling improves patient knowledge about induction of labor. In the future, this information can be used to appropriately direct patients' expectations and improve satisfaction with the induction process.

		standardized counseling.		

Appendix B

Childbirth Choices Follow-up Survey

When labor begins <u>naturally on its own,</u> your contractions begin or water breaks without the use of medical interventions.

The term "induction" refers to labor that is started by using medications that are given through an IV or applied directly to the cervix. In most cases inductions require advanced scheduling and occur in the hospital before labor begins <u>naturally on its own.</u>

The term "prepared childbirth class" refers to a Lamaze Prepared Childbirth class, an Infant Care Class or a One Day Prepared Childbirth Class.

1. Did you attend a prepared childbirth class at Flowers Hospital?
   - □ Yes
   - □ No

2. If yes, what type of prepared childbirth class did you attend at Flowers Hospital?
   - □ Lamaze Prepared Childbirth class
   - □ Infant Care Class
   - □ One Day Prepared Childbirth Class
   - □ Other pregnancy/delivery related class at Flowers Hospital
   - □ Non-applicable, I did not attend a prepared childbirth class at Flowers Hospital

3. If you did not attend a prepared childbirth class at Flowers Hospital how did you prepare for the birth of your baby?
   Select all that apply:
   - □ Childbirth class through my physician's office or another hospital
   - □ Private childbirth preparation class
   - □ The Internet
   - □ Books/Magazines
   - □ Television shows (such as Birth Day, A Baby Story, Maternity Ward etc.)
   - □ Talking with friends and family
   - □ Other, Please explain _____

4. Who or what provided the most useful information for what to expect during your labor and birth?
   - □ My labor nurses
   - □ My childbirth class instructor
   - □ My physician
   - □ My family
   - □ My friends
   - □ Books/Magazines
   - □ The Internet
   - □ Television shows (such as Birth Day, A Baby Story, Maternity Ward etc.)
   - □ Other, please explain_____

5. What type of birth did you have?
   - □ Vaginal
   - □ Cesarean

6. During your pregnancy did your physician offer you the option of having your labor induced?
   - □ Yes
   - □ No

7. If yes, when during your pregnancy did your physician offer you this option?
   - □ Early in my pregnancy
   - □ During the middle of my pregnancy
   - □ A few weeks before my due date
   - □ Right around my due date
   - □ After my due date had passed

8. What type of labor did you have?
   - □ I went into labor naturally on my own
   - □ My labor was induced

9. If your labor was ***not*** induced, was this your decision or your physician's decision?
   - □ My decision (I did not ask my physician to induce my labor)
   - □ My decision (My physician suggested labor induction, but I did not want my labor induced)
   - □ My physician's decision (I asked my physician for a labor induction, but he or she said no)
   - □ Non-applicable

10. If **you** decided not to have your labor induced, what was the ***most*** influential factor in your decision?

    _____
    _____

11. Did the information received in the prepared childbirth class in any way influence your decision to ***not*** have your labor induced?
    - □ Yes, Please explain:

    _____
    _____

    - □ No, Please explain:

    _____
    _____

    - □ Non-applicable, I did not attend a prepared childbirth class

12. Are there any other reasons that you chose to wait until spontaneous labor occurred?
    - □ Yes, Please explain:

      _____
      _____
      _____
    - □ Non-applicable

13. Were you satisfied with the outcome of your labor?
    - □ Yes
    - □ No, Please explain:

      _____
      _____
      _____

If your labor was *not* induced, you are finished with this survey. Thank you for participating. If your labor was induced, please proceed with the next question.

14. What was the **MAIN** reason that your labor was induced?
    - □ My physician was concerned about the size of the baby
    - □ My physician was concerned that I might be overdue
    - □ My water had broken and there was a fear of infection
    - □ My physician felt the baby was not doing well and needed to be born soon
    - □ I had a health problem that required quick delivery of the baby
    - □ I wanted relief from pregnancy discomforts
    - □ I wanted to get the pregnancy over with
    - □ I wanted to control the timing of birth for work or other personal reasons
    - □ I wanted to give birth with a specific physician who would be available on that day
    - □ I'm not sure why my labor was induced
    - □ Other, Please explain _____

15. If your labor was induced, was this primarily your decision or your physician's decision?
    - □ My decision (I asked my physician to induce my labor and he or she agreed)
    - □ My physician's decision (My physician suggested labor induction or said that I needed to be induced and I agreed)

16. If the decision to be induced was yours, when did you make this decision?
    - □ Early in my pregnancy
    - □ During the middle of my pregnancy
    - □ A few weeks before my due date
    - □ Right around my due date
    - □ After my due date had passed

17. Do you feel you were adequately prepared for what to expect during your labor induction?
    - □ Yes
    - □ No

18. Who or what provided the most useful information for what to expect during your labor induction?
    - □ My labor nurses
    - □ My childbirth class instructor
    - □ My physician
    - □ My family
    - □ My friends
    - □ Books/Magazines
    - □ The Internet
    - □ Television shows (such as Birth Day, Maternity Ward etc.)
    - □ Other, please explain_____

19. Having experienced a labor induction, would you choose to have your labor induced for your next pregnancy?
    - □ Yes, Please explain:

      _____
      _____
      _____
    - □ No, Please explain:

      _____
      _____
      _____

20. Did the information received in the prepared childbirth class in any way influence your decision to have your labor induced?
    - □ Yes, Please explain:

      _____
      _____
      _____
    - □ No, Please explain:

      _____
      _____
      _____
    - □ Non-applicable, I did not attend a prepared childbirth class

21. What additional information would have been beneficial to you in making your decision to have your labor induced?

    Please explain:

    _____
    _____
    _____
    _____

22. What do you know now that you wish you would have known prior to consenting to labor induction or asking that your labor induced?

    Please explain:

    _____
    _____
    _____
    _____
    _____

23. What is your highest level of education?

    □ 8th grade
    □ High school
    □ Some college
    □ 4-year college graduate
    □ Graduate school or professional degree

Thank you so much for taking the time to complete this survey and participate in our research study about Childbirth Choices. We really appreciate it. The information you provided will help us as we plan our care for mothers and babies who give birth at Flowers Hospital. Congratulations on the birth of your baby!

Ashton Leger, RN, BSN

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