To Clamp or to Delay the Clamp: Implement Best Practice

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To Clamp Or To Delay The Clamp:
Implement Best Practice

By
Kimberly Kay Popp

An Action Project Submitted in Partial Fulfillment of the
Requirements For the Degree of

A Master of Arts in Organizational Leadership
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Signature of Advisor

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Date
Master of Arts in Organizational Leadership
Abstract

One grey area in the miracle of birth is the timing of when an umbilical cord is clamped. Currently there is not agreement among obstetricians, family practice medical doctors, midwives, neonatologists, neonatal nurse practitioners and nurses as to the best time to clamp the umbilical cord following the delivery of a newborn baby. A lot of buzz regarding delayed cord clamping is currently heard in the fetal-maternal areas and newborn intensive care units of hospitals. This research examines and confirms the best practices of umbilical cord clamping, identifies barriers that may delay the adoption of the best practices, and finally recommends an implementation model to facilitate the best practices in standardized care. A literature review, a survey, and interviews compose the methodology of this research. In the literature review, delayed umbilical cord clamping versus immediate umbilical cord clamping was found beneficial to the late preterm and full-term infants, without placing the mother at risk during the postpartum period. A survey targeted at healthcare delivery professionals identified the barriers to the implementation of delayed umbilical cord clamping. Lastly, two interviews with change agents clearly defined how the barriers of delayed cord clamping can be overcome and how implementation of delayed umbilical cord clamping can become a standardized best practice among delivery team members across a healthcare system.
Leadership Action Project Research

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**Purpose of the Proposed Research**

The birth of a baby is a miracle. It is the beginning of a new life. The Neonatal Intensive Care Unit (NICU) where I work as a registered nurse (RN) has the slogan, “We deliver miracles.” As a member of the high-risk delivery infant team, I am honored to be a part of that miracle of birth. Words cannot express what it feels like to assist a baby to take his/her first breath, to stimulate a baby’s first cry, to provide the warmth the little one requires in its new environment and above all to experience the miracle of birth between baby and parents. When I exit the birthing room and close the door behind me, I know my team and I made a difference in that baby’s life and in the life of their family.

I recently entered into the Magnet Champion role on the NICU. The definition of a Magnet Champion is an RN who models professional nursing and who is also committed to strengthening professional practice within the Magnet hospital. (See Appendix A for a description of the magnet champion role.) The Magnet Champion dedicates time, energy and talent to support nursing’s strategic goals of being a Magnet hospital. A Magnet hospital is a hospital that has been recognized as an organization that provides nursing excellence in professional nursing practice resulting in high quality nursing care. In addition to supporting nursing’s strategic goals, I embrace The University of Minnesota Amplatz Children’s Hospital nursing vision: *Touching lives through excellence in caring, collaboration and innovation.* As I step into this new leadership role, I ponder how our high-functioning delivery team can be raised to an even higher level of excellence in caring, collaboration and innovation in the lives we touch.
One grey area in the miracle of birth is the timing of when an umbilical cord should be clamped. Clamping a newborn baby’s umbilical cord immediately after birth to stop the flow of blood between the placenta and the baby is routine practice today in obstetric care. Currently there is no agreement among obstetricians, family practice medical doctors, midwives, neonatologists, neonatal nurse practitioners and nurses as to the optimal time to clamp the umbilical cord following the delivery of a newborn baby. Early or immediate umbilical cord clamping refers to clamping the cord as soon as the baby is delivered. Delayed umbilical cord clamping refers to clamping the cord from any point after 30 seconds (for a premature infant) to the time when the umbilical cord stops pulsating. Published research from the Cochrane Collaboration (2009) of 11 randomised controlled trials of 2989 mothers and their babies comparing early and delayed umbilical cord clamping revealed:

Delaying clamping of the cord for at least two to three minutes seems not to increase the risk of postpartum hemorrhage. In addition, late cord clamping can be advantageous for the infant by improving iron status which may be of clinical value particularly in infants where access to good nutrition is poor, although delaying clamping increases the risk of jaundice requiring phototherapy (p. 2). Despite the published benefits primarily to infant and mother of delaying umbilical cord clamping, there is little evidence that this practice routinely occurs in hospital settings.

The process of early or immediate cord clamping evolved with the advancement of modern medical care and technology. Healthcare providers tend to practice cord clamping in the manner in which they were clinically trained. Or healthcare providers may practice cord clamping how it is being done at the organization where they work.
Hence, this is my practical purpose to do the research, I want to confirm that delayed cord clamping is the best practice as compared to the current practice of immediate cord clamping. If it is the best practice, what are the barriers as to why it is not being implemented among team members? What changes need to take place in an effort to implement the best practices? This project offers recommendations for the implementation of the best practices of cord clamping among medical teams. Following the results of this current research, a team consisting of a certified nurse midwife, an advanced practice nurse leader, a registered nurse who specializes in umbilical cord blood collection and myself will develop guidelines for umbilical cord clamping. Parents are also members of the delivery team. Prior to their delivery, parents should be informed of the difference between immediate cord clamping and delayed cord clamping. Parents should be offered a choice so that delayed umbilical cord clamping will be incorporated in their birthing plan if that is their preference.

**Analysis of Conceptual Context**

Dating back to as early as 1801, Erasmus Darwin a respected English physician, philosopher and physiologist stressed the importance of not clamping an infant’s umbilical cord right after delivery as a measure for both mother and baby’s health. In one of Darwin’s writings titled *Zoonomia* (Coggins & Mercer, 2009) Darwin wrote:

> Another thing very injurious to the child is the cutting (of) the navel-string too soon; which should always be left till the child has not only repeatedly breathed, but till pulsation in the cord ceases. As otherwise the child is much weaker than ought to be; a part of the blood being left in the placenta which ought have been in the child (p. 133).
Centuries ago, as noted in the quote above, the timing of when an umbilical cord should be clamped was of concern. Today there still continues to be considerable controversy among medical staff as to the best time to clamp the umbilical cord following the delivery of a newborn baby.

In an effort to begin my research, I have provided some definitions regarding effective strategies for implementing delayed cord clamping. First of all, a normal pregnancy is 40 weeks gestation. For this research full-term babies are defined as babies with a gestation of 37 plus weeks. Late-preterm babies are defined as babies with a gestation of 34 weeks to 36 weeks plus 6 days. Pre-term babies are defined as babies with a gestation of less than 34 weeks. This research focuses on babies in the term and late pre-term gestations.

The next term to define is umbilical cord clamping. An umbilical cord connects the placenta (mother) and the umbilicus (naval of the baby). In utero (where the fetus is developed and nourished until birth) a baby receives oxygenated blood and nutrients through the umbilical cord from its mother’s placenta. Wastes are then exchanged from the fetus to the placenta. At the time of birth, when a baby takes its first breaths, pulmonary respiration begins. As the infant continues to breathe, pulmonary circulation starts and placental circulation stops and eventually the umbilical cord stops pulsating. At some point after birth the obstetrician, midwife or nurse clamps off the umbilical cord using two clamps that are called Kelly clamps. The cord is then cut between these two clamps. The clamp on the placental side is placed on the mother’s abdomen as the placenta will soon be delivered. The clamp on the newborn’s side of the umbilical cord is removed when a new plastic cord clamp is placed about 2cm from the baby’s abdomen. This plastic cord remains on the newborn for 24 hours after birth and then is removed
with a cord clamp cutter by the nursing staff. The remaining umbilical cord that is on the infant dries up and will eventually fall off in a few weeks.

The procedure of cord clamping is categorized by two methods: immediate cord clamping and delayed cord clamping in the term babies and preterm babies. **Immediate cord clamping** is the clamping of the umbilical cord as soon as the baby is delivered. After the umbilical cord is clamped, the baby is placed on a bed warmer (a bed that provides radiant heat). If resuscitation measures are not needed a physical examination is then completed. **Delayed cord clamping** is a more complex term to define. Arca, Botet, Plalacio and Carbonell-Estrany (2010) define early or immediate and delayed umbilical cord clamping well when they state:

> The exact definition of early and delayed cord clamping remains unclear. In general, early clamping in full-term neonates is considered when the umbilical cord is clamped immediately after birth or within the first minute. In preterm neonates, early clamping is not precisely defined in any study, although clamping is generally performed between 5 and 10 seconds after birth. Delayed cord clamping in full-term neonates is usually defined at 2 or 3 minutes after birth or once it stops pulsating. In preterm infants, late clamping usually refers to cords clamped between 30 and 45 seconds after birth (p. 1275).

**Standard of care** is defined as a treatment or diagnostic process that a healthcare provider should follow for a particular patient, a circumstance that occurs or an illness. I utilized the textbook titled, *Nursing Research: Generating and Assessing Evidence for Nursing Practice* to help me form a bridge between my research and putting my research
into effective practice. What is effective practice? Webster’s Dictionary defines *effective* as causing or capable of causing a desired or decisive result. In regards to this project, effective would further be defined as a measurable strategy that can put delayed cord clamping into practice in the hospital setting when it proves to be beneficial to the baby.

There is a lot of research regarding delayed cord clamping and the history behind it. Coggins and Mercer (2009) summarize the evolution of delayed cord clamping:

In the United States, delayed cord clamping was the standard care between the 1930s and 1960s and was advocated by well-respected obstetricians. Over time, the practice of delayed cord clamping became viewed as dangerous or at least inconvenient, without adequate scientific evidence applied to the subject. In more recent times, the haste to “hand-off” even a vigorous infant to the pediatric staff results in immediately clamping and cutting the umbilical cord (p. 133).

Delayed umbilical cord clamping used to be practiced. However, healthcare providers moved away from it. The belief was that delayed umbilical cord clamping contributed to the possibility of the mother having a postpartum hemorrhage. There was also concern about high bilirubin levels due to the higher hemoglobin levels in infants resulting in the need for phototherapy among newborns. Delayed umbilical cord clamping has been re-examined by healthcare professionals over the past few years. When working alongside a neonatologist, I asked him, how do you feel about delayed cord clamping and the need for more research in this area? The neonatologist stated, “It is a hot topic. It used to be practiced, we went away from it, and there is a lot of current research that supports it. It can be beneficial to the baby.” Despite opinions like this from healthcare providers of
authority and published research supporting delayed cord clamping, immediate cord clamping continues to be the standard practice at many hospitals. Research by Arca, Botet, Palacio and Carbonell-Estrany (2010) describe the benefit of delayed umbilical cord clamping nicely when they state:

There is not enough evidence to justify routine early clamping of the umbilical cord. Early clamping appears to have no benefit for the mother and trials have shown that it has no effect on the risk of postpartum hemorrhage. The procedure of delayed cord clamping is safe and the increase initial blood volume favors higher hemoglobin levels, better cardiopulmonary adaptation, higher cerebral and gastrointestinal blood flow, improvement of iron stores and decreased risk of anemia. In preterm infants, late clamping decreases the need of treatment of hypotension and hypovolemia, blood transfusion, mechanical ventilation and oxygen therapy and is associated with less intraventricular hemorrhage and late-onset sepsis. Professionals should consider incorporating delayed umbilical cord clamping into delivery routines (p. 1284).

While conducting my research, I discovered three themes as to why immediate umbilical cord clamping continues to be practiced and why delayed cord clamping may not be implemented. In order to implement delayed cord clamping and make a change in the healthcare of babies, these themes must be first acknowledged and then addressed. The themes discovered are actual barriers (attitudes, education and technology) in the implementation of delayed cord clamping. I developed and constructed Figure 1 in an effort to demonstrate that the three themes are floating together in a funnel as an emulsion. Each circle represents a barrier as it will not mix with and remains separate
from the solution (delayed cord clamping) it is surrounded by. For the implementation of delayed cord clamping to be effective each barrier must pass through the opening of the funnel to be recognized, acknowledged and addressed.

Attitude is the first barrier in the implementation of delayed cord clamping. Obstetricians are clinically trained in a specific way and they continue to practice in the manner in which they are comfortable. As a group, midwives tend to exert more flexibility in regards to implementing delayed cord clamping. According to Oboneze and Hutchon (2009) “Obstetricians are reluctant to practice delayed cord clamping in spite of the proven benefits of this simple clinical practice. Difficulty in implementation was the main reason given although in reality it is not the case” (p. 224). There can be an additional resistance to delayed cord clamping when a baby is born prematurely. Obstetricians feel difficulty in implementing this practice with preterm babies who may need resuscitation after delivery. There are not many babies that need additional measures at birth in comparison with the number of normal deliveries. Lisa Moulton
(2011), a midwife explains “fewer than 10 percent of newborns require help to start breathing at birth and usually only require stimulation, positioning and clearing of the airway, all of which can be done while the umbilical cord remains attached” (p. 1).

Education is the second barrier in the implementation of delayed cord clamping. Leadership is needed in this area to develop education for the delivery teams. Delivery team members can include obstetricians, midwives, neonatologists, neonatal nurse practitioners respiratory therapists, delivery room nurses and neonatal nurses. Moulton (2011) stresses that awareness needs to take place amongst colleagues in order to influence practice, change protocols and produce guidelines. Parents are also part of the delivery team and they need to be educated, offered the choice and explained the benefits of delayed cord clamping.

Technology is the third barrier in the implementation of delayed cord clamping. In the past, babies were handed to their mothers in an effort for mothers to provide warmth and begin bonding with their newborn babies. With the advancement of hospital technology and bed warmers, radiant heat can take the place of a mother’s body warmth. Thus, umbilical cords can be quickly clamped and infants are placed on the bed warmer for a physical assessment rather than allowing that initial special bonding time. Within the last few years Kangaroo Care, which is defined as skin-to-skin contact and bonding between a mother and her baby is becoming a more common practice.

After recognizing and addressing the barriers of delayed cord clamping, there is a need for strong leadership to provide strategies in the development and implementation of delayed cord clamping. Changes in current practice in the medical field are primarily the result of Evidence-Based Practice (EBP). EBP was an approach that began in 1992 in the
area of medicine and has branched off into other areas such as nursing, education and psychology. Dr. David Sackett, a pioneer in evidence-based practice provides the best definition of EBP. According to the website, What is Evidence-Based Practice (EBP)? (2010) Sackett states, EBP is “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research.” EBP utilizes the integration of three very important components into the decision making process for patient care (see Figure 2).

![Image of Evidence-Based Practice (EBP) Decision Making Process](EBP, 2010)

Patient values and preferences, clinical experience and best research evidence all play a role in the decision making process for patient care. The patient has his or her concerns and values. Clinical expertise refers to the healthcare provider’s education, skills and experience in the field he/she practices. Lastly, best research evidence can be explained by Sackett who states, “The best evidence is usually found in clinically relevant research that has been conducted using sound methodology” (EBP, 2010).

One change model that has been utilized at my organization is the Change Acceleration Process (CAP) model. The Change Acceleration Process (CAP) Model
(2006) was developed by the General Electric Company. The model is the property of GE Healthcare (see Figure 3) and has advanced into the healthcare industry.

The CAP Model may allow individuals and organizations to transform through the current state, the transitional state of change and to the improved state by focusing on five areas of leadership: Creating a Shared Need, Shaping a Vision, Mobilizing Commitment, Making Change Last and Monitoring Progress.

**Research Question and Methodology**

My Leadership Action Project will attempt to answer this question: *What barriers exist to standardizing best practice in cord clamping within the Fairview Health System*
in light of the fact that delayed cord clamping is gaining increased support among healthcare workers?

Focus 1: Literature Review

I conducted a literature review to confirm that delayed umbilical cord clamping is supported by evidence-based research. A literature review created an illustration of published information regarding both immediate and delayed cord clamping. I selected the search engines MEDLINE and PubMed to examine current cord clamping procedures by reviewing recent studies and trials. From this literature review, themes emerged identifying barriers as to why delayed umbilical cord clamping is not routinely practiced.

Focus 2: Healthcare Provider Survey

Maxwell (2005) states:

The relationships that you create with participants in your study (and also with others, sometimes called “gatekeepers,” who can facilitate or interfere with your study) are an essential part of your methods, and how you initiate and negotiate these relationships is a key design decision (p. 82).

Throughout this research study I hope to initiate, negotiate and foster relationships. I want the participants to feel their time spent working with me is valued and that they are a part of paving a path to future practice. Maxwell (2005) stresses the importance of the feelings of participants in a study when he states, “A little consideration, a little thought for others, makes all the difference” (p. 85). I am currently in contact with the Perinatal Advanced Practice Nurse Leader on The Birthplace at The University of Minnesota Amplatz Children’s Hospital. She allowed me to “gain access” to obstetricians, family practice MDs, midwives and nurses throughout the Fairview system whom I sent the survey to.
In an effort to obtain viewpoints on delayed cord clamping in the late premature population, I sent the survey to all neonatologists, neonatal nurse practitioners and nurses throughout the Fairview Health System who work with this population. I was able to “gain access” to these healthcare providers due to the fact that I work with them. I conducted a Fairview system-wide survey to answer the question: *What are the barriers that need to be identified and addressed to allow best practice to become a standard practice?* This question allowed me to identify the barriers to implementing the best practice of umbilical cord clamping. I learned what each of the following delivery team members (obstetricians, family practice medical doctors-FMPs, certified nurse midwives, neonatologists, neonatal nurse practitioners and registered nurses) feel about delayed cord clamping and what they perceive to be barriers to its implementation. I utilized Survey Monkey to send my survey to providers throughout the Fairview system. I also examined the relationships between the questions asked. By collecting data through a survey, I was able to obtain a large amount of data from a large group of healthcare providers. I surveyed six Fairview facilities: Fairview Lakes Medical Center, Fairview Maple Grove Medical Center, Fairview Ridges Hospital, Fairview Southdale Hospital, Fairview Northland Medical Center and The University of MN Amplatz Children’s Hospital. See Appendix B for the ten survey questions.

Obstetricians, family practice MDs and midwives are the individuals who are physically cutting the umbilical cords at the deliveries. The University of Minnesota Amplatz Children’s Hospital is the only facility within the Fairview system that has nurse midwives as providers; thus, I needed to conduct the survey system-wide as I did not want to skew the data. The neonatologists, neonatal nurse practitioners and registered
nurses that I work with on the NICU provided viewpoints on the premature population. The labor and delivery nurses are present at deliveries.

I attended the Zero Birth Injury Committee meeting on July 12, 2012 and introduced the survey to the committee members. The Zero Birth Injury Committee is a Fairview Health Systems mothers’ and children’s quality and safety steering committee. The committee is made up of healthcare team members such as pediatricians, obstetricians, midwives, advanced practiced nurses, etc…who work on designing and implementing changes and safety in the maternal-child clinical areas. At the meeting, we informed the committee members of the survey that would be sent out to them. When the survey was conducted, it increased awareness of this topic to all team members. The survey was sent to approximately 900 healthcare providers. Under the direction of Perinatal Advanced Practice Nurse Leader on The Birthplace at The University of Minnesota Amplatz Children’s Hospital, an email was sent to the nurse leaders at each of the Fairview sites asking for a rough estimate of the number of obstetricians, family practice MDs, certified nurse midwives, neonatologists, neonatal nurse practitioners and registered nurses that their site had.) The leaders were also the contacts that forwarded my surveys to their healthcare providers. I conducted the survey and 117 healthcare providers voluntarily responded. This was roughly 13% of the individuals who were surveyed.

My goal for the qualitative data analysis from the survey was to understand the barriers and ultimately improve practices in the highly functioning delivery teams within the healthcare system. I utilized Appreciative Inquiry (AI) because this method of data
collection is a “search for the best in people, their organizations, and the relevant world around them… AI involves, in a central way, the art and practice of asking questions that strengthen a system’s capacity to apprehend, anticipate and heighten positive potential” ("Appreciative Inquiry," 2005). I formulated the raw data from the survey answers by developing themes that helped me identify the barriers.

My next step was to connect the themes to create a design that demonstrated the relationships among the survey questions. One example of a relationship was to examine survey question #1 “Which of the following are you?” (See Appendix B) with survey Question #8 “What are your barriers to using delayed cord clamping?” There were similarities and differences in the barriers of delayed cord clamping pending if the respondent was an obstetrician or a certified nurse midwife. Also, what answer occurred the most in each of these survey questions?

**Focus #3: Expert Interviews**

I conducted two interviews to answer the question; *What are effective change management strategies for implementing best practice?* I interviewed two change consultants within the Fairview system to answer the core question, what are effective change management strategies that have previously worked for you to allow successful implementation of evidence based medical practice in the healthcare setting? Names of the consultants were kept confidential and consent was obtained from these two individuals. See Appendix C for examples of interview questions. I conducted the interviews in a mutually agreed upon private room that was convenient for each person. I reviewed four methodology books that helped me draft survey and interview questions: Qualitative Interviewing The Art of Hearing Data, InterViews, Handbook of Interview
In the two interviews, I asked open-ended questions which utilized Appreciative Inquiry by asking the questions in a positive manner. For example, “Describe a “personal best” change that you were a part of implementing?”

**Validity**

Validity is important in research. Validity is defined as the relationship of the conclusions to reality. Strategies can be used to identify and help with validity threats. Maxwell (2005) emphasizes:

> Strategies work only if you *use* them. Putting them in your proposal as though they are magical spells that could drive away the validity threats (and criticism of the proposal) won’t do the job; you will need to demonstrate that you have thought through how you can effectively use them in your own study (p. 109).

In the methodology section of my research design, **Triangulation** was built into the data collection methods. Triangulation was the first strategy that I used to help with validity threats. Triangulation is a process of collecting data using a variety of sources and methods. When defining triangulation, Maxwell (2005) explains, “this strategy reduces the risk that your conclusions will reflect only the systematic biases or limitations of a specific source or method and allows you to gain a broader and more secure understanding of the issues you are investigating” (p. 93-94). I conducted my data collection by focusing on triangulation. This strategy works well with a researcher’s reactivity (ability for researcher to influence) the research. Triangulation is protection against researcher bias. Regarding my research question, triangulation was supported in the following three ways. A literature review supported focus one: best practice. A
survey supported focus two: barriers. The interviews supported focus three: change process. I constructed Figure 4 below for an easier understanding of methodology.

![Figure 4: Triangulation of Data Collection](image)

A second strategy I utilized that also worked well with reactivity is the **collection of “rich” data**. In the methodology section of my research design, this strategy was built into the data analysis section. I taped and transcribed the interviews in an effort to focus on the content of the whole interview versus taking notes on what I felt was important. This process aided in the construction of creating themes and relationships among the verbal data by hearing and seeing the interview content again.

A third strategy that was utilized was **intensive, long-term involvement**. My long-term involvement of seventeen years in the NICU helped me identify my biases and allowed me to work through them. As a member of the high-risk delivery team, I attend high-risk deliveries. Maxwell (2009) states, “Repeated observations and interviews, as well as the sustained presence of the researcher in the setting studied, can help to rule out spurious associations and premature theories” (p. 110).

A fourth strategy that was important in dealing with validity threats was **respondent validation**. I felt that I found myself soliciting feedback about the data and some of the conclusions with the survey participants. For example, the late preterm infant benefitted
the most from delayed cord clamping and neonatologists appeared to be interested in this knowledge.

By utilizing these four strategies throughout my research, I limited the validity threats of bias and reactivity. Validity is especially important in healthcare research as it affects how procedures are done to individuals receiving medical care.

I reported my findings of the healthcare provider survey on Thursday, September 20, 2012 to the ZBI committee. The two change consultants that I interviewed were present. My presentation on this research action project was Wednesday, November 7 2012 at The University of Minnesota Amplatz Children’s Hospital Brennan Center. Throughout this entire process, I wanted to emphasize two important concepts. First, my hope was that my participants feel they played a role in the development of the best practices of umbilical cord clamping. Second, I wanted the value of this research to increase awareness and be helpful in leading and implementing the framework of change.

Findings

The findings are divided into the three focuses, the literature review, the Healthcare Provider Survey and the expert interviews.

Focus #1: The Literature Review

In a literature review of umbilical cord clamping the focus was on best practice. The question to answer: Is immediate or delayed umbilical cord clamping supported by evidence-based research? Literature supports that delayed umbilical cord clamping generally is most often advantageous for the infant. According to *The Cochrane Collaboration* (2009), Effect of Timing of Umbilical Cord Clamping of Term Infants on Maternal and Neonatal Outcomes (Review) included 11 trials of 2989 mothers and their
babies. Regarding the mother, the main results of this review showed:

No significant differences between early and late cord clamping were seen for postpartum hemorrhage or severe postpartum hemorrhage in any of the five trials (2236 women) which measured this outcome (relative risk (RR) for postpartum hemorrhage 500mls or more, 95% confidence interval) (p. 1).

Regarding the infant, “late cord clamping can be advantageous for the infant by improving iron status which may be of clinical value particularly in infants where access to good nutrition is poor, although delaying clamping increases the risk of jaundice requiring phototherapy.” (p.2). In both term and preterm infant populations, few (such as jaundice and photoherapy), if any risks were associated with delayed cord clamping.

Professional practice conversations among healthcare workers over the last seven months and at ZBI committee meetings within the Fairview Healthcare System indicate that delayed cord clamping would be beneficial to the baby. By having conversations and conducting the Healthcare Provider Survey on umbilical cord clamping an increased awareness of the topic developed.

Focus #2: Healthcare Provider Survey

The Healthcare Provider Survey was conducted from August 13, 2012 – September 10, 2012 via Survey Monkey. One additional survey was sent two weeks after the initial survey to those individuals who did not complete the survey at that time. All of the six Fairview hospitals within the Fairview System were included in the survey. The data was collected from 117 healthcare professionals who volunteered to take the survey. All percentages from survey results reflect the response percent of the response count.
Question #1 from the survey reads as follows, “Please indicate which of the following are you?” The registered nurses were the largest healthcare professional group that responded to this question, they consisted of 71.8% of the healthcare professionals. Registered nurses had the largest pool of people in comparison with the other groups of healthcare professionals surveyed. The other healthcare respondents that completed the survey include the following: 10.3% were obstetricians, 8.5% were certified nurse midwives, 4.3% neonatologists, 3.4% family practice MDs and 1.7% neonatal nurse practitioners.

Question #2 from the survey reads as follows, “At which hospital do you currently practice?” Of the six Fairview hospital sites, The University of MN Amplatz Children’s Hospital had the largest response rate. Of the Fairview hospitals, this hospital has the most employees. Fairview system-wide hospital response rates were as follows:
The University of MN Amplatz Children’s Hospital 64.1%
Fairview Southdale Hospital 21.4%
Fairview Ridges Hospital 15.4%
Fairview Lakes Medical Center 8.5%
Fairview Northland Medical Center 1.7%
Fairview Maple Grove Medical Center 0.9%

I examined the relationship between two of the survey questions to allow me to evaluate how familiar each health professional was with delayed cord clamping. I did a crosstab of the responses from the following two questions. Question #1: “Please indicate which of the following are you?” and Question #3 which focuses on familiarity with delayed cord clamping. Question #3 reads as follows, “Cord clamping for a term
baby (36+ weeks) can be delayed “between two minutes after birth and cessation of cord pulsations” – which can be additional minutes. In a later preterm baby (34 to 36+6 weeks) cord clamping can be delayed 30 seconds or more pending the baby’s current respiratory status and the needed resuscitation measures to sustain life. Are you familiar with delayed cord clamping as a strategy in managing the third stage of labor?” See Figure 5 for the stacked responses from each healthcare professional group. These responses range from “I have never heard about it” to “I have used it regularly.” The differences between the colors in the response rate by each individual group of healthcare professionals can be identified.

![Figure 5: Familiarity of Delayed Cord Clamping Among Healthcare Professionals](image)

When taking a closer look at the responses above, all of the healthcare professionals except the certified nurse midwives have an amount of blue present. The blue color represents that health professionals have heard about it, but never witnessed delayed cord clamping. The certified nurse midwives are the most familiar with delayed cord clamping. They have two colors present. First, they have a majority of the green color
present, which signifies that they have used it regularly. This group also has the red color present, red indicates that they have used it a few times.

Next, I evaluated if the healthcare professionals practiced delayed cord clamping. I did a crosstab of the responses from the following two questions. Question #1: “Please indicate which of the following are you?” and Question #4 which focuses on practicing delayed cord clamping. Question #4 reads as follows: “Have you practiced delayed cord clamping as a strategy for managing the third stage of labor?” See Figure 6 below for the stacked responses from each healthcare professional group.

![Figure 6: Practice of Delayed Cord Clamping Among Healthcare Professionals](image)

These responses range from “Never” to “Always.” The differences between the colors in the response rate by each individual group of healthcare professionals can be identified. “Never” is the most common answer in all healthcare provider responses. Certified nurse midwives have practiced delayed cord clamping the most as they have the largest chunks of the green color, which represents “always” and red color which represents “21+ times.”
Obstetricians are the second largest group to practice delayed cord clamping. There are differences in the health care that is being delivered.

To further examine these two questions of familiarity and the practicing of delayed umbilical cord clamping; a connection or a bridge is formed and the barrier of attitudes is formed, see Figure 7.

This bridge between the two questions forms the barrier of attitudes in the following manner. By taking a few steps back and referring to Figure 5, there is only an orange color, which represents “I have never heard about it” (familiarity) in the registered nurse profession. This only block of orange represents 12.8% of the registered nurses that “have never heard about it.” Nurses do not routinely clamp umbilical cords at deliveries. No other healthcare professional group has this orange color present. Also when referring back to Figure 6 and examining the (practice) of delayed cord clamping, “Never,” the orange color, was the most common answer (69.1%) among professionals. Thus, healthcare professionals have at least heard about it; however, it is not being practiced. Obstetricians and family practice MDs are the healthcare professionals targeted in this finding. Some certified nurse midwives might have the barrier of attitudes. Remember back in Figure 5: Familiarity with Delayed Cord Clamping,
certified nurse midwives all heard about it. Of the ten certified nurse midwives who responded to the survey, only one “never” practices delayed cord clamping as the orange color signifies back in Figure 6, five of the certified nurse midwives have used it “21+” times (red color) in their practice. Only four certified nurse midwives have “always” (green color) used it. Usually neonatologists and neonatal nurse practitioners are not the healthcare professionals who are practicing the management and cutting of the umbilical cord.

The next five survey questions focus on education. See Figure 8 below.

Questions #5 and #6 of the survey focus on benefits of delayed cord clamping to the term and late preterm infants. Question #5 reads as follows, “Which of the following benefits of delayed cord clamping in full term infants are you aware of?” The healthcare providers awareness to the benefits in the full term population is indicated in their response percentages of the response count. The percentages are as follows: increase hematocrit, hemoglobin levels and ferritin (60.7%); decrease iron-deficiency anemia (41.9%); allow better perfusion and circulation to the gut (37.6%); increase cerebral blood flow (34.2%); none of the benefits (28.2%); duration of breastfeeding (10.3%); decrease costs (10.3%); other (7.7%).
Question #6 asks, “Which of the following benefits of delayed cord clamping in late preterm infants are you aware of?” The healthcare providers awareness to the benefits in the late preterm population is indicated in their response percentages of the response count. The percentages are as follows: less transfusions due to anemia (48.7%); none of the above (41%); less hypotension (increased blood pressure, less inotropic support) (35%); improvement of cerebral oxygenation (34.2%); less intraventricular hemorrhage (20.5%); less late-onset sepsis (15.4%); fewer days on mechanical ventilation (13.7%); decrease costs (12.0%); other (2.6%).

Question #7: “In your opinion, which of the following are maternal/fetal barriers to using delayed cord clamping?” The healthcare providers awareness to the maternal/fetal barriers to using delayed cord clamping is indicated in their response percentages of the response count. The percentages are as follows: delay in resuscitation for infant (58.4%); increase neonatal jaundice requiring phototherapy (26.5%); none of the above (23.0); general anesthesia (21.2%); higher levels of hemoglobin in infant (20.4%); hypothermia in infant (13.3%); hypovolemia in infant (12.4%); other (10.6%); There were many comments, they include:

- Beliefs among providers regarding the answers to this question.
- Physicians not wanting to wait.
- Patient’s and hospital’s desire for skin to skin contact. Benefits of delayed cord clamping involve holding the infant at the perineum. Placement of maternal abdomen often compresses the cord and pressure gradient reduces the benefit.
- The practitioner’s convenience.
- NICU/infant team anxious for baby.
- Sterility in caesarean sections.
- Increase neonatal jaundice requiring phototherapy.
increase the risk of respiratory distress for infant (8.8%); placental retraction (4.4%); increase the risk of postpartum hemorrhage (3.5%); increase the risk of maternal blood transfusion (3.5%); lower maternal ferritin level at delivery (2.7%).

Question #8: Which of the following are your personal/professional barriers to using delayed cord clamping? Figure 9 below gives a nice breakdown of the barriers.

![Figure 9: Personal/professional barriers to using delayed cord clamping](image)

The top five barriers identified in this survey question originate from education. These barriers include the following:

- “I don’t know the criteria for patient selection.”
- “I am not familiar with delayed cord clamping procedure.”
- “I don’t know the benefits of delayed cord clamping.”
- “The nurses at my hospital are not familiar with delayed cord clamping.”
- “The providers at my hospital are not familiar with delayed cord clamping.”

In Figure 9 above, none of the healthcare professionals felt “It is not appropriate for my patients.” This response can also tie into the focus on attitudes. Healthcare professionals must feel it is appropriate for their patients; however, only 4.5% of the
response rate answered that they “always” practice delayed cord clamping as a strategy for managing the third stage of labor – Question #5.

Figure 9 also touches on technology. The response “Infants should be placed on the warmer for an assessment and warmth following a delivery” indicates that the technology of a bed warmer takes should take place quickly. The response rate to this personal/professional barrier was the second lowest (5.5%), second to “It is not appropriate for my patients.” Technology can be a barrier; however, it is not appear to be a big barrier among the group of healthcare professionals that completed the survey. See Figure 10.

I did a crosstab of the responses from the following two questions. Question #1: “Please indicate which of the following you are?” and Question #9: “Which of these if any, would help you utilize delayed cord clamping?” See Figure 11 below. The colors orange, blue, purple and red are apparent in the responses from all healthcare professionals. Thus education is needed in the following areas in an effort to help utilize delayed cord clamping. Standardized evidence-based practice policy/procedure/guideline, provider support, nursing support and a power point presentation with questions and answers are
the types of education that all six groups of healthcare professionals identified as beneficial to them.

Figure 10: Utilization of delayed cord clamping

Question #10: “Do you believe there is a need for an evidence-based delayed cord clamping protocol at your facility? This would include patient selection, gestational age assessment, communication tips including a possible plan prior to delivery and parent education.” Health care professionals feel there is strong need for evidence-based protocol at their facility. See Figure 11 below. Of the professionals surveyed, 82.5% stated “Yes” that there is a need for evidence-based delayed cord clamping protocol. “No” was the answer for 6.1% of the health professionals surveyed. “Other” was the response form 11.4% of the professionals surveyed. Comments under other include the following:

- Not until more data is collected on safety in preterm infants.
- I think the evidence is already there, why reinvent the wheel?
- The parents are the ones who usually want this.
Correct protocol for how to do delayed cord clamping is important. It doesn’t matter if the cord is pulsing if the cord is occluded higher up.

Perhaps not a “protocol” but a guideline or algorithm.

There is a need, first, for an evidence-based review and then if appropriate, a protocol to be set up.

Figure 11: The need for evidence-based delayed cord clamping protocol at your facility

Focus#3: Expert Interviews

Two interviews were conducted with change agents in an effort to identify what are effective change management strategies for implementing best practice. Both interviewees agreed to have the interviews recorded. After the interviews were recorded they were transcribed. I listened to each of the tape recordings a few times. I examined both interviews more closely by reading and re-reading the transcriptions and identifying themes between the two interviews.

Key findings that developed from the interview data that helped identify effective change management strategies include the following.

- There needs to be passion toward the subject of change. One needs to do things that he/she believes in. If there is that passion to drive and to pursue to do something, one usually is more effective in the change process.
• Authority buy-in is important. Authority buy-in power can make a project if you have it or it can break a project if you do not have it. If authorities agree with the change management project, they will promote it and the process will be much easier. It authorities do not agree with the project, negative comments may be made among themselves and it could destroy the project.

• One needs to “hook” people and get them interested in the topic. As the interest in people sparks, their involvement may increase. It is important to assign an individual to be a champion and continue to implement and monitor the progress to assure that it is going in the right direction. When people make it their own, they feel good about the change.

• Try to get negative people on your side. Develop a committee. They may be the ones who address the very difficult questions and/or concerns. It will be better to be asked the hard questions up front and have them addressed, “instead of having whatever you have get set up and get totally destroyed.” This may increase the creditability of one’s project.

• Try to get you data facts straight. By having your “ducks in a row, your information clear and organized” the process will be less difficult.

• Continue to keep things framed from the beginning of the project to the finish, their needs to be planning, implementation, monitoring, and control. Project management must continue to keep the project on the right track.

• The process of change management takes longer than most people realize.
Interpretations

Literature supports that delayed umbilical cord clamping is beneficial to term and late preterm infants. The majority of healthcare professionals at Fairview believe there is a need for an evidence-based delayed cord clamping protocol at their facility. So then, why is this practice not implemented among healthcare professionals? Attitudes, education and technology have become barriers to standardizing best practice in umbilical cord clamping within the Fairview Health System, despite the fact that delayed cord clamping is gaining increased support among healthcare workers. Technology is a barrier; however, it has not proved to be a big barrier in this research. Both attitudes and education were identified as major barriers in the implementation of delayed umbilical cord clamping. Now that the barriers were identified through the survey, they need to be addressed among all health care professionals and the change management process needs to continue to move forward.

Healthcare professionals feel delayed umbilical cord clamping is appropriate for their patients; however, only 4.5% of the response rate answered that they “always” practice delayed cord clamping as a strategy for managing the third stage of labor. Of all healthcare professionals, certified nurse midwives are practicing delayed umbilical cord clamping more than any of the other healthcare providers. Despite that, they too still have a need for improvement. Also, there are differences in the health care that is being delivered.

Authority figures did “buy-into” the change management process of this topic from the very start. Participation appears to be a key factor in this change process. The survey was presented at the Zero Birth Injury Committee in July 2012. The introduction of the
survey raised awareness among the authority figures and sparked conversations. Conversations continued during the survey and when the survey results were presented to the Zero Birth Injury Committee. The survey results were presented to the healthcare providers in a manner in which it was “their survey” with “their survey results” in an effort to answer “their questions regarding the implementation of delayed umbilical cord clamping.” Through this change management process it will be important to keep the process framed and continue planning, implementing, monitoring and controlling in an effort to keep the project on the right track.

**Recommendations**

Below is a list of recommendations to the hospitals within the Fairview Healthcare System. The recommendations consist of the acronym **DELAY**. **DELAY** will assist in overcoming the barriers and implementing the best practices of delayed umbilical cord clamping.

1. **Discover the barriers of delayed umbilical cord clamping.**
   
   - Implement the Change Acceleration Process Model to lead change from the current state to the transition state of change by shaping a vision and mobilizing commitment. Present the survey results in a power point presentation to the Zero Birth Injury Committee (healthcare providers of authority are present). The committee members will become aware and informed of the barriers (attitudes, education and technology) of delayed umbilical cord clamping. Keep these healthcare professionals involved in the change management process allowing them to have a voice in shaping the vision. (This recommendation was completed September 20, 2012.)
At this meeting, ZBI committee members decided to move forward and have a team develop an algorithm and guideline for delayed umbilical cord clamping. The power point presentation was sent to the healthcare professionals who were unable to attend this ZBI committee meeting.

- Present these barriers of delayed umbilical cord clamping in conjunction with the education to all healthcare delivery team members.

2. **Educate**

- Of the survey respondents, 84.3% stated that they wanted a “standardized evidence-based practice policy/procedure/guideline.” Develop an algorithm and guideline for delayed umbilical cord clamping with a team of healthcare workers. The team members will include a certified nurse midwife, an advanced practice nurse specialist, a registered nurse who specializes in umbilical cord blood collection and myself. The algorithm and guideline will be presented and explained to ZBI committee members at the November 2012 meeting.

- Pending ZBI committee members’ acceptance of the algorithm and guideline, notify stakeholders (example: delivery room team members, nurse managers of birthing units within system, etc…).

- Provide education to delivery team members. Develop a power point presentation or a computerized power point in the Learning Management System (LMS) that Fairview has in place.

- Educate parents of delayed umbilical cord clamping. Introduce and explain the benefits of delayed cord clamping in the early childbirth
classes. Place information in the Birthplace folders that are given to parents on admission. Delayed umbilical cord clamping would become a part of the “baby friendly hospital.”

**Lasting effect.**

- Continue to monitor the progress of change management while utilizing the Change Acceleration Process Model. The process of change management takes longer than most people realize. Keep the project on the right track by moving from the transition state to the improved state by mobilizing commitment, making change last and monitoring progress.

- Have delayed umbilical cord clamping as an agenda item on future ZBI committee meetings. A change management specialist is present at the ZBI meetings who can assist in the change management progress.

3. **Address attitudes, issues and concerns that continue to develop with delayed cord clamping among healthcare providers.**

- Debriefings can be held in a private area among healthcare providers after deliveries focusing on what went well and what can be improved regarding the process of delayed umbilical cord clamping.

- Allow time at ZBI meetings to address issues and concerns that develop in the delivery rooms among delivery team members. This may prevent other delivery teams from having the same issue and/or concerns.

4. **You can make the difference.**

- Provider and nursing support among delivery team members will be crucial in the start and in the success of delayed umbilical cord clamping.
Of the survey respondents, 60.9% emphasized the importance of provider support and 51.3% emphasized the importance of nursing support to help utilize delayed umbilical cord clamping.

**Summary**

Delayed cord clamping is currently a hot topic in fetal-maternal areas and newborn intensive care units of healthcare. This action research project researched the best practices of umbilical cord clamping, identified barriers that may delay a change of the best practices and finally recommended an implementation model to work through the change processes. First, best practices of umbilical cord clamping were explored through a literature review. Second, barriers were identified through a Fairview system-wide survey of healthcare providers who were part of delivery teams. Third, change processes were examined through interviews that were conducted with two change consultants within the Fairview system.

With this research, I hope to increase awareness of delayed cord clamping among healthcare providers in an effort to allow them to make the best decisions. I am willing to continue my leadership on this umbilical cord clamping process and I am aware that it may extend well beyond my academic commitment. As a leader in this research project, I intend to apply both my head and my heart into developing and implementing the best practices of umbilical cord clamping. As each delivery room door opens, I hope to lead change by touching lives through excellence in caring, compassion and innovation and assure that the best practices of umbilical cord clamping are being utilized among the various delivery team members.
References


Appendix A

University of Minnesota Medical Center, Fairview

Magnet Nurse Champion Description

Description: A magnet champion is a RN who is a role model of professional nursing and who is committed to strengthening the climate for professional practice. A magnet champion has the ability and willingness to dedicate time, energy and talent to support the nursing strategic goals and to assist in sustaining and enhancing UMMC’s designation as a Magnet hospital. They actively demonstrate the University of Minnesota Medical Center/University of Minnesota Children Hospital’s Nursing’s vision: Touching lives through excellence in caring, collaboration and innovation.

Qualifications of the individuals:
- Open to all RN’s
- Embraces change and acts as a change agent
- Positive, enthusiastic and approachable
- Demonstrates commitment to professional growth
- Actions reflect commitment to Fairview’s values of dignity, integrity, service and compassion
- Strong interpersonal and collaboration skills
- Endorsed by peers, health team and management
- Actions and words reflect positive working relationship with co-workers, other disciplines and departments

Functions: Serves as a liaison to nursing staff and works collaboratively with unit leadership and Magnet Steering committee:
1.) Energizes colleagues
2.) Educates peers and health team co-workers about the “Forces of Magnetism” and the Magnet standards
3.) Helps unit staff members recognize their contributions to achieving and maintaining a Magnet culture
4.) Demonstrates a willingness to assist with cross fertilization of success stories by sharing information outside of their clinical practice area
5.) Enlists and engages unit based committees and councils to get onboard

Responsibility: Magnet Nurse Champions demonstrate their active involvement and contributions each year by:
- Collaborates with co-workers to identify how their clinical area exemplifies a specific magnet standard or ‘Force of Magnetism’ to facilitate visibility and cross fertilization of success stories
- Contributes to either unit or departmental publications activities aimed at improving nursing practice, patient care outcomes or the image of nurses.
• Formally updates co-workers about magnet related activities on a routine basis at meetings or through unit specific publications.

Structure:
• RN’s who are on the magnet steering committee are automatically magnet champions.
• Each area should have one to two champions. The champions should be representative of the clinical area in regards to shifts and experience level. (e.g. experienced staff, newer staff, different shifts etc.)
• Unit leadership is expected to solicit and support Magnet Champions

Meetings:
The champions will meet every 2 hours every other month for sharing of ideas. Incorporated into the meetings is time to complete projects.

Compensation:
Payment for hours will be from a budget outside of the clinical care area. (UMC5355) Whether hours are part of the individual’s authorized hours will be negotiated between the individual and the manager.
Appendix B
Information Sheet For Research and Survey Questions

INFORMATION SHEET FOR RESEARCH
Delayed Umbilical Cord Clamping: Surveys

You are invited to be in a research study of delayed umbilical cord clamping. You were selected as a possible participant because you are part of the delivery healthcare team within the Fairview System. Please read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: Kimberly Popp, Registered Nurse on the Newborn Intensive Care Unit at The University of Minnesota Amplatz Children’s Hospital.

Procedures:

If you agree to be in this study, you will be asked you to do the following things:

Read this consent form, ask questions and note that participation is voluntary. All subjects and subject data will remain confidential. Survey questions will take 5-10 minutes to complete. There will be no identifying information about you stored for this research.

Confidentiality:

The records of this study will be kept private. In any sort of report I might develop, I will not include any information that will make it possible to identify a subject. Research records will be stored securely and I will be the only one who will have access to the records.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota Amplatz Children’s Hospital. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contact and Questions:

The researcher conducting this study is Kimberly Popp. You may ask any questions you have now. If you have questions later, you are encouraged to contact Kimberly at 612-269-9899 or kpopp1@fairview.org.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Research Subjects’ Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.
Survey Questions

1. Please indicate which of the following are you?
   Obstetrician
   Family Practice
   Certified Nurse Midwife
   Neonatologist
   Neonatal Nurse Practitioner
   Registered Nurse

2. At which hospital do you currently practice?
   University of MN Amplatz Children’s Hospital
   Fairview Southdale Hospital
   Fairview Ridges Hospital
   Fairview Lakes Medical Center
   Fairview Northland Medical Center
   Fairview Maple Grove Medical Center

3. Cord clamping for a term baby (37+ weeks) can be delayed “between two minutes after birth and cessation of cord pulsations” - which can be additional minutes. In a late preterm baby (34 to 36+6 weeks) cord clamping can be delayed 30 seconds or more pending the baby’s current respiratory status and the needed resuscitation measures to sustain life. Are you familiar with delayed cord clamping as a strategy in managing the third stage of labor?
   • I have never heard about it
   • I have heard about, but never witnessed
   • I have witnessed it
   • I have used a few times
   • I have used regularly

4. Have you practiced delayed cord clamping as a strategy for managing the third stage of labor?
   • Never
   • 1-5 times
   • 6-20 times
   • 21+ times
   • Always

5. Which of the following benefits of delayed cord clamping in full term infants are you aware of?
   • increase cerebral blood flow
   • allow better perfusion and circulation to the gut
   • increase blood pressure
   • increase hematocrit, hemoglobin levels and ferritin
   • decrease iron-deficiency anemia
• increase duration of breastfeeding
• decrease costs
• none of the above
• other

6. Which of the following benefits of delayed cord clamping in preterm infants are you aware of?
• less transfusions due to anemia
• less hypotension (increased blood pressure, less inotropic support)
• less intraventricular hemorrhage
• less late-onset sepsis
• fewer days on mechanical ventilation
• improvement of cerebral oxygenation
• decrease costs
• none of the above
• other

7. In your opinion, which of the following are maternal/fetal barriers to using delayed cord clamping? Check all that apply.
• lower maternal ferritin level at delivery
• increase the risk of postpartum hemorrhage
• increase the risk of maternal blood transfusion
• placental retraction
• increase neonatal jaundice requiring phototherapy
• higher levels of hemoglobin in infant
• general anesthesia
• increase the risk of respiratory distress for infant
• delay in resuscitation for infant
• hypothermia in infant
• hypervolemia in infant
• none of the above
• other

8. Which of the following are your personal/professional barriers to using delayed cord clamping? Check all that apply.
• None, I currently delay cord clamping
• It is not appropriate for my patients
• Infants should be placed on the warmer for an assessment and warmth following delivery
• I don’t know the criteria for patient selection
• I am not familiar with delayed cord clamping procedure
• I don’t know the benefits of delayed cord clamping
• The nurses at my hospital are not familiar with delayed cord clamping
• The providers at my hospital are not familiar with delayed cord clamping
• The hospital does not have documentation that supports delayed cord clamping
• other

9. Which of these, if any would help you to utilize delayed cord clamping? Check all that apply:
   • Standardized evidence-based practice policy/procedure/guideline
   • Provider support
   • Nursing support
   • Powerpoint Presentation with questions/answers
   • Learning Management System (LMS) support
   • Support from hospital administration
   • other

10. Do you believe there is a need for evidence-based delayed cord clamping protocol at your facility? This would include patient selection, gestational age assessment, communication tips including a possible plan prior to delivery and parent education?
   Yes
   No
   Other
Appendix C

Information Sheet For Research and Interview Questions

INFORMATION SHEET FOR RESEARCH
Delayed Umbilical Cord Clamping: Interviews

You are invited to be in a research study of delayed umbilical cord clamping. You were selected as a possible participant because of your current position as a change consultant within the Fairview system. Please read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: Kimberly Popp, Registered Nurse on the Newborn Intensive Care Unit at The University of Minnesota Amplatz Children’s Hospital.

Procedures:
If you agree to be in this study, you will be asked you to do the following things:
Read this consent form, ask questions and note that participation is voluntary. You will be asked to sit down for an interview with Kimberly Popp to answer questions regarding change management strategies. The interview will be approximately 30 minutes in length and it will be tape recorded. After completion of the interview, the tape recordings will be transcribed and the audio tapes will be destroyed. I will assigned a Subject # to each tape and the transcript so there will be no identifiers. All subjects and subject data will remain confidential. There will be no identifying information about you stored for this research.

Confidentiality:
The records of this study will be kept private. In any sort of report I might develop, I will not include any information that will make it possible to identify a subject. Research records will be stored securely and I will be the only one who will have access to the records.

Voluntary Nature of the Study:
Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota Amplatz Children’s Hospital. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contact and Questions:
The researcher conducting this study is Kimberly Popp. You may ask any questions you have now. If you have questions later, you are encouraged to contact Kimberly at 612-269-9899 or kpopp1@fairview.org.
If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Research Subjects’ Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.
Interview Questions

How many years have you been implementing change?

What do you like best about the change process?

Describe a “personal best” change that you were a part of implementing. What was your role? Who was involved? Why did you consider it your “personal best”? Were there barriers? If yes, what strategies did you use to overcome these?

What change models have you used in the past that have successfully implemented change within the Fairview system? Please describe.

What change model would you use if you were implementing delayed cord clamping? Please describe the steps you would take.

Are you familiar with the Change Acceleration Process (CAP) for leaders within Fairview? Have you used this process? What has been your experience?