Improving Neonatal Outcomes Through the Implementation of a Delayed Bathing Program

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IMPROVING NEONATAL OUTCOMES THROUGH THE IMPLEMENTATION OF A
DELAYED BATHING PROGRAM

BY

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DNP Final Scholarly Project Committee

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Dr. Donna Bowman

Submitted in partial fulfillment of the Requirements for
the degree of Doctor of Nursing Practice Seton Hall

University

2018
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Dedication

This project is dedicated to my family, especially to my parents, Carol and Jim LiVolsi, for instilling in me a genuine love of learning and role modeling values and integrity like no other.

To my siblings, Tim, Kevin, Beth Anne, Teresa, Megan, and their families, for their continued support, perspective, and sense of humor, during this endeavor and throughout life.

To Greg and Patricia, who are smiling down upon me from heaven and always close to my heart.

During a recent hospitalization, a dear friend commented that I had won the lottery when it came to families. Truer words were never spoken.
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This project would not have been successful without the support, guidance, and friendship of Dr. Donna Bowman. Her clinical knowledge and mentorship have been invaluable throughout my nursing career.

I have been blessed with the incredible gift of being able to work with so many exceptionally talented and compassionate colleagues while caring for remarkable patients and families throughout my nursing career. It has been my greatest privilege and has helped me become the person I am today. I have reaped so much more than I could ever give back and I will always be eternally grateful.
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Abstract

Background and Objective: Until 2010 newborns at most community-based hospitals were subjected to their initial bath within two hours of birth. However, this practice has recently changed due to the evidence-based recommendations that demonstrate improved outcomes for neonates when the first bath is delayed for 12-24 hours after birth. Upon delivery, infants are placed skin-to-skin with their parents to promote thermoregulation, breast feeding and bonding. The purpose of this project was to implement a program that delayed infant bathing until the infant was approximately 24 hours old. Rates of neonatal hypoglycemia, neonatal hypothermia, exclusive in-hospital breastfeeding and formula supplementation rates were explored after implementation of the delayed infant bath. The population targeted in the project included well infants at a local community hospital. The primary objectives were to discuss the traditional versus more recent evidence-based nursing practices for newborns, review the implementation plan for the delayed sponge bathing program, and review newborn clinical outcomes as a result of implementing this evidence-based practice.

Significance: This project is significant to the improvement of the overall health of neonates. This can be achieved by providing education to hospital staff aimed at improving nursing knowledge and practice, which will, in turn, promote improved neonatal outcomes.

Methods: Orlando’s nursing theory provided the theoretical framework for the implementation of this program. The methodology was comprised of the following: needs assessment,
presentation of the program to the stakeholders to obtain approval and support, staff and parent education, and the implementation of the delayed infant bathing program including benchmarking clinical outcomes data.

**Project Outcomes:** Before the implementation of this evidence-based practice, clinically stable infants were bathed within two hours of life. The infants and parents participating in the program benefited from the improved nursing care that was a direct result of the education and knowledge gained during this program implementation. In-hospital breastfeeding rates improved by 10 percent and formula supplementation decreased by 10 percent. It was also noted that delayed infant baths resulted in a two percent decrease in the frequency of hypoglycemia and a four percent decrease in the incidence of hypothermia in low-risk infants. The results of the program promote overall infant health.

**Clinical Relevance:** The implementation of a delayed infant bathing program has substantial health benefits to newborns and families, including increased bonding, improved breastfeeding rates, reduced incidence of hypoglycemia and demonstrated parent participation in their infant’s care. Nurses, in turn, are driving evidence-based care which standardizes healthcare practices and reduces unsubstantiated variations in care.

**Keywords:** Evidence-based care, infant baths, in-hospital breastfeeding, nursing practice, neonatal hypoglycemia.
SECTON I: BACKGROUND

The clinical setting where this project takes place is a 305-bed community teaching hospital in the Northeast. Maternal-Child Health services include high-risk antepartum care, labor and delivery and maternity services including mother-baby couplet care, a newborn nursery, neonatal intensive care unit and an inpatient pediatric unit. There are approximately 2,500 births annually, a cesarean section rate of 42%, 325 neonatal intensive care admissions and 800 patients that are triaged through labor and delivery prior to giving birth. The hospital provides high-risk Perinatology, Neonatology and lactation services as well as in-house Pediatric Hospitalist and Anesthesia services. Nursing staff from all clinical areas are cross-trained to at least one other clinical setting within Maternal-Child Health other than their primary unit.

The hospital has several prestigious designations, including Magnet (American Nurses Credentialing Center, n.d.) and Planetree (Planetree, 2018), a Patient Centered Care Designation representing the highest level of achievement in patient centered care based on evidence and standards. Additionally, the hospital has received an A rating in patient safety from the Leapfrog Group, which has inspired and led a movement uniting purchasers and patients to improve the safety and quality of our health care system (The Leapfrog Group, n.d.). The institution is not a designated Baby Friendly facility, but the Maternal-Child services currently practices 9 of the 10 tenets of Baby Friendly Designation. The Baby Friendly Hospital Initiative was established in 1991 by the United Nations Children’s Fund (UNICEF) and the World Health Organization (WHO), with the goal of encouraging and recognizing birthing facilities that offer an optimal level of care for infant feeding and couplet bonding (Baby Friendly USA, 2012). Currently, the
institution subscribes to all but one of the tenets of Baby Friendly Designation, including encouraging breastfeeding on demand and the establishment of breastfeeding support groups. The one exception is the concept of continuous rooming in, as the patient population has been slow to embrace this concept. Of significance, there are two competing hospitals within 15 miles that offer very similar services and care in the field of Obstetrics and Pediatrics.

Also of significance is the tenure of the nursing and provider staff, which consists exclusively of physicians. Advanced Practice Nurses are not currently employed in our service line, although this will soon be changing. Over 75% of the attending physicians have completed their residency program at this institution. Each of the Maternal-Child Health Units has a very tenured nursing staff, with an average institutional career of greater than 15 years. This is significant in that there are many team members who have worked at this institution for a long time and are used to delivering care in a prescribed, systematic way. Change can be difficult, especially among collaborative teams who have worked together for many years. Attending obstetricians do not deliver at any other local institutions.

Patient demographics are diverse in that the hospital is in an urban setting surrounded by suburban communities. Most patients have commercial insurance and approximately 20% of patients are Medicaid recipients. The primary ethnicities that utilize the Maternal-Child services are Caucasian, Hispanic, Haitian, and Portuguese.

As part of the organization’s strategic plan, there are five service lines that are a focused priority for delivering high quality, evidence-based care with exceptional outcomes while recruiting new patients to the organization. The five identified service lines are: Heart and Vascular, Cancer Care, Women’s Health, Pediatric Services, and Orthopedics. Within the past 18 months, the organization completed construction on a $450 million facility on the existing
campus that now houses the majority of patient care services, excluding Maternal-Child Health services, which are housed in an adjacent pavilion that was built 17 years ago.

Obstetrical and pediatric outcomes are continually tracked and submitted to several data bases, including the National Perinatal Information Center (NPIC), Vermont Oxford Data Base for benchmarking NICU outcomes, and Perinatal Core Measures. Prior to the implementation of the delayed bathing initiative, our exclusive breast-feeding rate during post-partum hospitalization was 41%, below the 53% benchmark, currently established by The Joint Commission, an independent, non-profit organization that is the largest standards-setting and accrediting body in health care (The Joint Commission, 2018).

Organizational quality and safety expectations are high with a strong focus on developing and implementing evidence-based practice. In 2001, the Institute of Medicine (IOM) published a report, Crossing the Quality Chasm, which highlighted the tremendous gaps in current healthcare knowledge and the delivery of patient care. The report stated, “Between the health care we have and the care we could have lies not just a gap but a chasm” (IOM, 2001, p.1), appealing to health care providers to be part of the long overdue and very necessary health care transformation towards improving quality care. The IOM reports from 2003, 2008 and 2011 acknowledge the need to consistently identify and deliver evidence-based practice in order to close the existing quality gap. The intent of delivering evidence-based care is to standardize healthcare practices utilizing the best evidence available, while reducing unsubstantiated variations in care. The delivery of evidence-based care is also driven by the consumer’s demand for improved patient safety and quality in health care as well.

For evidence-based practice to be implemented and sustained, health care disciplines acknowledge that it must be adopted by providers, collaborative teams, and systems, including at
the state, federal, and regulatory level. A recent survey of nurses in regards to evidence-based practice initiatives demonstrated that while most nurses had positive attitudes towards evidence-based care and increasing overall knowledge and skills, there still exist challenges and barriers to disseminating it into practice (Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012).

**Description of the Project**

The project was comprised of four main components that were aimed at providing education to nursing and physician staff involved in delivering infant care as well as providing education to parents of infants on the importance of delayed sponge bathing.

The four main components include:

1. Needs Assessment. In order to develop an appropriate educational plan, it was imperative to establish existing knowledge related to the clinical topics including hypoglycemia, thermoregulation, and breastfeeding (Appendix A).

2. Staff education. Multiple opportunities for staff education included a mandatory power point presentation (Appendix B), attendance at staff meetings, and leader rounding for formal and informal question-and-answer sessions. Physician education occurred during established Grand Rounds sessions where providers could attend in person or join a web-ex session, available on line, remotely.

3. Parent education. Multiple prenatal class offerings provided an excellent educational venue for prospective parents. Childbirth preparation classes, hospital tours, prenatal breastfeeding, and infant care classes all incorporated the benefits of delayed infant bathing into their curriculum. Additionally, a parent education handout (Appendix C) was created to be distributed in physician offices and upon arrival to the Labor and Delivery unit, as not all patients attend prenatal educational offerings.
4. Clinical outcome data. Incidence of hypoglycemia, hypothermia, and exclusive breastfeeding rates were collected on low risk infants prior to implementing the delayed sponge bathing initiative. Low risk infants were categorized as infants who were between the 10th and 90th percentile for birth weight and whose mother did not have any type of diabetes. As part of the project evaluation, we continue to collect and trend these outcome data.

**Recipients of the Project Activity**

The recipients of the delayed infant bathing initiative were newborns and their parents who delivered at the facility during the implementation of the program. These were well infants at 36 weeks gestation or greater who did not require neonatal intensive care nursing as well as mothers who had uncomplicated deliveries that did not require prolonged hospitalization in the Labor and Delivery unit after delivering or transfer to a higher level of care such as an ICU or a telemetry environment.

**Purpose of the Project**

The goal of the project was to implement the delayed infant bathing program. The initiative also aimed to provide knowledge and education on the clinical benefits associated with delayed bathing to staff and patients. Additionally, improving neonatal outcomes by decreasing hypoglycemia and hypothermia as well as increasing overall exclusive breastfeeding rates were outcomes that were tracked and measured. The participants of the project included infants and parents who delivered at the facility within the implementation period. Other participants included nursing and provider staff as their expertise and ongoing support was essential in promoting this evidence-based initiative. Parents were empowered to be a part of the decision making process related to the timing of their infant’s initial bath that contributed to the overall health and well-being of their baby. The staff and parents were provided with information that
helped increase their knowledge on the outcomes of a delayed bath as opposed to the traditional sponge bath soon after birth.

**Project Outcomes**

The project outcomes were multifactorial and included the “go-live” implementation of the delayed bathing program. Outcomes also included increased knowledge for clinical care team members, including nursing, lactation, and physician staff as well as ancillary team members, as measured through various educational venues that were utilized throughout this project. Tracking and trending clinical outcome data, including exclusive breastfeeding rates, rates of formula supplementation, incidence of hypothermia and hypoglycemia, are ongoing outcome that serve to continually evaluate the effectiveness of this implementation. Parental participation in the first bath was an additional project outcome.

**Phases of Implementation**

The project implementation process was comprised of five phases.

Phase I was comprised of multiple steps in order to ensure successful implementation of the project. A supportive mentor who was a subject matter expert was chosen to guide the project. A pre-knowledge assessment was developed to be completed by nursing and provider staff in order to obtain baseline data that would serve as the foundation for the development of the educational plan for staff and parents. Networking with institutions that had already implemented this evidence-based initiative proved to be invaluable in formulating the overall educational plan. Communication occurred with the Director of the organization’s Institutional Review Board (IRB) regarding the necessary data collection integral to this project implementation. It was determined that this project was not required to obtain approval through the organization’s IRB. Baseline clinical data from current practice, including rates of exclusive
breastfeeding and formula supplementation as well as incidence of hypoglycemia and hypothermia, were obtained during phase I. Additionally, a budget proposal for the project was created. Classroom and hands-on education for staff was absorbed in the annual training, non-productive budget. Capital expenditure items included the purchase of additional infant scales and radiant portable heating lights. (Appendix D)

Phase II included meeting with multiple stakeholders to explain the project, answer questions, share the implementation plan, solicit support, and disseminate best practice. The stakeholders included: physician and nursing leadership, lactation consultants, nursing staff, community physicians, and a focus group of recently delivered mothers who attend the hospital’s weekly Mothers’ Group. Feedback and ideas were solicited during these stakeholder meetings to capture any ideas unaccounted for in the project implementation plan. Identifying necessary workflow redesign steps was a key metric in this phase as that would be integral to the success of the project launch. Any identified resources required for the project implementation were acknowledged during this phase. The goals and objectives of the project were continually aligned with the vision and strategic plan of the organization.

Phase III consisted of disseminating education to multiple healthcare disciplines prior to the project launch. Nursing and ancillary staff, providers, and lactation consultants were all required to complete an educational component. Nursing staff who educate patients through various prenatal classes were required to attend a formal education session to incorporate best practice information into their classroom curriculum.

Phase IV focused on evaluating the implementation of the delayed bathing project. Real-time feedback was obtained at staff meetings and during leader rounding. With the implementation of the delayed bathing initiative, frequent leader rounding on all shifts was
required to ensure staff were engaged in the initiative. Trouble shooting and problem solving occurred when unanticipated questions or scenarios arose. Role-playing unique scenarios that occurred between patients and staff were helpful in anticipating future questions from parents. Clinical outcomes data collection from participating infants were collected during this phase to be compared to clinical outcomes from infants who did not participate in the delayed bathing initiative. This data primarily focused on the incidence of neonatal hypoglycemia and hypothermia as well as exclusive breastfeeding and formula supplementation rates.

Phase V focused on identifying next steps to ensure ongoing success. Identified next steps included further revising the electronic medical record to better document the delayed bathing project, as well as ensuring newly hired staff were appropriately educated regarding the benefits of participating in the delayed bathing initiative. Additional next steps include revisiting nursing workflow with a goal of increasing parental participation in the bathing process, exploring the concept of immersion vs. sponge bathing, and introducing the concept of “swaddle” bathing into the Neonatal Intensive Care Unit. Data collection will be expanded beyond the low risk infant group to include “at risk” infants who are born to diabetic mothers or were below the 10th % or above the 90th percentile for weight at birth.

Significance of Project for Nursing

The implementation of the delayed bathing initiative has a significant impact on infant nursing care as well as the nursing profession in general. Nursing as a profession within the healthcare sector is mainly focused on delivering safe and effective care to communities, families, and individuals. The primary aim of providing this care is for patients to recover from disease and/or attain and maintain optimal health. Nurses work in collaboration with multiple disciplines including therapists, patients, physicians, and other hospital stakeholders to fulfill
their responsibilities to patients. Infants require focused, evidence-based care that promotes optimal health and fosters wellness. Nurses as caregivers are instrumental in the role of teacher for patients, including new parents and family support members. The practice of delayed infant bathing has positive health benefits as compared to the traditional sponge baths that were carried out immediately after birth. These include improved parental bonding, increased breastfeeding, maintenance of blood sugar levels, the ability to provide thermoregulation, and an improvement in feeding (Brogan & Rapkin, 2017). Providing a delayed bathing experience increases the chances for the infant to have a healthier start in life as compared to immediate traditional sponge baths, where infants were subjected to cold stress which impacted thermoregulation, glucose stability, and their overall ability to feed.

Nursing also plays an important role in prevention of health care issues. This is achieved through the identification of risks that are likely to impact the health of an individual or community. The Maternal-Child Health nursing staff utilized prenatal education classes, printed education materials, and one-on-one interactions with parents to disseminate the information about the benefits of delayed bathing. Harvey and O’Brien (2011) stated that it is vital to tailor information to diverse populations to address healthcare issues since lack of knowledge is the primary cause of disparities. A language line was utilized to communicate to those parents where language barriers existed, so they could receive the same knowledge and information to make decisions regarding participating in the delayed bathing process. With this knowledge and information, participants would be more likely to make decisions and choices that would improve their health. Vulnerable populations that were not likely to accept the implementation of the project include those communities that hail from backgrounds where traditional taboos and ways of life dictate how the infant is to be handled at birth, including a perception of promoting
hygiene by early infant bathing. Providing education to such populations as well as a detailed explanation of the importance of delayed bathing helped change the perception of some participants, but not all. The results from the project can be used to make the argument that it is crucial that nurses and other health practitioners and caregivers implementing a health program be cognizant of all the determinants to achieve success with the program.

SECTION II: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Theoretical Framework

The theory that provided the framework for the implementation of this project is Orlando’s deliberative nursing process theory. This theory was established by Ida Jean Orlando Pelletier in the 1950’s. Those nurses considered to have practiced good nursing care were always attentive to the distress of the patients by listening to their concerns. Nurses understood why a particular patient was distressed and identified ways in which he/she would reduce the distress. Nurses recognized that without their immediate response to patient’s pain, the challenges faced by the patient would not be resolved. This discovery led to Orlando concluding that it was the professional duty of every nurse to identify and meet the patient’s immediate needs. This would ensure that the patient’s call for help was responded to at the right time. This would result in the distress of the patient being relieved, thus assuring an improvement in the quality of life of the patient (Orlando, 1972).

The framework of Orlando Nursing process theory is comprised of five concepts that are interrelated. The first concept is the professional nursing function, i.e., organizing principle. According to Orlando, the primary duty of a nurse is first to identify the immediate needs of the patients and then to meet the needs of the patient to improve their quality of life (Orlando, 1972). In her work, Orlando states,
Nursing...is responsive to individuals who suffer or anticipate a sense of helplessness; it is focused on the process of care in an immediate experience; it is concerned with providing direct assistance to individuals in whatever setting they are found, for avoiding, relieving, diminishing, or during the individual’s sense of helplessness (Orlando, 1972, p. 12).

She also states that “Need is situationally defined as a requirement of the patient which, if supplied, relieves or diminishes his immediate distress or improves his immediate sense of adequacy or well-being” (Orlando, 1972, p. 5). After identifying the needs of the patient, the nurse must facilitate coordinating additional care and services if they cannot meet the patient’s needs. The theory suggests that the primary central role of a nurse is to identify and meet the patient’s immediate needs for help. The nursing practice is centered on the interactions and activities that happen between a nurse and the patient.

During the initial contact, a nurse is not aware of the needs of the patient. However, after interaction with the patient, the nurse is provided with information which he/she decodes to understand the needs of the patient. The information availed to the nurse is crucial for the initial diagnosis of the patient to determine the level of help in a case whereby the patient requires assistance. Orlando states that,

First, the nurse must take the initiative in helping the patient express the specific meaning of his behavior to ascertain his distress. Second, she must help the patient explore the distress to ascertain the help he requires for his [immediate] need [for help] to be met (Orlando, 1972, p. 26).

This formed the basis of the implementation of the delayed infant bath project at the facility. Information was disseminated to the parties involved in the facility. This was aimed at making
sure that the participants were aware of the project plan, its objectives, and targets as well as the expected outcome. The nurse’s interaction with the participants, i.e., the expectant parent, was crucial in determining the expectations of how the baby would be cared for immediately after birth,

Patients’ presenting behavior is the second concept in the nursing process theory. According to Orlando (1972), nursing practice comprises frequent patient-nurse contact that is aimed at understanding the complexities of problematic situations. The nurse requires the patient to exhibit verbal and nonverbal behavior, which is then used to identify the kind of help needed by the patient. The various behaviors a nurse may consider in a patient to make a diagnosis may include: complaints, moaning, crying, clenching fist, reddened face, and other cues. The nonverbal signs to look out for include blood sugar levels, blood pressure, and respiration. In this project, the nurses are expected to observe the behavior of the infant immediately after birth. Clinical parameters, such as body temperature, blood glucose levels, and breast-feeding latch are some of the metrics that are evaluated after birth.

The third concept is an immediate reaction. According to Orlando (1972), the behaviors exhibited by the patient influenced the immediate response presented by the nurse. The various thoughts that trigger the reaction of the nurse are affected by the information encoded by the nurse. This type of response cannot be controlled. Nurses combine their past experiences with their understanding of the immediate situation to respond to the situation appropriately.

The fourth concept of the nursing process theory is the nursing process discipline. Orlando (1972) argues that the behavior of the patient influences the behavior of the nurse while at the same time the expression of a nurse will affect the patient. Orlando states, “The nurse does
not assume that any aspect of her reaction to the patient is correct, helpful or appropriate until she checks the validity of it in exploration with the patient” (Orlando, 1972, p. 41).

Lastly, improvement concept is discussed in Orlando’s nursing process theory. According to Orlando (1972), after implementation of the help formulated by the nurse, patients are expected to exhibit changes in their behavior both verbally and nonverbally. These changes in behavior can then be used by the nurse to determine whether the needs of the patient have been met or not. In the case of the implementation of delayed infant baths at this facility, increased breastfeeding rates occurred, improved levels of blood sugar were noted, and infant body temperatures were maintained at normal levels. This outcome data were used to evaluate the effectiveness of the project implementation as outlined by Orlando’s nursing process theory. This guides the nurse to make well-informed, data-driven decisions. Theory concepts associated with Orlando’s deliberative nursing process include the function of professional nursing, presenting behavior, immediate reaction, nursing process discipline and finally the improvement.

Orlando’s theory utilizes the nursing process of assessment, diagnosis, planning, implementation, and evaluation and is individualized with each patient. Ida Jean Orlando’s theory not only defines the function of nursing, it is clear and concise. Applicable in the Maternal-Child clinical practice setting, it individualizes each patient and their plan of care, which is essential when delivering couplet care to mothers and newborns. Additionally, this theory makes several assumptions, including the premise that nurses are concerned about patient health and outcomes. The outcome goals for infants were to improve their breastfeeding rates while reducing the overall incidence of hypoglycemia and hypothermia. Implementing delayed bathing introduced an evidence-based initiative that helped achieve these patient outcomes. It also assumes that the profession of nursing offers mothering and nursing analogous to an adult
nurturing a child. With over 98% of births in the United States occurring in the hospital setting, the nurses’ role as teacher and advocate is paramount to the mother-baby dyad (CDC, 2014).

**Literature Review**

**Benefits of breastfeeding.** Breastfeeding is recommended as the optimal feeding method for newborns by medical professionals and governmental organizations. The benefits of breast milk feeding are well documented in the literature for both mother and baby. Systematic reviews of the literature demonstrate the multiple benefits of breastfeeding as well as the encouragement necessary to support new mothers in this initiative.

The literature espouses the many benefits of breastfeeding for infants, including protection against diseases such as bacteremia, diarrhea, respiratory infections, otitis media, urinary tract infections, late onset sepsis in preterm infants, and type 1 and 2 diabetes (Victora et al, 2016). Maternal health benefits to breastfeeding include decreased post-partum bleeding, decreased menstrual blood loss, earlier return to pre-pregnancy weight as well as a decreased risk of breast and ovarian cancers (American Academy of Pediatrics [AAP], n.d). The AAP (2012) recommends exclusive breastfeeding for all infants for a minimum of 6 months, preferably 12 months. The World Health Organization (n.d.) recommends breastfeeding up to 2 years and beyond. The Baby Friendly Hospital Initiative demonstrates up to a 78% exclusive breastfeeding rate compared to 46% exclusive breastfeeding rates in non-Baby Friendly institutions (Merten, Dratva, & Ackermann-Liebrich, 2005). Breastfeeding benefits infants because it promotes overall health and growth. It helps strengthen the bond between the mother and the infant. Additionally, breast milk boosts the child's immunity, thus enhancing protection against early life diseases including asthma, diabetes and frequent colds (AAP, 2016). In-hospital breastfeeding refers to the initial breastfeeding that occurs in the hospital environment after an
infant is born. The prevalence at which this breastfeeding occurs is referred to as in-hospital breastfeeding rate. This section of the literature review will primarily focus on the benefits of higher exclusive in-hospital breastfeeding rates among new mothers.

Initial in-hospital breastfeeding helps reduce the risk of the baby becoming obese, and it further decreases this risk with each month of exclusive breastfeeding (Harder, Bergmann, Kallischnigg, & Plagemann, 2005). However, in the US, most babies are exclusively breastfed at birth with half of them being introduced to formula in the first week of life (Chantry, Dewey, Peerson, Wagner, & Nommsen-Rivers, 2014). This sequence is considered alarming towards infants’ overall health and calls for hospitals to assist mothers with breastfeeding their babies while in the hospital setting (Modrek et al. 2017). Unfortunately, most hospitals in the United States do not fully support in-hospital breastfeeding. Statistics supporting this claim indicate one in every three mothers who wanted to introduce their infants to breast milk had a hard time without hospital support and one in every three mothers stopped breastfeeding early due to lack of hospital support (Modrek et al. 2017). It is prudent for hospitals to offer help to mothers to start breastfeeding after giving birth.

A study conducted on 522 low-income women who were shown a prenatal educational video geared to improving the rates of in-hospital breastfeeding rates and breastfeeding initiation did not achieve the perceived results (Kellams et al. 2016). The results showed low-income mothers were likely to terminate breastfeeding of their infants early on. The educational video did not affect breastfeeding rates, introduction to breastfeeding, or the level of exclusivity intended among the mothers who participated in the study. Lack of impact from the video on breastfeeding initiation persisted into the post-hospitalization phase. The investigation revealed
that the video in isolation was not enough in furthering in-hospital breastfeeding practices of low-income mothers (Kellams et al. 2016).

Timing, mode of intervention, and lack of support from the hospital staff could have contributed to the lack of impact from the educational video on mothers and their breastfeeding behaviors. Additionally, the type of educational intervention may vary according to the age group of the recipients. For instance, young mothers may be influenced by social media content while older mothers may reap benefits from more conservative intervention. Improvement in in-hospital breastfeeding requires a multi-pronged effort that should be introduced early in pregnancy, continue during the hospital experience, and provide continued support after discharge (Kellams et al. 2016).

Maternal pre-pregnancy obesity is directly related to 13.1% lower rates of in-hospital breastfeeding introduction and 20% diminished instances of any breastfeeding at seven months post-delivery (Babendure, Reifsnider, Mendias, Moramarco, & Davila, 2015). Factors such as additional body tissues, enlarged areolas, and large breasts contribute to the low rates of in-hospital breastfeeding by obese mothers. Large breasts can make traditional breastfeeding positions a challenge to an obese mother. Low in-hospital breastfeeding rates have adverse effects on post-hospital breastfeeding behavior. Mothers who had a poor breastfeeding experience while in the hospital are unlikely to continue to attempt exclusive breastfeeding by introducing formula early in the life of their infants. In-hospital formula use increases early breastfeeding cessation among mothers who initially intended to exclusively breastfeed (Chantry et al. 2014). Exclusive breastfeeding decreases the risk of childhood obesity by 32% and effectively reduces the risk of obesity-related conditions like diabetes and high cholesterol levels (Horta, Loret de Mola, & Victora, 2015). However, the research explains that socio-cultural
issues contributing to low breastfeeding prevalence in obese mothers were insignificant. The study also indicates that the obesity factor further aggravates low breastfeeding rates among mothers with known medical conditions like diabetes (Babendure et al. 2015).

Research conducted to establish the relationship between delayed bathing of the newborn and in-hospital breastfeeding rates revealed that the rates were affected by delaying the initial infant bath for at least eight hours (Preer, Pisegna, Cook, Henri, & Philipp, 2013). The research was conducted on 702 infants whose bathing was delayed by approximately 13.5 hours after birth departing from the traditional 2.4 hours after delivery. The rate increased from 32.8% to 40.1% after the bath was deferred. When data were subjected to multivariate analysis, it was observed that total breastfeeding rate was 39%. This research supports that delayed bathing can increase in-hospital breastfeeding rates (Preer et al. 2013).

A study conducted to ascertain the relationship between breastfeeding aid and the rate of breastfeeding in the UK revealed that mothers who receive assistance from hospital staff have a higher likelihood of breastfeeding preterm and term babies (Rayfield, Oakley, & Quigley, 2015). The study evaluated 14,525 term and 579 late preterm infants. Mothers who did not receive any help from hospital staff had a lower probability of breastfeeding preterm babies. The study advocates for hospitals to advance breastfeeding help to mothers in order to increase the number of neonates introduced to exclusive breastfeeding. Mothers who introduce their infants to formula while in the hospital have higher chances of stopping exclusive breastfeeding earlier than recommended. Some of the reasons for introducing milk supplements to babies are insufficient milk production, inadequate intake, and poor latch. These challenges can be addressed to allow for exclusive breastfeeding to infants. Thus, there is a need for hospitals to
have exclusive breastfeeding policies except in rare instances where medical conditions require additional intervention (Rayfield et al. 2015).

Well-researched policies that support exclusive in-hospital breastfeeding include the "baby friendly" by WHO/UNICEF and the California Model Hospital Policies (Haydu & Gamba, 2016). These policies are geared toward ensuring that hospitals provide the necessary care and support to all mothers and their infants. However, reports indicate that only 34% of newborns are exclusively breastfed while in the hospital. This translates to fewer than half of mothers who exclusively breastfed their children while in the hospital. Lack of policies in hospitals to support exclusive breastfeeding could be a factor contributing to low numbers of infants who are exclusively breastfed (Rayfield et al. 2015).

In 2011, the Surgeon General, Dr. Regina Benjamin, implemented a call to action in support of breastfeeding. Specifically, there were 20 key actions identified to improve support for breastfeeding (U.S. Department of Health and Human Services, 2011). These actions were targeted towards mothers and families, communities, health care, and employment. The following six actions were targeted towards health care institutions and include:

1. Ensuring that maternity care practices throughout the United States are fully supportive of breastfeeding.
2. Developing skilled systems to guarantee continuity of skilled support for lactation between hospitals and health care settings in the community.
3. Providing education and training for all health care professionals who care for women and children.
4. Including basic support for breastfeeding as a standard of care for midwives, obstetricians, family physicians, nurse practitioners, and pediatricians.
5. Ensuring access to services provided by the International Board Certified Lactation Consultants.

6. Identifying and addressing obstacles to greater availability of safe banked donor milk for fragile infants.

One of the most highly effective preventative measures a mother can take to protect the health of her infant and herself is to breastfeed. However, in the United States, while 75% of mothers start out breastfeeding, only 13% of babies are exclusively breastfed at the end of 6 months; rates are significantly lower for African American infants (Centers for Disease Control and Prevention [CDC], 2017).

Health care leaders are in an influential position to positively impact breastfeeding rates (CDC, 2018). Necessary steps to effect change include the following:

- Partner with nursing schools to improve the breastfeeding curricula in undergraduate nursing programs.
- Increase opportunities for continuing education, ensuring regular competency assessment and skills.
- Participate in writing health care standards, putting policies in place and role modeling leadership that supports breastfeeding mothers.
- Ensure that breastfeeding is supported and encouraged prenatally, during hospital care, and post-partum.
- Establish transparent, accountable organizational quality outcome measures related to breastfeeding.

If 90% of U.S. families complied with the current breastfeeding recommendation for exclusive breastfeeding for 6 months, it is estimated that $13 billion/year would be saved and
911 infant deaths would be prevented annually (Bartick & Reinhold, 2010). With 80% compliance, savings are estimated to be $10.5 billion/year with 741 infant deaths prevented (Bartick & Reinhold, 2010).

**Neonatal hypoglycemia.** Hypoglycemia is a metabolic emergency caused by the decrease in blood glucose during the neonatal period. Infants who develop hypoglycemia tend to have a serum glucose concentration of <40 mg/dl (<2.2 mml/L). If unrecognized and untreated, neonatal hypoglycemia can result in permanent brain damage (Straussman & Levitsky, 2010).

A hospital-based study was conducted by De, Biswas, Samanta and Kundu (2011) to examine hypoglycemia rates in breastfed neonates in the first 48 hours after birth. Blood glucose values for each infant were measured at one, six, twenty-four and forty-eight hours of life. The results demonstrated an overall incidence of 19% hypoglycemia in healthy newborns which occurred within the first twenty-four hours after birth. Infants delivered by primipara mothers registered 23.07% compared to 5.4% from multiparous mothers. Additionally, a high percentage of hypoglycemia occurred in neonates whose initial breastfeeding occurred greater than one hour after delivery.

Early initiation of breastfeeding increases the metabolic and nutritional needs for a healthy neonate. According to Samayam, Ranganathan, Kotari, and Balasundaram (2015), underfeeding the infant may lead to hypoglycemia due to an inadequate glucose supply to the infant. Normal healthy neonates register standard and self-correcting physiologic glucose in the blood about one to three hours of life. Lower rates of hypoglycemia were demonstrated by infants who were breastfed within one hour of birth (Samayam et al., 2015). Research shows that delay in feeding for three to six hours after delivery leads to failure of neonates to maintain a plasma glucose concentration above 30mg/dl. Most cases occur in first-time mothers and those
who give birth through operative procedures due to delayed feeding caused by operation sedation, pain or discomfort. Research shows that infants who develop hypoglycemia have a mild global developmental delay and cognitive impairment.

A hospital-based study conducted in India aimed at determining initial glucose levels in newborns (Dias & Gada, 2014). The study included 100 undelivered mothers and 100 neonates regardless of gender, age, weight, and means of birth. Of the babies studied, 49 were born through cesarean section delivery and 51 were born via vaginal delivery. Afterwards the neonates were grouped based on gender, parity, and method of birth. The neonates’ blood glucose level was measured within the initial half, three, six, twelve and twenty-four hours of life. Also, the blood glucose of the mother was measured one hour after delivery. The results showed that neonates born to mothers who have high blood glucose levels did not demonstrate evidence of hypoglycemia. The blood glucose concentration level was high in preterm and post-term babies. Consequently, the blood glucose increased with increase in hours and the maximum level was attained at 24 hours of life. Neonates born via cesarean section, pre-term, post-term, and infants of diabetic mothers are included in at-risk populations that should have their blood glucose levels monitored (Dias & Gada, 2014).

Sasidharan, Gokul, and Sabitha, (2004) conducted a prospective study in South India to determine the incidences and risk factors for neonatal hypoglycemia. Among the 604 infants studied, glucose levels were measured within one to two days of life. The results demonstrated that 42 out of 1000 neonates had incidences of neonatal hypoglycemia. The factors attributing to the high rate are low birthweight, prematurity, diabetes mellitus, and delay in initiating breastfeeding within twenty-four hours of life. The researchers also found that the mode of delivery profoundly influenced the glucose level of neonates. Infants born through vaginal
delivery registered a high level of blood glucose as opposed to those born through caesarian. Women who deliver vaginally experience a level of stress leading to the release of catecholamine which raises the blood glucose level. Pre-term babies are more likely to develop hypoglycemia compared to post-term neonates. It is advisable to apply cost-effective factors like lowering cases of delaying neonate feedings to reduce the incidences of neonate’s hypoglycemia, especially in developing countries. Mandatory blood glucose screening should also be initiated for all pregnant women to diagnose and treat gestational diabetes.

**Neonatal hypoglycemic brain injury.** Persistent, untreated hypoglycemia can result in neonatal brain injury. It can contribute to cognitive impairment, vision problems, cerebral palsy, and occipital lobe epilepsy (Su & Wang, 2012). More research is being carried out to identify the clinical manifestation and treatment of Neonatal Hypoglycemia Brain Injury (NHBI) as well as the best treatment plan for patients. Neonates’ brain development can be measured through the use of ultrasound, which also identifies and measures brain maturation disorder. Infants born to mothers who experience glucose metabolic complications during pregnancy are more likely to develop several neonatal disorders, including permanent brain injury. Research demonstrates adverse neurological outcome in hypoglycemic neonates. Cases of NHBI resulting from hypoglycemia can be reduced by initiating early feeding at least within 24 hours of life and with frequent monitoring of the blood glucose level in neonates (Samayam et al. 2015).

Glucose is a vital substrate for human cells especially for the brain, which requires glucose for essential for continuous growth and development. Infants at higher risk of hypoglycemia include pre- and post-term infants, small for gestational age babies, and those infants born to mothers with diabetes. It is essential to carry out blood glucose screening to properly treat identified conditions. The fetal blood glucose should be regulated to ensure
adequate glucose is available for proper neurological development. Early and frequent breastfeeding helps neonates maintain a stable blood glucose level, thereby decreasing the incidence of neonatal hypoglycemia.

**SECTION III: METHODOLOGY**

The original goal of this project was to implement an evidence-based practice initiative that promoted the overall health and well-being of newborns. The delayed bathing initiative is supported and endorsed by the World Health Organization, American Academy of Pediatrics, American College of Obstetricians and Gynecologists, and Association of Women’s Health, Obstetric and Neonatal Nurses for the demonstrated health benefits provided to newborns, including reduced risk of infection, stabilized blood sugar, improved temperature control, improved maternal-infant bonding and improved breastfeeding (Lipka & Schulz, 2012).

Support for this initiative was obtained from key organizational leadership, including our Chief Nursing Officer, the Chair of Obstetrics and Gynecology, and the Chair of Pediatrics. Their buy-in would be crucial to a successful implementation. Physicians are collaborative team members and fostering a dynamic, collective working relationship among all disciplines is essential to achieving a successfully implemented project while providing consistent information to patients. Community physicians in the fields of Pediatrics and Obstetrics, ancillary team members, various nursing leaders, and nursing staff were stakeholders whose support would be essential for a successful project implementation. The illustration below depicts the multitude of disciplines supporting the couplet dyad at the center of this initiative:
A content expert in best practices in maternal-newborn care was chosen as a mentor for this project implementation. Her organization, thoughtful and deliberate approach were invaluable when asking questions and providing feedback.

The development and planning for this project implementation required skills and knowledge that have been acquired throughout a tenured nursing career. Certifications in Neonatal Care and Nursing Leadership ensured clinical and leadership knowledge necessary to implement this evidence-based project.

**Phase 1: Identification of Knowledge Gaps**

To successfully implement this initiative, it was imperative to understand the knowledge gaps of all participants, including nursing and ancillary staff, physicians, lactation consultants, and parents. Assessing educational needs would lay the foundation for the educational roll-out to all team members as well as encourage engagement and buy-in. A Survey Monkey tool was
developed and disseminated online to all nursing staff and lactation consultants. In order for staff
to be engaged and complete the questionnaire, it was limited to ten questions that focused on
information related to breastfeeding benefits, newborn metabolic disorders such as
hypoglycemia, the benefits of vernix, and our current institutional performance related to
exclusive breastfeeding. The Survey Monkey tool was disseminated to all units within Maternal-
Child Health, including Labor & Delivery, Maternity, Well-Baby Nursery, and NICU. Pediatrics
was also included because of the cross-training initiative among units. Nurses and lactation
consultants had to be continually encouraged to complete the Survey Monkey tool. Email
reminders, signs posted in the locker and break rooms, and consistent leader rounding on all
shifts was done to facilitate completion of the needs assessment. Charge nurses were encouraged
to “talk it up” at change of shift report as well. The Survey Monkey tool was open for one month
for completion and 95% of all RN staff completed the needs assessment. The average score of
correct answers was 70%, with Pediatrics scoring the lowest (average score 50%) and Maternity,
NICU, Nursery and Labor and Delivery all scoring an average between 65-85%.

Our physician team members were comprised of Neonatologists, community-based OB-
GYN physicians, pediatric hospitalists, and community-based pediatricians. It was not a realistic
option to expect physicians to complete the Survey Monkey tool online as we have had
historically poor compliance with these types of assessments in the past. OB and Pediatric
Physician Grand Rounds are held weekly at our institution and attendance is typically robust.
Physician Chairs from the Department of OB-GYN and Pediatrics graciously agreed for nursing
to present at a Grand Rounds session to conduct a physician needs assessment. The majority of
OB physicians on staff had completed their residency at our institution and care delivery
principles were steeply routed in tradition. In order to facilitate engagement and participation, we
used an audience participation process where participants could answer questions anonymously. This was a fun and interactive process that created dialogue and discussion surrounding best practices. The same questions from the Survey Monkey tool were used, as well as other questions related to our organizational current performance. Physicians were truly shocked to see our current cesarean section rate, one of the highest in the country, and our lower than benchmark exclusive breastfeeding rate of 41%. Over 60% of our community physicians participated in this interactive process, which resulted in engaged and thoughtful discussion around the ten questions surveyed.

Parental needs assessments were conducted by leader rounding during hospitalization and included informal discussions with parents about their current experience, our vision for implementing the delayed bathing program, and their thoughts on participation in this initiative. Fifty families were rounded on to collect this information and feedback was very positive that parents would support this initiative and enjoy participating in their infant’s first bath. Several parents struggled with the concept of delaying the initial bath for 24 hours from a hygiene perspective, but information was provided, and parents were reassured that parent preference would determine the plan of care once the project was implemented.

Results of the needs assessment were shared with staff at staff meetings and during leader rounding to provide feedback and facilitate discussion.

**Phase 2: Definition of the Project/ Obtaining Stakeholders Support**

The project definition phase involved the development of an implementation plan. The plan was developed with the support of key stakeholders, including physician and nursing leadership, the Chief Nursing Officer (CNO), and identified project team members. With the knowledge needs assessment completed, an educational plan was developed. This consisted of a
power point presentation placed on Healthstream, a learning center utilized by the institution to facilitate ongoing education. The same educational content was reinforced at staff meetings, in-services, and during ongoing rounding with staff. The needs assessment for physicians was conducted through an audience participation interactive program, which was used to deliver education and best practice outcomes from this initiative. A simple parent education flyer was created to be distributed at prenatal classes, posted in patient rooms, and made available for physician offices.

Additional necessary resources were identified and a budget was developed to solicit funding for the necessary equipment. Supplemental warming lights and infant scales needed to be purchased and funding was secured from the hospital Foundation with approval from the CNO.

Key stakeholders from the Maternal-Child Health units met to redesign potential workflow as parents would be encouraged to have the infant admitted in their room, rather than in the Well Baby Nursery. This would continually facilitate parent bonding, skin-to-skin care, thermoregulation and breastfeeding. Parents could opt out of having their infant admitted in their room as this would not interfere with the delayed bathing initiative.

**Phase 3: Project Execution**

This stage involved the actual implementation of the delayed infant bathing program. The program launched in November of 2017 and the pilot extended for a 2-month period. During admission to Labor & Delivery, parents were informed of what to expect during and after the birthing process. The delayed bathing initiative was discussed so when they arrived on the Maternity Unit it was reinforced, rather than introduced for the first time. Parents who had attended prenatal classes and hospital tours had previously heard about the initiative during those
classes. Parents verbally consented to participate if they chose. In addition to delaying the infant’s initial bath, parents were invited to participate in the bathing process. This afforded them an opportunity to be hands on with their newborn for the initial bath and help to instill knowledge and confidence prior to being discharged home. Benefits to the initiative were reinforced, questions were answered, and the infant’s clinical status was continually relayed to the parents. Ongoing clinical data was collected from participating infants.

Prior to the initial bath, universal precautions, including the use of gloves for handling were used for all infants. Once the initial bath was complete, a *duck* sticker was placed on the infant’s crib card, signifying that the bath had been performed and gloves were no longer required unless performing a diaper change. This was a discreet way of ensuring that staff were not at risk for handling infants that had not been thoroughly cleaned of all body fluids from the birth process. Infants born to mothers infected with Hepatitis or HIV were excluded from the project as an early initial bath was required prior to any injections of Vitamin K or Hepatitis vaccines. There were no infants that fell into this category during the implementation.

**Phase 4: Project Evaluation**

The evaluation of the project was conducted through analysis of the outcome data as well as from direct feedback from parents, staff, and physicians. The outcome data demonstrated improved patient outcomes, nursing and physician staff demonstrated increased knowledge related to the project, and parents provided feedback praising the initiative. Parental feedback was obtained via comments during leader rounding and from the patient satisfaction surveys that are mailed out to them after discharge. Parental comments praising the program included:

> “We loved participating in Ben’s first bath. It gave me confidence as a new mom to take him home and be able to care for him properly!”
“Love that you are delaying the initial bath and that parents can participate. Wish we could have done this with our last baby!”

“This is my 3rd baby but the first time the bath was delayed. Maybe it is because this is my 3rd, but I felt that breastfeeding was easier this time around.”

“We just relocated from Europe for my husband’s job and I was very concerned that the healthcare model would be very different. I was thrilled to see you encourage postponing the first bath and promoting vernix for good skin care.”

“Staff were all great—they explained everything that would be happening, encouraged us to participate in care, and highly encouraged breastfeeding.”

Data Collection

There were a total of 319 infants who participated in the project implementation over the initial two-month period. This accounted for 80% of well newborns delivered during that time frame participating in delayed bathing. Parents who declined participation cited hygiene concerns or pending visitors as the primary reasons for electing not to participate. Of the 319 infants that participated in delayed bathing, 281 parents (mom or dad or both) participated in the initial bath, accounting for 88% parental involvement. Parents who did not participate cited fatigue and planned help at home as the primary reasons for not participating.

Prior to the delayed bathing implementation, we collected baseline data on 100 well, non-at-risk newborns. For data collection purposes, the definition of hypothermia was a temperature below 36.5 C (97.7 degrees Fahrenheit) and the definition of hypoglycemia was a blood glucose level below 45. Those parameters are consistent with the organizational parameters utilized in the appropriate policies and procedures and are aligned with current nursing practice. The incidence of hypothermia post 2 hours sponge bath was 6%, incidence of hypoglycemia (with no
risk factors such as maternal diabetes) was 4% and the overall organizational exclusive breastfeeding rate was 41%. Fifty-nine percent of well newborns received some form of formula supplement prior to discharge from the hospital.

Post delayed bathing implementation, participating infants demonstrated a 2% incidence of hypothermia after bathing, a 2% incidence of hypoglycemia, and an exclusive breastfeeding rate of 51%. Forty-nine percent of infants received some form of formula supplement prior to discharge.

**Figure 2**  
*Clinical Outcomes*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Pre-implementation</th>
<th>Post-implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Hypothermia</td>
<td>6%</td>
<td>2%</td>
</tr>
<tr>
<td>% Hypoglycemia</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>% Exclusive Breastfeeding</td>
<td>41%</td>
<td>51%</td>
</tr>
<tr>
<td>% Formula Supplement</td>
<td>59%</td>
<td>49%</td>
</tr>
</tbody>
</table>

The Survey Monkey tool that served as a knowledge pre-assessment for staff was completed by staff prior to the educational rollout and repeated during the second month of the implementation phase. Initially, there was an overall participation rate of 95% with Pediatrics scoring an average of 50% and the remaining Maternal-Child Health units including Labor &
Delivery, NICU, Nursery and Maternity scoring between 65-85%. Post project implementation, the overall participation rate was 89% and the average score among all units was 90%.

**Figure 3**
*Data Results: Nursing Knowledge Pre & Post Assessment*

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**SECTION IV: SUMMARY**

**Project Sustainability and Recommendations**

The delayed bathing implementation project should be easily sustainable going forward. It reinforces the need for all disciplines to collaborate in the delivery of evidence-based care. Newborn baths are necessary to prevent the spread of communicable disease through blood and body fluid, but they can promote family-centered care concepts. The resources required for the sustainability of this project have already been put into practice at the facility. The educational content has been created and is readily available to any team member. The project plan can be reproduced at other institutions providing Maternal-Child services.
During the project implementation, staff were encouraged to provide ongoing feedback and identify best practices that could continually improve the project. To that end, several key projects are currently being worked on: the ongoing revision of the electronic medical record (EMR) and the development of a competency checklist for newly hired staff. The EMR has limitations to capture adequate documentation and nursing staff identified several components they would like to see captured in the documentation. Currently, revisions to the EMR are being developed and will be built and trialed. Additionally, a competency checklist regarding the clinical concepts and skills necessary to participate in the delayed bathing initiative is being developed and will be added to the orientation packet for all new staff in the Maternal-Child Health units. This is similar to any other competency or evidence-based initiative that has been implemented.

Further next steps include exploring the concept of delayed immersion bathing vs. delayed sponge baths and implementing “swaddle” bathing in the Neonatal Intensive Care Unit, which allows preterm and high-risk infants to remain in a calm, midline, flexed position during bath time, reducing stress and caloric consumption (Finn, Meyer, Kiersten, & Wright, 2017). Another next step is to expand the data collection to include the at-risk population of infants born to diabetic mothers and infants below the 10th % or above the 90th percentile at birth.

To ensure that this initiative persists, nursing leadership continues with leader rounding, soliciting feedback, suggestions, and identifying barriers. At a minimum, an annual evaluation of patient and staff education materials will be reviewed and modified. Parent education material for placement on the Get-Well Network, an interactive patient engagement solution, is currently in development as well. Ongoing outcome performance will continually be shared with nursing and physician staff. Nursing leadership attends the OB and Pediatric Physician Business
Meetings on a monthly basis and will continue to do so to elicit any physician or patient feedback that has been communicated to them regarding the program.

Conclusion

The implementation of the delayed infant bathing program in our community hospital was received favorably by all team members, including parents and families. As an evidence-based practice initiative, delayed bathing of newborns demonstrated improved clinical outcomes, increased provider knowledge, and enhanced parent involvement in the care of their newborn.

It is aligned with our organizational strategic plan to improve overall quality and safety within the organization. Additionally, the project promoted teamwork and collaboration among team members and disciplines. It was extremely rewarding to see the project from concept to implementation. An additional goal is that it motivates health care professionals within the Maternal-Child Health service line to question the care we deliver and explore continuous best practices in the care of mothers and newborns.
References


http://pediatrics.aappublications.org/content/pediatrics/129/3/e827.full.pdf


Putnam Publishing Group.


https://planetree.org/designation-2/


Appendix A

SURVEY MONKEY

Delayed Bathing—Knowledge Pre-Assessment

1. The current CMS benchmark for exclusive breastfeeding during the inpatient post-partum period is:
   A. 30 %
   B. 40%
   C. 50%
   D. 60%

2. SH's exclusive breastfeeding rate for 2016 was:
   A. 27%
   B. 37%
   C. 47%
   D. 57%

3. Currently, the practice at SH is to administer the infant’s first bath at ______ hours of life:
   A. Within the first hour of birth
   B. 2-4 hours
   C. 8 hours
   D. 24 hours
Appendix A (continued)

4. Breastfeeding has been associated with the following health benefits:
   A. Reduction in otitis media
   B. Reduction in respiratory illnesses for babies and children
   C. Reduction in hospitalization from any cause
   D. All of the above

5. Effects on newborns from cold stress include which of the following:
   A. Decreased surfactant efficiency
   B. Post-natal weight loss
   C. Increased oxygen consumption leading to respiratory distress
   D. All of the above

6. During the discharge process from the Mother-Baby Unit, the RN is performing discharge teaching to a mother whose newborn infant is being exclusively breastfed. The most appropriate instructions for the mother to receive are:
   A. Discontinue breastfeeding and offer formula feedings only going forward
   B. Feed the infant less frequently
   C. Temporarily discontinue breast feeding and formula feed for 2 week period
   D. Continue to breast feed every 2-4 hours
7. The most common metabolic problem in the newborn period is:
   A. Hypothyroidism
   B. Galactosemia
   C. Hypoglycemia
   D. PKU (Phenylketonuria)

8. List 2 evidence-based benefits of vernix:
   A. ________________
   B. ________________

9. List 3 evidence-based benefits of delayed bathing:
   A. ________________
   B. ________________
   C. ________________

10. The World Health Organization (WHO) recommends administering the first newborn bath:
    A. Within the first hour after birth
    B. At 2-4 hours of life
    C. At 8 hours of life
    D. At 24 hours of life
Appendix B

Delayed Bathing
An Evidence-Based Initiative Aimed at Improving Neonatal Outcomes

The 10 Steps to Successful Breastfeeding Include:

1. Have a written breastfeeding policy that is routinely communicated to all staff
2. Ensure staff are adequately trained to implement our breastfeeding policy
3. Inform all pregnant women about the benefits of breastfeeding
4. Help mothers initiate breastfeeding within 1 hour of birth
5. Show mothers how to breastfeed and maintain lactation even if they are separated from their infants
6. Give infants no food or drink other than breast milk unless medically indicated
7. Practice rooming in—allow mothers and babies to remain together 24 hours a day
The 10 Steps to Successful Breastfeeding
Continued

8. Encourage breastfeeding on demand
9. Give no pacifiers or artificial nipples to breastfeeding infants
10. Foster the establishment of breastfeeding support groups and refer mothers to them

Examples of Evidence-Based Care Practices Currently Implemented

- Skin to skin immediately after delivery, including with cesarean section patients
- 9 of the 10 steps towards Baby Friendly Designation, with the exception of rooming in (we are working on it!)
- Back To Sleep SIDS prevention initiative
- Neonatal Resuscitation Training
- Simulation Training / Mock Codes
- Car Seat Safety
- Critical Congenital Cardiac Screening
What About That Vernix?

- Vernix is a natural skin moisturizer that has protective elements to the fetus in utero and the infant after birth
- Vernix is a skin protectant that provides skin protection to newborns as they transition from the amniotic fluid environment into the air environment
- Vernix has antimicrobial benefits to newborns after delivery as it contains antioxidants and anti-inflammatory properties

What Does the Evidence Show?

- In 2015, a community hospital implemented delayed bathing, waiting a minimum of 14 hours to perform the first bath. Findings included:
  - Incidence of hypothermia decreased from 29 to 14%
  - Breastfeeding rates increased from 51 to 71%
  - Parents verbalized improved bonding with their infants

Adapted from Courtney Buss, RN, Sherman Family Birthing Center
Appendix C

Parent Letter

Dear Parents,

We encourage providing your baby’s first bath at approximately 24 hours of life. There are many benefits to delaying the initial newborn bath including:

- Allowing for increased bonding time with your baby
- Allowing for parents to be involved in your baby’s first bath
- Reducing the risk of infant hypoglycemia (low blood sugar)
- Reducing the risk that your baby will become cold
- Increasing the ability for your baby to breastfeed
- Improving the hydration of your baby’s skin

Your baby’s nurse will talk to you about your newborn’s first bath and invite you to participate!

We ask all visitors and anyone handling your baby to practice good handwashing before and after their first bath!
### Appendix D

**DELAYED BATHING BUDGET PROPOSAL**

<table>
<thead>
<tr>
<th>Delayed Bathing Component</th>
<th>Costs Associated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary / Benefits / Non-Productive Time of staff required to perform tasks</td>
<td>$0—incorporated into daily responsibilities of nursing care</td>
</tr>
</tbody>
</table>
| Capital expenditure for initial purchase of necessary equipment to transform care at the bedside  
  - Neonatal / Infant Scales  
  - Radiant Portable Heating Lights | 4 @ $1200 = $4800.00  
6 @ $1000 = $6000.00 |
| Hands-on classroom education for all staff | 170 staff members x $40 (average salary) x 2 hours = $13,600. This is training / non-productive time build in to the annual operational budget |
| Marketing costs for parent education material to be given out at MD offices prenatally and during hospital prenatal classes. | Initial template of Education Material = $495.00  
Annual supply for distribution = $0  
(To be printed internally after creation of template) |
| Cost of EMR revision to capture necessary components of delayed bathing implementation and run quality report | $0—to be handled by internal nursing IT team |
| Cost of physician education during Grand Rounds Lecture Series for OB, Peds and Family Medicine | $0—education to be done by internal expert nursing staff |
| Necessary space modifications for project | $0 |
| **Total Costs** | **$24,895.00** |