

EVIDENCE-BASED RECOMMENDATIONS FOR NURSING CARE DURING THE  
SECOND STAGE OF LABOR  
A BEST PRACTICE APPROACH

By

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### Abstract

The purpose of this thesis was to develop best practice recommendations to care for women in the second stage of labor. Evidence suggests that care of women during the second stage of labor using upright positioning, delayed pushing, application of warm compresses to the perineum, and perineal massage can improve maternal and neonatal outcomes (Aasheim et al., 2011; Brancato et al., 2008; Chang et al., 2011; Dahlen et al., 2007; Dahlen et al., 2009; Gillesby et al., 2010; Gupta et al., 2012; Kelly et al., 2010; Sanders et al., 2005; Schaub et al., 2008; Simpson & James, 2005; Terry et al., 2006; Thies-Lagergren et al., 2013). A theoretical plan for implementation and evaluation of best practice recommendations for the second stage of labor was discussed in this paper. Registered nurses implementing evidence-based recommendations within the hospital setting for pregnant women regarding delayed pushing, upright labor positions, and interventions to reduce perineal trauma and pain, would provide women care that may improve second stage of labor outcomes.

## CHAPTER 1

### INTRODUCTION

#### **Statement of Purpose**

In chapter 1, the purpose of the paper and the background of the problem will be addressed. In addition, the significance of the problem to nursing will be discussed. The purpose of this thesis was to develop evidence-based best practice recommendations for the care of women in the second stage of labor. In this thesis, recommendations for best practice will arise from articles that describe research about laboring down (delayed pushing), positioning, and techniques in order to reduce perineal trauma and pain during vaginal births. Information regarding these three topics will be discussed in detail. Historical trends of nursing care during labor will be explained and the significance of the problem to nursing will be elaborated on. After reviewing the research regarding delayed pushing, various labor positions, and therapies to reduce perineal trauma and pain, evidence-based best practice recommendations will be outlined to improve nursing care of women in the second stage of labor.

#### **Historical Background of Nursing Care**

A majority of women in the United States have given birth in hospitals rather than at home since the middle of the 20<sup>th</sup> century (Durham & Chapman, 2014). Continuous nursing care during the second stage of labor is no longer just the routine in the hospital setting, it is the expectation (Durham & Chapman, 2014). Past trends consist of a focus on physiological changes and needs of the woman and neonate from nurses and family and friends and fathers being excluded from the birth experience (Durham & Chapman, 2014). Previously, labor has been managed in the hospital setting by women lying in the lithotomy position and starting to push at ten centimeters regardless of whether or not they feel the urge to push (Brancato et al., 2008;

Simpson & James, 2005; Gillesby et al., 2010; Kelly et al., 2010; Gupta et al., 2012; Terry et al., 2006; Thies-Lagergren et al., 2013; Chang et al., 2011). Now, trends consist of family-centered nursing care, where there is a focus on psychosocial and physiological changes and meeting the needs of the family (Durham & Chapman, 2014). Family, friends, and the fathers are now involved in the birth experience. The neonate mortality rate has been reduced to 5.7 per 1,000 live births in 2014 (WHO, 2015) and the maternal mortality rate reduced to 21 per 100,000 live births in 2010 (CIA, 2010). Research shows that it is more beneficial for women to give birth in upright positions and allow women to wait to push until they feel the urge to push (Brancato et al., 2008; Chang et al., 2011; Gillesby et al., 2010; Gupta et al., 2012; Kelly et al., 2010; Simpson & James, 2005; Terry et al., 2006; & Thies-Lagergren et al., 2013).

According to the Centers of Disease Control, there were 3,932,181 births in 2013, which is 12.4 births per 1,000 people in the United States (2015). Labor and birth are separated into four distinct stages (Durham & Chapman, 2014). The first stage begins with the onset of labor and ends with complete cervical dilation, meaning that a woman is fully dilated to 10 centimeters (Durham & Chapman, 2014). The second stage of labor begins with complete cervical dilation and ends with the delivery of the neonate/s, and the third stage of labor begins after the delivery of the neonate and ends with the delivery of the placenta and membranes (Durham & Chapman, 2014). The fourth and final stage begins after the delivery of the placenta and is completed 4 hours later. This stage is considered to be the immediate postpartum period (Durham & Chapman, 2014). Since the second stage of labor will be the focus in this paper, it will be discussed more thoroughly in the following paragraph.

The second stage of labor can last anywhere from 20 minutes for multigravidas to 50 minutes for primigravidas with contractions every 1 to 2 minutes for 50-90 seconds in duration

(Durham & Chapman, 2014). During the second stage of labor, women may have a strong urge to push (or bear down), due to the neonate reaching the pelvic floor (Durham & Chapman, 2014). Nursing care during the second stage of labor is very important so a woman can have a more positive experience during birth. For years, researchers have investigated different positions, timing, and different techniques in order to provide more optimal care during the second stage of labor and improved outcomes for both mom and neonate.

### **Significance of the Problem**

As stated above, labor has been managed in the hospital setting by women lying in the lithotomy position and starting to push at ten centimeters regardless of whether or not they feel the urge to push (Brancato et al., 2008; Simpson & James, 2005; Gillesby et al., 2010; Kelly et al., 2010; Gupta et al., 2012; Terry et al., 2006; Thies-Lagergren et al., 2013; Chang et al., 2011). These practices have led to adverse outcomes and effects, such as an increase in the following: pain (Chang et al., 2011), fatigue (Chang et al., 2011), perineal tears (Terry et al., 2006), episiotomies (Gupta et al., 2010), instrument-assisted births (Brancato et al., 2008; Gupta et al., 2012), active pushing time (Brancato et al., 2008; Gillesby et al., 2010; Kelly et al., 2010), and duration of labor for pregnant women (Chang et al., 2011; Terry et al., 2006; Thies-Lagergren et al., 2013). In neonates, adverse effects include an increase in oxygen desaturations and a decrease in pH levels (Simpson & James, 2005; Yildirim & Beji, 2008). Evidence suggests that the nursing care of women during the second stage of labor using upright positioning, delayed pushing, and the use of perineal interventions, such as warm compresses and perineal massage can improve maternal and neonatal outcomes (Aasheim et al., 2011; Brancato et al., 2008; Chang et al., 2011; Dahlen et al., 2007; Dahlen et al., 2009; Gillesby et al., 2010; Gupta et al., 2012;

Kelly et al., 2010; Sanders et al., 2005; Schaub et al., 2008; Simpson & James, 2005; Terry et al., 2006; Thies-Lagergren et al., 2013).

Research has shown that maternal positions that are upright (walking, sitting, squatting, kneeling) have more benefits than the lithotomy position (Chang et al., 2011; Gupta et al., 2012; Terry et al., 2006; Thies-Lagergren et al., 2013). When the mother is positioned upright, there is a decrease in the “compression of the descending aorta and ascending vena cava” in the mother, which could compromise cardiac output if compressed (Gupta, Hofmeyr, & Smyth, 2004 as cited in Durham & Chapman, 2014, p. 194). When this occurs, the mother can experience supine hypotension, which then leads to decreased placental perfusion (Gupta, Hofmeyr, & Smyth, 2004 as cited in Durham & Chapman, 2014, p. 194). When mothers are in an upright position for labor, there has also been research to show that this position aids in the descent of the neonate and that more effective contractions occur (Gupta, Hofmeyr, & Smyth, 2004 as cited in Durham & Chapman, 2014, p. 195). In regards to positioning, frequent position changes have also shown a decrease in fatigue and an increase in comfort to the mother along with improved circulation to the mother and fetus during labor (Gupta, Hofmeyr, & Smyth, 2004 as cited in Durham & Chapman, 2014, p. 194). With non-supine birth positions, there is a decrease in vulvar edema and perineal tears (Terry et al., 2006), decrease in the second stage of labor (Chang et al., 2013; Terry et al., 2006; Thies-Lagergren et al., 2013) and a decrease in episiotomies and instrument-assisted births (Gupta et al., 2012).

Research has also shown that delayed pushing during the second stage of labor decreases maternal active pushing time (Brancato et al., 2008; Gillesby et al., 2010; Kelly et al., 2010), instrument-assisted births (Brancato et al., 2008; Gupta et al., 2012), and neonatal oxygen desaturations and increases the rate of better pH level for the neonates (Simpson & James, 2005;

Yildirim & Beji). Delayed pushing also has been shown to increase maternal satisfaction with their birth experience (Yildirim & Beji, 2008). In the past, women have been advised to push immediately when they reached ten centimeters regardless of whether or not they felt the urge to push, which resulted in a decrease in the satisfaction of their birth experience (Yildirim & Beji, 2008). Past trends have been shown to negatively affect maternal and neonatal outcomes making this problem significant to maternal-neonatal nursing in second stage labor management.

### Important Terms Defined

Various obstetrical terms are defined below in table one. These terms will be used throughout this thesis and are important in fully understanding the research and evidence-based best practice recommendations.

Table 1

*Obstetrical terms associated with the second stage of labor*

Term	Definition	Source
Apgar Score	“A rapid assessment of five physiological signs that indicate the physiological status of the newborn at birth.”	(Durham & Chapman, 2014, p. 551)
Cervical Dilation	“This measurement estimates the dilation of the cervical opening by sweeping the examining finger from the margin of the cervical opening on one side to that on the other.”	(Durham & Chapman, 2014, p. 552)
Cervix	“The neck of lowest part of the uterus; interfaces with the vagina.”	(Durham & Chapman, 2014, p. 552)
Episiotomy	“An incision in the perineum to provide more space for the fetal presenting part at delivery.”	(Durham & Chapman, 2014, p. 554)
Fourth Degree Laceration	“A laceration that extends into the rectal mucosa and to expose the lumen of the rectum.”	(Durham & Chapman, 2014, p. 555)
Laboring Down	“...process of letting the body push without the mother adding extra effort.”	(Vanderlaan, 2015)
Lithotomy Position	“Position in which the patient is on their	(Medicine Net, 2012)



	back with the hips and knees flexed and the thighs apart.”	
Open Glottis	“Refers to spontaneous, involuntary bearing down accompanying the forces of the uterine contraction and is usually characterized by expiratory grunting or vocalizations by a woman during pushing.”	(Durham & Chapman, 2014, p. 557)
Second Stage of Labor	“Begins at complete dilation of cervix and ends with delivery of the neonate.”	(Durham & Chapman, 2014, p. 559)
Third-degree Laceration	“A laceration involves skin, mucous membrane, muscle of perineal body, and extends to the rectal sphincter.”	(Durham & Chapman, 2014, p. 559)
Valsalva Maneuver	“The method of breath holding, closed-glottis pushing.”	(Durham & Chapman, 2014, p. 560)

### Summary

The purpose of this thesis was to develop evidence-based best-practice recommendations for the care of women during the second stage of labor. The goal of these evidence-based best practice recommendations is to reduce adverse outcomes and provide mothers and neonates with care that is supported by research. Chapter 2 will focus on a review of seventeen research articles that address research that supports the benefits of certain positions and pushing techniques, as well as therapies to reduce perineal trauma and pain.

## CHAPTER 2

## REVIEW OF LITERATURE

This review of literature addresses ways to care for women during the second stage of labor in relation to delayed pushing, positioning, and therapies to reduce perineal trauma and pain. Search engines including PubMed and CINAHL were applied to identify the research articles. The keyword “labor stage, second” was used within PubMed as a MESH heading and filters “English, human, and 10 years” being applied. The keyword “labor stage, second” was used within CINAHL with filters “English, human, peer reviewed, 10 years, and research” being applied. These headings and filters were applied to narrow the search and find pertinent articles. Seventeen articles were evaluated, ranging from years 2005-2014. These seventeen articles included nine randomized controlled trials, one non-randomized controlled trial, three meta-analyses, one quasi-experimental study, one retrospective cohort study, one qualitative follow-up study, and one postal survey study. The results from the above studies will be included in the evidence-based best practice recommendations for nursing care during the second stage of labor.

**Literature Review**

In chapter 2, the author discusses a literature review of research studies that have been completed within the past ten years that address nursing care for women during the second stage of labor. The articles were categorized as follows: research on laboring, positioning, and interventions to reduce perineal trauma and pain.

**Laboring Down (Delayed Pushing)**

In this section, five articles that discuss research about laboring down (pushing) in the second stage of labor are reviewed. Simpson & James (2005) conducted a randomized control trial to examine the effects of immediate versus delayed pushing during the second stage of labor

and to look at fetal well-being with the pushing types. Oxygen saturation was monitored throughout labor as well. The sample consisted of 45 women from a level three perinatal community hospital. These women were randomized into two groups by computer-generated allocation, which were the immediate pushing once 10 centimeters dilated, and delayed pushing groups (Simpson & James, 2005). The women in the study all had received epidurals.

Researchers found that the women in the delayed pushing group had less fetal oxygen desaturation than the immediate pushing group (Simpson & James, 2005). The study showed that there were no differences in length of labor for the women or Apgar scores in the neonates (Simpson & James, 2005). Women who pushed immediately did have more perineal lacerations compared to the delayed pushing group (Simpson & James, 2005). The strength of this study was that it was a randomized control trial which decreases the chance of bias.

A meta-analysis was conducted by Brancato, Church, and Stone (2008) to investigate whether passive descent or early/immediate pushing would be more beneficial in women who received epidurals (Brancato et al., 2008). This study analyzed a combination of seven randomized control studies with a total sample size of 2,827 women who received epidural anesthesia from all studies (Brancato et al., 2008). The seven studies were found by searching MEDLINE, CIN-HAL, and the Cochrane Register of Controlled Trials (Brancato et al., 2008). Once the seven studies were obtained, the data was analyzed and reviewed.

The main findings in this study showed that passive descent should be used compared to early/immediate pushing (Brancato et al., 2008). The results showed that passive descent decreases active pushing time, decreases the amount of instrument-assisted births, and increases spontaneous vaginal births and these results were all statistically significant (Brancato et al., 2008). There were no differences in rates of cesarean births, lacerations, or episiotomies and

nothing was noted about maternal fatigue or fetal well-being (Brancato et al., 2008). Since maternal fatigue was only mentioned in two of the seven articles, it was not evaluated for this meta-analysis (Brancato et al., 2008).

The purpose of this study by Yildirim and Beji (2008) was to determine the effects of pushing techniques on the mother and neonate during birth. This study was a randomized control study (Yildirim & Beji, 2008). The sample used for this study was 100 women who were randomized into spontaneous pushing versus Valsalva pushing groups and took place in Istanbul, Turkey (Yildirim & Beji, 2008). When a pregnant woman pushes steadily through each contraction during labor, it is referred to as the Valsalva technique (Yildirim & Beji, 2008). Women who were between 38 and 42 weeks gestation who were planning on having a vaginal delivery were used in the study (Yildirim & Beji, 2008). Only 6% of the women had epidural anesthesia (Yildirim & Beji, 2008).

The results showed that women who were in the Valsalva pushing group had a longer duration of labor compared to women in the spontaneous pushing group (Yildirim & Beji, 2008). No statistically significant differences were stated between the two groups in regards to perineal tears, episiotomies and hemorrhages (Yildirim & Beji, 2008). Neonates born from the spontaneous pushing group had better Apgar scores and higher pH and PO<sub>2</sub> levels when born (Yildirim & Beji, 2008). Women also stated that they had greater satisfaction in the spontaneous pushing group (Yildirim & Beji., 2008). Researchers stated that education is key when teaching about pushing techniques and it is important to provide support for spontaneous pushing during the second stage of labor (Yildirim & Beji, 2008).

The purpose of a randomized control trial by Gillesby et al. (2010) was to establish if postponed pushing after the beginning of second stage labor decreased the length of active

pushing and fatigue in pregnant women (Gillesby et al., 2010). The sample consisted of seventy-seven women from a non-profit community hospital labor and delivery unit who all had epidural anesthesia (Gillesby et al., 2010). The inclusion criteria for this study was limited to women that were at thirty-six or more weeks gestation and sixteen years and older of age (Gillesby et al., 2010). The sample was randomized into a control and experimental group by a randomized computer program. There were thirty-nine participants in the immediate pushing group and thirty-eight participants in the delayed pushing group (Gillesby et al., 2010).

The researchers found that by postponing pushing by two hours after the start of second stage labor, active pushing was decreased by 27% (Gillesby et al., 2010). This increased the time women were in labor due to the delayed pushing, but still decreased the overall amount of time in active pushing (Gillesby et al., 2010).

Kelly et al. (2010) conducted a randomized control trial that was completed in a non-profit community hospital in the labor and delivery unit in a Southeastern part of the United States (Kelly et al., 2010). The purpose of this study was to compare the duration of active pushing amongst an immediate pushing group and a delayed pushing group once the women were dilated to ten centimeters (Kelly et al., 2010). In order to be included in this study, women had to be having a spontaneous, elective, or medically induced labor induction and be at thirty-eight weeks gestation or farther (Kelly et al., 2010). There were forty-four nulliparous women included in the study that were on a continuous epidural anesthetic (Kelly et al., 2010).

Nulliparous women are women who have never given birth before to a live neonate. In order to be included in the study, the epidural anesthetic had to be started before complete dilation (Kelly et al., 2010). Women were randomized by a computer program generator into a control group and an experimental group. There were twenty-eight women in the immediate pushing group and

sixteen in the delayed pushing group (Kelly et al., 2010). The delayed pushing group had to wait ninety minutes once fully dilated to begin active pushing (Kelly et al., 2010).

The results of this study concluded that the delayed pushing group, the group of women that waited ninety minutes to push, spent significantly less time actively pushing than the experimental group that started active pushing right when they were fully dilated (Kelly et al., 2010). The delayed pushing group of women spent around 39 minutes actively pushing until giving birth, whereas the immediate pushing group spent around 79 minutes actively pushing before giving birth (Kelly et al., 2010). As stated in the previous study, the delayed pushing group was considered to be in labor longer, but the overall pushing time was decreased (Kelly et al., 2010).

### **Positioning During Labor**

In this section, six articles will be discussed that address research on various positions during the second stage of labor. The purpose of a study by Su-Chuan Chang et al. (2011) was to investigate maternal pain, fatigue, duration of the second stage of labor, and the Apgar scores of the neonate after being born when birthing in an upright position (Chang et al., 2011). The study design was a quasi-experimental study with a sample of sixty-six women from a medical center in Taichung, Taiwan (Chang et al., 2011). In order to be included in this study, women had to be between 38-42 weeks gestation, eighteen years or older, and be absent of any medical or obstetric complications (Chang et al., 2011). Thirty-three women were in the experimental group, so they pushed spontaneously from an upright position during labor and thirty-three women were in the control group that pushed using the Valsalva technique from a supine position (Chang et al., 2011). The Valsalva technique involves a pregnant woman in labor pushing steadily through each contraction often holding her breath (Chang et al., 2011).

The main findings of this study were that women in the experimental group had a lower pain score, lower feelings of fatigue after birth of the neonate, a shorter duration of second stage labor and a more positive birth experience than the control group (Chang et al., 2011). When looking at Apgar scores during the first or fifth minute after birth, there were no significant differences between the experimental and control group (Chang et al., 2011).

The study conducted by Terry, Westcott, O'Shea, and Kelly was a non-randomized clinical trial (2006). The purpose of this study was to investigate preferred positions during childbirth and look at the postpartum outcomes in women and neonates (Terry et al., 2006). Apgar scores, demographics, blood loss, perineal tears, vulvar edema, and neonatal weight were all assessed after birth (Terry et al., 2006). The sample consisted of low-risk women from two different practices. In one practice, 100 women birthed in the supine position and in the other practice, 98 women birthed in a non-supine position which was either sitting, squatting or kneeling (Terry et al., 2006).

The results of this study indicated that women who birthed in a non-supine position had less perineal tearing than women who birthed in a supine position (Terry et al., 2006). Women who birthed in a non-supine position also had less vulvar edema and had a shorter duration of labor than supine births (Terry et al., 2006). The shorter duration of labor compared to supine births did not have statistical significance. There were no differences in the risk to the neonate in either group (Terry et al., 2006). So when comparing the results of the two groups, non-supine positioned births had more benefits than supine positioned births (Terry et al., 2006).

de Jonge, Rijnders, van Diem, Scheepers, and Lagro-Janssen (2009) conducted a retrospective cohort study. The purpose of this study was to look at various factors such as age, education, marital status, and ethnic origin to see if any of these factors were associated with

birthing positions throughout the second stage of labor and time of birth (de Jonge et al., 2009). This study was completed in the Netherlands, where 3,200 surveys were sent out via the mail to women who gave birth between three to four years prior (de Jonge et al., 2009). Researchers gathered their sample through eight primary care midwifery practices. Out of the 3,200 surveys, 1,309 were returned and used for data (de Jonge et al., 2009).

The main findings in this study showed that highly educated women and older women were more likely to give birth in a non-supine position compared to women with a lower or medium education or were less than 36 years of age (de Jonge et al., 2009). There were no significant variations in positioning techniques when looking at different ethnicities or in women with unlike marital statuses (de Jonge et al., 2009).

The research study, conducted by Thies-Lagergren, Kvist, Sandin-Bojo, Christensson and Hildingsson (2013), was a randomized control trial conducted with a sample from two hospitals in Sweden. The purpose of this study was to investigate the use of synthetic oxytocin for augmentation duration of labor and birth and neonatal outcomes in nulliparous women randomized to birth on a birth seat or any other position (Thies-Lagergren et al., 2013). In order to be included in this study, women had to have never given birth before, understood Swedish enough to where they could understand all the study information, be healthy, have an uncomplicated pregnancy with only one fetus, be between 37 and 41 weeks gestation, have a Body Mass Index less than 30, and have a spontaneous onset of labor with no assistance from any health care professionals (Thies-Lagergren et al., 2013). Since this was a randomized control trial, 500 women were in the experimental group and 502 women were in the control group. (Thies-Lagergren et al., 2013). The experimental group gave birth on the birth seat, whereas the control group gave birth in another position (Thies-Lagergren et al., 2013).



Through this study, researchers found that the women who were randomized to give birth using a birth seat, had a significantly shorter duration of second stage labor and birth than the control group (Thies-Lagergren et al., 2013). When looking at the differences between the use of synthetic oxytocin and neonatal outcomes, there were no significant differences and the results were similar between the experimental and control group (Thies-Lagergren et al., 2013).

Thies-Lagergren, Hildingsson, Christensson, and Kvist (2013) conducted a qualitative follow-up study from a prior randomized control trial (Thies-Lagergren et al., 2013). The purpose of this study was to look at factors associated with the adherence to assign birth positions and the decision-making for birth positions in the second stage of labor (Thies-Lagergren et al., 2013). The sample consisted of 289 women selected from the randomized control trial they had previously participated in (Thies-Lagergren et al., 2013). The women were asked to join the study by an online questionnaire (Thies-Lagergren et al., 2013). The sample consisted of 177 women who gave birth in the birth seat, and 112 women who did not give birth on a birth seat (Thies-Lagergren et al., 2013). The women who did not give birth on the birth seat were allowed to choose any other position for birth except the birth seat. The second group had the choice of whether or not they wanted to use the birth seat, and they all decided they wanted to use the birth seat for the second stage of labor (Thies-Lagergren et al., 2013).

The results of this study found that women who gave birth on the birth seat said that they felt like they were more involved in the decision-making process (Thies-Lagergren et al., 2013). The article also stated that the women felt like they had more of an opportunity to choose their own birth position and felt more powerful, protected, and self-confident compared to the other group that was not allowed to use the birth seat during second stage labor (Thies-Lagergren et al., 2013).

The purpose of a study conducted by Gupta, Hofmeyr, and Shemar (2012) was to learn about risks and benefits associated with various positions during the second stage of labor (Gupta et al., 2012). The study completed was a meta-analysis composed of 22 different trials with a total sample of 7,280 women (Gupta et al., 2012). Types of studies included in this trial were quasi-randomized and randomized controlled trials (Gupta et al., 2012). The researchers looked at any study that involved women using upright positioning compared to supine or lithotomy positioning in the second stage of labor (Gupta et al., 2012).

Although this meta-analysis did show that the second stage of labor duration was reduced when a woman was positioned upright compared to supine, the results were non-significant (Gupta et al., 2012). In addition, this study found that there was an increase in second degree perineal tears and estimated blood loss in the group that birthed in an upright position (Gupta et al., 2012). There were statistically significant lower rates of episiotomy and instrument-assisted deliveries rates among women giving birth in upright birthing positions compared to supine birthing positions (Gupta et al., 2012).

### **Reduction of Perineal Trauma and Pain**

In this section, the six articles reviewed addressed different therapies to reduce perineal trauma and pain. A survey study conducted by Sanders, Peters, and Campbell (2005) was used to explore various ways to reduce perineal pain during vaginal deliveries and perineal suturing. Researchers gathered their sample through questionnaires sent to 219 maternity units in the United Kingdom (UK). This study analyzed at 207 questionnaires that were completed by midwives working in maternity units (Sanders et al., 2005).

The main findings of this study showed that hot packs, cold packs, and perineal massage were used most often for pain relief amongst all of the women (Sanders et al., 2005). Local

anesthetic before perineal repair was also used. There were various doses of local anesthetics used for pain relief for perineal repair, so no guideline was given on what dosage to give for pain relief since it varied amongst women (Sanders et al., 2005).

The purpose of a study conducted by Dahlen, Homer, Cooke, Upton, Nunn, and Brodrick (2007) was to establish if perineal warm packs reduced perineal trauma and increased comfort during the second stage of labor (Dahlen et al., 2007). This study was a randomized, controlled, clinical trial (Dahlen et al., 2007). Researchers hypothesized that warm packs would increase the level of comfort in women (Dahlen et al., 2007). The sample consisted of a total of 717 nulliparous women (Dahlen et al., 2007). Participants were randomly assigned into two groups with one of the groups being 360 women who had warm packs applied during birth and 357 women who received standard care and no warm packs (Dahlen et al., 2007).

Researchers found that there were no statistically significant differences in the number of women who had perineal suturing after birth, but did find that women who had warm packs had fewer third and fourth degree tears (Dahlen et al., 2007). There was also a reduction in pain with the women that received warm packs compared to the women who received standard care (Dahlen et al., 2007). The two main strengths of this study were that it was a randomized control trial which decreases bias and that the researchers used a large sample. Researchers stated that the use of perineal warm packs is an inexpensive practice that can be easily incorporated into the nursing care for the second stage of labor (Dahlen et al., 2007).

The research study, conducted by Schaub, Litschgi, Hoesli, Holzgreve, Bleul, and Geissbuhler (2008), was a randomized control trial. The purpose of this study was to see if using obstetric gel could reduce perineal trauma and shorten the second stage of labor in nulliparous women (Schaub et al., 2008). The obstetric gel contained polyacrylic acid which the researchers

used in order to increase lubrication for vaginal deliveries (Schaub et al., 2008). The study's sample consisted of 251 women that were recruited from Switzerland at the Cantonal Women's Hospital in Frauenfeld and Schaffhausen (Schaub et al., 2008). There were two groups used for the study; one group used obstetric gel and one group did not use obstetric gel (Schaub et al., 2008). The obstetric gel was applied into the birth canal and was applied prior to four centimeters of dilation and at every vaginal examination until delivery of the neonate (Schaub et al., 2008). This practice may be used in other countries, such as Switzerland, but it is not widely used in the United States, nor is it supported by a large amount of high quality evidence.

The results showed that obstetric gel reduced the length of second stage labor by 26 minutes and also reduced perineal tears (Schaub et al., 2008). There were no statistically significant results when looking at the second stage of labor and the total duration of labor between the two groups (Schaub et al., 2008). No side effects from the obstetric gel were reported in the article (Schaub et al., 2008). Researchers stated that there needs to be further research completed on the maternal and neonatal outcomes using the gel (Schaub et al., 2008).

The purpose of a study by Dahlen, Homer, Cooke, Upton, Nunn, and Brodrick (2009) was to investigate women's and midwives' experiences when using warm packs during the second stage of labor (Dahlen et al., 2009). This study was a randomized, controlled clinical trial completed in Sydney, Australia (Dahlen et al., 2009) based off the Dahlen et al., 2007 study. The sample consisted of 266 women who received warm packs and 270 midwives who applied warm packs and they were asked to complete a questionnaire (Dahlen et al., 2009).

The results of this study showed that women and midwives were both very accepting to the use of warm packs in the second stage of labor (Dahlen et al., 2009). About 80% of the women and midwives both agreed that they felt the warm packs reduced pain during labor and

stated they felt positive about using warm packs when having another child or in their practice (Dahlen et al., 2009). Women also stated that they would be willing to recommend them to friends and 92% of midwives said that they would like to use them as part of their routine care (Dahlen et al., 2009). The strength of this study was that it was a randomized controlled trial decreasing bias throughout the study. Perineal tears and pain were decreased in women in the Dahlen et. al., 2007 study and combining this research with how accepting women and midwives are to using warm perineal packs, this should be an inexpensive implementation that could be part of routine care (Dahlen et al., 2009).

A study by Karacam, Ekmen, and Calisir (2012) focused on the technique of perineal massage during the second stage of labor. Perineal massage is a massaging technique used on the perineum, which is the area between the vagina and anus, to try to alleviate perineal tears during the second stage of labor (Karacam et al., 2012). Due to the amount of pressure on the perineum during childbirth, tears are quite common (Karacam et al., 2012). The purpose of this study was to see if perineal massage during the second stage of labor would decrease the amount of perineal trauma and tears (Karacam et al., 2012). This study was a randomized control trial including women between 37 to 42 weeks gestation, 18 to 35 years old, and were expected to have a vaginal delivery (Karacam et al., 2012). The sample for this study was taken from Aydin State Hospital in Turkey and consisted of 396 pregnant women (Karacam et al., 2012). After randomization, there were 198 in the massage experimental group and 198 in the control non-massage group (Karacam et al., 2012).

Researchers found that perineal massage did not offer any advantages or disadvantages with regards to perineal trauma (Karacam et al., 2012). It showed that perineal massage had no effect on whether or not perineal trauma would ensue (Karacam et al., 2012).

The purpose of a study conducted by Aasheim, Nilsen, Lukasse, and Reinar (2012) was to evaluate how perineal trauma was effected during the second stage of labor based on various perineal techniques. The study completed was a meta-analysis composed of eight different trials (Aasheim et al., 2012). Types of studies included in this trial were unpublished and published randomized controlled trials and quasi-randomized control trials (Aasheim et al., 2012). Perineal techniques analyzed for the study included warm compress, perineal massage, flexion technique, and Ritgen's maneuver (Aasheim et al., 2012). The total sample consisted of a total of 11,651 randomized nulliparous and multiparous women who were at least 36 weeks pregnant and were planning to have a spontaneous vaginal birth. (Aasheim et al., 2012). The women who were included in the study also had no medical complications (Aasheim et al., 2012).

One of the main overall findings of this study was that the amount of third and fourth degree perineal tears were reduced significantly due to warm compresses being held against the perineum, compared to no intervention of warm compresses (Albers, 2005 & Dahlen, 2007 as cited in Aasheim et al., 2012). The other significant finding of the study was that there was a decrease in third and fourth degree perineal tears by using perineal massage versus no perineal massage during the second stage of labor (Albers, 2005 & Stamp, 2001 as cited in Aasheim et al., 2012).

### **Summary**

In conclusion, the articles reviewed address nursing care during the second stage of labor and what clinical professionals can do to help better care for women during this stage of labor. Evidence suggests that women who give birth in a non-supine position have a decreased chance of getting vulvar edema and less perineal tearing compared to supine positions (Terry et al., 2006). Women who gave birth on a birth seat had a decreased duration of second stage labor

(Thies-Lagergren et al., 2013). It has also been shown that giving birth in an upright position with spontaneous breathing can lead to a lower pain score, a lower feeling of fatigue, a shorter duration of labor, and a more positive birthing experience (Chang et al., 2011). Nurses should educate patients about positions and the benefits of each position and allow patients to focus on their position of choice. This will allow the pregnant woman to feel more in control of her labor and feel like she is in control of her own experience (Thies-Lagergren et al., 2013).

According to one of the articles, delaying pushing during the second stage of labor decreased perineal lacerations and there were less fetal oxygen desaturations than immediate pushing groups (Simpson & James, 2005). Also, according to two of the study articles, delaying pushing for ninety minutes or more will decrease the time women will spend actively pushing in labor (Kelly et al., 2010). Research shows that spontaneous pushing compared to immediate pushing decreases the duration of labor, increases the satisfaction of women, and increases Apgar scores, pH levels, and PO<sub>2</sub> levels in neonates (Yildirim & Beji, 2008). Passive descent of the fetus instead of immediate pushing, decreases pushing time, the amount of instrument assisted births, and increases spontaneous vaginal births (Brancato et al., 2008). Since the above research included mostly women with epidurals, there could be a difference in outcomes for women without epidurals.

In regards to heat packs, research shows there is a decrease in perineal pain when using them and women had fewer third and fourth degree tears (Dahlen et al., 2007). Research also shows that women would use heat packs again during labor and recommend the use of heat packs to other women in their second stage of labor in order to reduce pain (Dahlen et al., 2009). Another way to decrease perineal pain and tears is to use perineal massage (Aasheim et al., 2011; Sanders et al., 2005). The last recommendation from one of the articles above is to use

obstetrical gel in order to decrease the length of second stage labor and decrease perineal tears (Schaub et al., 2008). However, this practice is not widely used in the United States and is not supported by a large amount of evidence.

In the next chapter, evidence-based best practices for caring for women experiencing second stage labor will be discussed.



## CHAPTER 3

### BEST PRACTICE RECOMMENDATIONS

The purpose of this thesis was to develop best practice recommendations for the care of women in the second stage of labor. Chapter two presented findings from studies that identified ways to care for women during the second stage of labor in relation to pushing, positioning, and therapies to reduce perineal trauma and pain. This chapter will describe the evidence-based best practice recommendations to care for women in the second stage of labor. Nurses and other health care professionals will be able to use these recommendations in their current practice and educate pregnant mothers on these proposed recommendations that can positively impact themselves and their neonate.

#### **Target Population**

The evidence-based best practice recommendations will be offered to all pregnant women in second stage of labor in a hospital setting. According to Durham and Chapman (2014), a woman is considered to be in the second stage of labor when their cervix is dilated to ten centimeters. All pregnant women meeting the criteria of being in the second stage of labor will be offered these best practice recommendations from registered nurses or other knowledgeable health care professionals.

#### **Evidence-Based Recommendations**

##### **Laboring Down (Delayed Pushing) Interventions**

Women in four out of the five laboring down studies had received epidural anesthesia, so this should be considered when reviewing the recommendations on delayed pushing. In regards to laboring down, the main recommendation is to allow passive descent of the fetus and delay pushing until the woman feels the urge to push once in the second stage of labor (Gillesby et al.,

2010; Kelly et al., 2010). Passive descent of the fetus, compared to immediate pushing once a woman's cervix is dilated to ten centimeters, results in a decrease in active pushing time, decrease in the incidence of instrument-assisted births (Brancato et al., 2008), decrease in perineal lacerations (Simpson & James, 2005), and an increase in spontaneous vaginal births and the satisfaction of women (Brancato et al., 2008). The research showed that neonates had better pH levels and less oxygen desaturations than the immediate pushing groups (Simpson & James, 2005; Yildirim & Beji, 2008).

### **Positioning Interventions**

In regards to positioning, the first recommendation is to encourage women to labor and give birth in a non-supine position (Terry et al., 2006; Thies-Lagergren et al., 2013). Non-supine birthing positions showed results of decreased vulvar edema and a decrease in perineal tears compared to supine birthing positions (Terry et al., 2006). In one study, birth seats were used for the second stage of labor (Thies-Lagergren et al., 2013). Women who used birth seats in the second stage of labor, compared to women who birthed in the supine position, had a shorter duration of labor (Thies-Lagergren et al., 2013). In addition, there was a decrease in pain scores and fatigue in women who used an upright position during the second stage of labor and had a more positive birth experience compared to those who birthed in a supine position (Chang et al., 2011). The second recommendation regarding positioning in the second stage of labor is to allow pregnant women to choose the birth position they want to be in for labor. Studies show that pregnant women feel more in control of their labor and birth experience if allowed to choose their birthing position (Thies-Lagergren et al., 2013).

### **Reduction of Perineal Trauma and Pain Interventions**

The evidence-based best practice recommendations that target the reduction of perineal trauma and pain for women in the second stage of labor are to use perineal heat compresses and perineal massage (Aasheim et al., 2011; Dahlen et al., 2009; Sanders et al., 2005). Research suggests that there was a reduction in third and fourth degree perineal tears among women who used heat packs compared to women who did not use heat packs during the second stage of labor (Dahlen et al., 2007). Perineal massage helps to reduce pain and lacerations (Aasheim et al., 2011; Sanders et al., 2005). Obstetrical gel shows evidence of perineal tear reduction and a decrease in the length of the second stage of labor (Schaub et al., 2008) and cold packs have been shown to reduce pain in some studies (Sanders et al., 2005), but these interventions have not been widely supported by randomized control trials and need more research completed on them before recommendations can be made.

### **Summary**

The proposed evidence-based practice recommendations for second stage labor care include information about laboring down (pushing), positioning, and techniques to reduce perineal trauma and pain, have been linked to better labor and birth outcomes for women and neonates (Aasheim et al., 2011; Brancato et al., 2008; Chang et al., 2011; Dahlen et al., 2007; Dahlen et al., 2009; Gillesby et al., 2010; Gupta et al., 2012; Kelly et al., 2010; Sanders et al., 2005; Schaub et al., 2008; Simpson & James, 2005; Terry et al., 2006; Thies-Lagergren et al., 2013). The key objective of teaching nurses these recommendations is so they will be able to provide pregnant women with evidence-based care that impacts their labor and birth. If these evidence-based recommendations are properly implemented in a hospital setting, it can be expected that labor and birth outcomes will be improved and adverse outcomes during the second stage of labor will decrease.

## CHAPTER 4

### IMPLEMENTATION AND EVALUATION

Chapter four discusses the proposed implementation and evaluation of the evidence-based best practice recommendations for the second stage of labor. These recommendations will be primarily implemented by registered nurses, but will also be taught to other health care providers, such as patient care technicians, midwives, and physicians, since they can use and promote these interventions to make a positive impact on laboring women as well. The model that will be used as a foundation for practice change implementation and evaluation in this chapter is called the Diffusion of Innovation Process/Model by Elliott Rogers (Rogers, 2003 as cited in Sahin, 2006). Knowledge, persuasion, decision, implementation, and confirmation are the five main stages that are included in this process are they are all in a time-ordered manner (Rogers, 2003 as cited in Sahin, 2006).

#### **Knowledge and Persuasion**

Within the knowledge stage of the Diffusion of Innovation Process, individuals desire information about the specific intervention that is being presented for implementation (Rogers, 2003 as cited in Sahin, 2006). Individuals want to know all of the details about the intervention and how and why it will work. In the knowledge stage, it is important to not only educate individuals on how to use the intervention correctly, but also why they are using these interventions (Rogers, 2003 as cited in Sahin, 2006).

In order to provide registered nurses in the hospital setting information about the evidence-based practice recommendations, there will be one hour workshops conducted. The workshop will include information on the historical background of nursing care in the second stage of labor, the significance of the problem, evidence-based best practice recommendations in

regards to delaying pushing, positioning, and reduction of perineal trauma and pain, and why these interventions are being recommended. These workshops will be advertised during the units' huddle, through email, and by leadership staff on the unit, such as the unit manager and charge nurse. In order to adequately provide information to all registered nurses on the labor and delivery unit, there will be a workshop for the day shift and the night shift, along with handouts to supplement learning. Registered nurses will be required to attend one of the set workshops and other health care professionals, such as patient care technicians, physicians, obstetricians, and midwives will be encouraged to attend. If there is a date or time that other health care provider's request for a special workshop, it will be accommodated in order to meet the needs of these health care providers and increase the knowledge of the intervention to the staff. Before each workshop, there will be a pre-test about the evidence-based recommendations that are going to be implemented on the unit. After the research is provided to the staff through the presentation, there will also be a post-test to see if the information taught was retained.

The second stage of the Diffusion of Innovation Process, which is persuasion, is closely related to the knowledge stage. According to Sahin, the persuasion step is when an individual shapes his/her attitude about the proposed intervention after learning about it (2006). This stage is a more feeling-centered stage compared to the knowledge stage, which is more knowing-centered (Rogers, 2003 as cited in Sahin, 2006). In this stage, the degree of uncertainty about the intervention's functioning and feelings from others, such as colleagues and peers, can highly affect the individual's beliefs about the intervention (Rogers, 2003 as cited in Sahin, 2006).

By providing health care professionals with evidence-based research that supports the interventions and the benefits of these interventions, the degree of uncertainty should also be reduced. In addition, it is important to have someone present who the team trusts, such as the

nurse educator or an evidence-based practice mentor (Melnyk & Overholt, 2011), in order to reduce uncertainty about the intervention outcomes. The evidence-based practice mentor helps to increase evidence-based knowledge of the health care team (Melnyk & Overholt, 2011).

### **Decision**

The third stage of the Diffusion of Innovation Process is the decision stage. Within this stage, individuals adopt or reject the intervention (Rogers, 2003 as cited in Sahin, 2006). Although individuals can adopt or reject the intervention, the decision can be jeopardized by personal bias meaning that some individuals might want to only implement some recommendations versus all of the recommendations (Sahin, 2006). In this case, the intervention is typically adopted more rapidly because individuals want to try the interventions on their own and then decide whether or not they want to fully adopt the interventions (Sahin, 2006). Even though the interventions may be adopted right away, rejection could occur during any point in the process (Sahin, 2006). During the decision stage in the hospital, all stakeholders will decide whether or not they believe that the evidence-based nursing care recommendations for women during the second stage of labor should be implemented on the unit.

### **Implementation**

The implementation stage is the fourth stage in the Diffusion of Innovation Process Model. During this stage, the intervention is put into practice (Rogers, 2003 as cited in Sahin, 2006). The degree of uncertainty by individuals about intervention outcomes can be problematic during this stage (Sahin, 2006). In order to reduce the degree of uncertainty during this stage, change agents such as the nurse educator or the evidence-based practice mentor should be involved to provide assistance during the implementation process (Sahin, 2006).

During the implementation stage, the evidence-based practice recommendations will be implemented into the hospital setting on the labor and delivery unit by health care professionals. Recommendations include: allowing passive descent of the fetus by delaying pushing until women have the urge to push (Gillesby et al., 2010; Kelly et al., 2010); giving birth in a non-supine position (Terry et al., 2006; Thies-Lagergren et al., 2013); allowing pregnant women to choose the birth position they want to be in for labor and delivery (Thies-Lagergren et al., 2013); and using heat packs during the second stage of labor in order to reduce perineal pain and trauma (Dahlen et al., 2009; Sanders et al., 2005).

The nurse responsible for implementation will work with the IT department at the hospital to clarify that there are fields in the electronic health record for documenting data for the woman, such as levels of pain before and after warm packs are applied, perineal interventions, fatigue levels, active pushing time and when the active pushing began compared to complete cervical dilation, if the woman had the urge to push, positioning during labor, and whether or not they chose their own position for labor. The second stage of labor begin and end time sections are already in the electronic health record, so these will not need to be added by the IT department, just documented in. If lacerations, episiotomies, or instrument-assisted deliveries occurred during the second stage of labor, this data will be documented in the electronic health record by the health care provider. Neonate Apgar scores and oxygen saturation levels, if completed, will also be documented on the electronic health record. If at any point a health care professional states he/she is not understanding why something is being completed or there is confusion about a part of the implementation process, the evidence-based practice mentor, charge nurse, unit nurse manager, or nurse educator will be available to provide additional support during the process change.

### **Confirmation and Evaluation**

The last stage of the Diffusion of Innovation Process is the confirmation stage. During the confirmation stage, “the individual looks for support for his or her decision” (Rogers, 2003, pg. 189 as cited in Sahin, 2006). At this stage, the decision of whether or not the intervention should be implemented has already been made, but the decision could be reversed if there are conflicting messages about intervention outcomes (Rogers, 2003 as cited in Sahin, 2006). At this stage, attitudes about the decision become more vital, since individuals are looking for support for the decision that they made (Sahin, 2006).

During this stage at the hospital, health care professionals will look for positive support for the decision to adopt evidence-based best practice recommendations into practice. It is very important to make sure that health care professionals feel they have an avenue to discuss problems they may be having with the implementation in order to reduce negative messages about the implementation. There will be monthly focus groups in order to identify problems in regards to the implementation process, so solutions can be implemented to solve these problems. This will show the health care providers that they are supported and involved in the implementation process. In addition, having a good support system during the implementation process, will help reduce the degree of uncertainty that the health care professionals may be experiencing (Sahin, 2006).

In order to evaluate the knowledge of the registered nurses and health care professionals about the evidence-based practice recommendations for the nursing care for women during the second stage of labor, a pre-test will be given before the workshop begins and post-test will be given after the workshop. This will allow evaluation of how much of the information the health care professionals retained and if there are any gaps in knowledge that needs to be addressed.



Before the interventions are implemented, data will be collected from the electronic health record from the previous three months in order to compare the maternal and neonatal outcomes data before and after the implementation of the interventions. After the decision is made to fully implement the interventions, there will be a three month implementation period and then data will be collected on maternal and neonatal outcomes for three months.

Data collected from the electronic health record for the woman will include levels of pain before and after warm packs were applied, perineal interventions, laceration and episiotomy rates, instrument-assisted delivery rates, fatigue levels, active pushing time, if the woman had the urge to push, the length of the second stage of labor, positioning during labor, and whether or not they chose their own position for labor. In addition, neonate Apgar scores and oxygen saturation will be collected from the electronic health record. Completing chart audits to gather the above data will allow the implementer to see if the interventions are being fully implemented on the unit. In addition, the implementer will be able to start analyzing the outcomes of the interventions if the interventions have fully been implemented to see the interventions are impacting positive maternal and neonatal outcomes, or if adjustments need to be made. Postpartum women will also be given a short survey about their satisfaction during the second stage of labor and whether or not they were able to choose their own birth position.

### **Summary**

Implementation of the best practice recommendations for nursing care during the second stage of labor will involve primarily training registered nurses and other health care professionals in the evidence-based practice recommendations in the knowledge phase of the Diffusion of Innovation Process. In order to have a positive outcome in the persuasion and decision phase, education about the recommendations and benefits must be fully explained and understood by

the health care professionals and there must be positive attitudes towards the implementation of the interventions. The implementation stage involves the health care providers implementing the evidence-based recommendations and supporting the health care providers through the process. During the implementation of these best-practice recommendations, evaluation through pre/post-tests, chart audits, health care provider focus groups, and patient surveys is highly important in order to see that the interventions are fully being implemented and positive outcomes are occurring. With the proper implementation of the evidence-based best practice recommendations including: allowing passive descent of the fetus and delaying pushing until women have the urge to push (Gillesby et al., 2010; Kelly et al., 2010); giving birth in a non-supine position (Terry et al., 2006; Thies-Lagergren et al., 2013); allowing pregnant women to choose the birth position they want to be in for labor and delivery (Thies-Lagergren et al., 2013); and to use heat packs during the second stage of labor in order to reduce perineal pain and trauma (Dahlen et al., 2009; Sanders et al., 2005), neonatal and maternal outcomes may improve.

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