The Effectiveness of Newborn Safety Information and Acknowledgement in Preventing Inpatient Newborn Falls

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Table of Contents

Abstract

Newborn falls can occur in the immediate postpartum period. The purpose of this capstone project was to evaluate the effectiveness of the Newborn Safety Information and Acknowledgement tool in impacting inpatient newborn falls in the postpartum setting. The literature indicated health care settings that used a safety contract in their newborn fall prevention programs had success in decreasing or eliminating in-hospital newborn falls. A mixed methods design, Evidence-based Practice (EBP), Quantitative Descriptive and Qualitative Case Study designs were utilized to address three outcomes. The primary target population was postpartum newborn fall case events and postpartum nursing staff documentation on the use of the Newborn Safety Information and Acknowledgement tool at a Mid-Western Women's Hospital. A convenience sample of all newborn fall events and charts for retrospective review were utilized. Data revealed no newborn falls occurred during the 3 months after implementation of the Newborn Safety Information and Acknowledgement tool. However, an examination of the newborn fall case events suggested the risk factors were mothers who breastfeed, or breast and bottle feed and delivery by cesarean section. Additionally, newborn falls were most likely to occur during the early morning hours between 1-7am, after 24 hours from delivery time, and within 6 hours of receiving sedating medication. Other data revealed, that the Newborn Safety Information and Acknowledgement tool was somewhat being used as intended. This study reinforced that the Newborn Safety Information and Acknowledgement tool can aide in communication between parents of newborns and postpartum nursing staff to prevent falls and improve the safety of newborns in the inpatient setting.

List of Tables

List of Figures

The Effectiveness of Newborn Safety Information and Acknowledgement in Preventing Inpatient Newborn Falls

A priority in hospitals nationwide is the prevention of falls across all populations. In order to protect patients, the Health and Medicine Division (HMD), a division of the National Academies, and the Joint Commission identify patient safety problems, sanction improvement needs and promote safety system development (HMD, 2016; The Joint Commission, 2016). A prevalent patient safety problem is falls resulting in injury. In the United States, hundreds of thousands of patients fall in hospitals every year. Of these, 30-50% result in injury. Injured patients may require longer hospital stays and sustain increased health care costs (The Joint Commission, 2015).

Previous research has resulted in a large body of evidence regarding in-patient fall prevention and cost reduction for the adult population (Galuska, 2011; Monson, Henry, Lambert, Schmutz, & Christensen, 2008; The Joint Commission, 2015). By contrast, newborn falls remain one of the least researched newborn care events in the acute care setting (Hodges & Gilbert, 2016). Newborn falls occur in the immediate postpartum period (Slogar, Gargiulo, & Bodrock, 2013). It is estimated the national infant fall rate is 1.6 to 4.4 falls per 10,000 live births (Helsley, McDonald, & Stewart, 2010).

Parents, caregivers and health care providers involved in newborn care can engage in evidence-based newborn fall interventions to prevent falls (Hodges & Gilbert, 2016). These interventions could include identifying fall and injury risk factors, providing care tailored to individual patient risk factors, and participating in systematic reporting and analysis of fall incidents (The Joint Commission, 2015). Nurses, as an important member

of the health care team, need to make it a priority intervention to help prevent inpatient newborn falls and subsequent injury.

Background

Regulatory and public health agencies expect a decrease in the risk of patient harm resulting from newborn falls. For hospitals to maintain magnet status, patient falls is a nurse-sensitive indicator that must be addressed (Bonuel, Manjos, Lockett, & Gray-Becknell, 2011).

The Joint Commission (2015) focuses on reducing the risk of patient and resident harm resulting from falls. One of the Healthy People 2020 goals is to reduce the rate of fetal and infant deaths by reducing the rate of sudden unexpected infant deaths. Another goal of infant care is that there will be an increase in the number of infants placed on their backs to sleep (Healthy People 2020, 2016). Safe sleep is a direct correlation to safe newborn care, including fall risk.

The American Academy of Pediatrics (AAP) Task Force on sudden infant death syndrome (SIDS) has a priority to promote the safest sleep environments for infants by developing evidenced based recommendations to reduce the risk of SIDS and other sleep-related deaths, such as infant falls (Goodstein, Bell, & Krugman, 2015). Safe sleeping environments are directly related to infant fall risk. The AAP recommendations for a safe infant sleeping environment should be modeled and implemented at birth and enforced through discharge with the support of staff caring for newborns to prevent newborn falls (AAP, 2016).

The quality and safety education for nurses. The Quality and Safety Education for Nurses (QSEN) is a project with the goal of preparing nurses to be effective care

providers with the ability to improve the quality and safety of healthcare systems amongst a challenging health care environment (2014). There are six defined competencies (patient-centered care, teamwork and collaboration, evidenced-based practice, quality improvement, safety, informatics) with proposed targets for each in the areas of knowledge, skills and attitudes. In relation to the capstone project, all six nursing competencies are needed to successfully impact the inpatient newborn population. However, patient centered care and safety are the two competencies of primary focus in this capstone project.

Patient centered care is the main competency focus in this capstone project. Families are engaged in active partnership in the safety and well-being of their newborn. Nurses communicate care in relation to newborn safety at each shift change. Nursing knowledge of this competency can increase by understanding how information, communication, and education impact patient centered care (QSEN, 2014).

Several safety skills are another competency focus in this capstone project and includes supporting safety and quality through effective use of standardized practices, demonstrating effective use of strategies to reduce harm to newborns, and communicating concerns as it relates to newborn fall potential to patients and families. By appropriately analyzing errors (newborn falls case events), there is potential for system improvements (QSEN, 2014).

Significance

Helsley et al., 2010 estimate that anywhere from 600 to 1600 newborn falls in United State hospitals occur yearly. This is a rate of approximately 1.6-4.14 per 10,000 live

births. Underreporting is also probable so the true incidence may be much greater (Galuska, 2011). The Centers for Disease Control and Prevention (CDC) has identified that falls are the leading cause of nonfatal injuries in children ages 0 to 19 (CDC, 2012, as cited in Matteson, Henderson-Williams, and Nelson, 2013).

Additionally, newborn falls result in a range of injuries from no reported injuries to minor bruises and abrasions, head injuries such as skull fractures and in very rare cases death (Helsley et al., 2010; Galuska, 2011). The newborn fall can also cause parents to experience emotional stress and guilt. In addition, the nursing staff may experience emotional distress and the health care institution may experience legal issues and increased financial costs due to a fall (Matteson et al., 2013). Therefore, this topic is significant to investigate as the majority of newborn falls are preventable and a zero fall rate is expected, no number of newborn falls is acceptable.

Definition of Newborn Falls

The National Database of Nursing Quality Indicators (NDNQI) defines newborn falls and drops. A newborn fall is defined as, “a sudden, unintentional descent, with or without injury to the patient, that results in the patient coming to rest on the floor, on or against some other surface, on another person, or on an object” (2016, p. 2). A newborn drop is defined as “a fall in which a baby being held or carried by a healthcare professional, parent, family member, or visitor falls or slips from that person’s hands, arms, lap, etc. This can occur when a child is being transferred from one person to another. The fall is counted regardless of the surface on which the child lands and regardless of whether or not the fall results in an injury” (NDNQI, 2016, p. 3). For the purpose of this project the term “fall” is utilized.

Stakeholders

There were many stakeholders identified for this capstone project. First, parents of newborns were key stakeholders as the main infant caregivers. Other stakeholders directly impacted by the issue of inpatient newborn falls were postpartum nurses, nurse leaders and health care team members. All health care providers who cared for women, newborns and families were also considered stakeholders. Additionally, professional societies, professional nursing organizations, and community groups were recognized stakeholders.

Parents were key stakeholders because they were the primary care givers in the hospital and were responsible for newborn safety in their home environment. Postpartum nurses that were involved in the care of newborns in the inpatient postpartum setting were stakeholders based on the actual nursing care provided to the infants. Additionally, nurse leaders such as clinical nurse specialist (CNS), mother/baby staff development nurse (SDN), and the unit's Service Leader were identified as stakeholders because of included responsibilities of postpartum nurse education, translating evidenced based research into practice and policy development focused on newborn safety. Existing teams within the health system were also considered stakeholders due to the role played on the Shared Governance Council Falls Committee and the Hospital Safety Committee.

Other health care providers who cared for women, newborns and families were also stakeholders because of the impact in the health care organization itself and in the broader community. These health care professionals consisted of lactation consultants, advanced practice nurses, obstetricians and pediatricians. Childbirth educations were

stakeholders because these health care professionals started the foundation of newborn safety practices with parents during class time. Furthermore, other considered stakeholders were the Magnet Program Director, professional societies, professional nursing organizations, and community groups. These stakeholders disseminated information and provided information and resources to health professionals and the larger community.

Purpose statement

Bonnel and Smith, (2014) stated the purpose statement of a capstone project was to guide resolution (outcome) of the clinical problem. The purpose of this capstone project was to evaluate the effectiveness of the Newborn Safety Information and Acknowledgement tool in impacting inpatient newborn falls in the postpartum setting (see Appendix A).

Clinical Question

A clinical question was defined as asking a clearly defined specific clinical practice problem (Bonnel & Smith, 2014). Therefore, the clinical question in this project was, "Can implementation of the Newborn Safety Information and Acknowledgement tool impact inpatient newborn falls in the postpartum setting as opposed to no implementation of the Newborn Safety Information and Acknowledgement"?

Outcomes

The outcomes or consequence (Bonnel & Smith, 2014) were threefold; 1) to identify risk factors associated with newborn falls in the postpartum setting (see Appendix B), 2) evaluate the effectiveness of the Newborn Safety Information and Acknowledgement tool

(see Appendix C), and 3) evaluate if postpartum nurses completed the Newborn Safety Information and Acknowledgement tool as intended (see Appendix D).

Theoretical Framework and Synthesis of Literature

Theoretical Framework

Systems theory guided this capstone project (see Figure 1). A system was defined as, "...a collection of independent but interrelated elements or components organized in a meaningful way to accomplish an overall goal" (Hayajneh, 2007, p. 1). Systems theory was used to understand how humans interacted with each other, with the environment, and the complexities that exist within systems (Cordon, 2013). When examining the general systems theory, input was the information that was entered into the system (material, energy, resources) and output was the product or service of the system. Throughput was the processes used by the system to convert the input from the environment into products or services that were usable. Feedback was information about processing that was used to evaluate and monitor the system and was used to guide more effective performance of the system (Hayajneh, 2007).

It was important to understand how Systems theory worked in a healthcare setting. For this particular capstone project, inputs were nurse's efforts and information. Processes were education and patient assessment. The output was fall rate that was a direct measure of the quality of care provided. Feedback was information obtained from fall rates, chart reviews and analysis of fall case events (Cordon, 2013).

Using Systems theory was also justified for this capstone project when asking the clinical question, "Can implementation of the Newborn Safety Information and Acknowledgement tool impact inpatient newborn falls in the postpartum setting as

opposed to no implementation of the Newborn Safety Information and Acknowledgement", because one of the greatest attributes was the theory's ability to adapt. Systems Theory sought stability and change (Cordon, 2013). Based on the complied data and findings from the literature review, change must be made in the newborn's environment, including personal, information, materials, time, and tools.

Framework relevance to capstone project outcomes. Based on Systems Theory, healthcare outcomes could be improved by systematically appreciating the whole system that contributes to these outcomes (Cordon, 2013). Using Systems theory was also justified and relevant for measuring the outcomes of this capstone project because improvement in newborn fall prevention required a purposeful system focus to make changes.

The first capstone project outcome was to identify risk factors associated with newborn falls in the postpartum setting. Systems theory, in this capstone project, helped nurses understand how humans interacted with each other, and with the environment, and the complexities that exists within the systems (Cordon, 2013). Evaluation of this outcome used Systems theory to understand that every part of newborn care was interrelated and related to the environment and processes.

The second capstone project outcome was to evaluate the effectiveness of the Newborn Safety Information and Acknowledgement tool. Comparing fall rates before implementation of the Newborn Safety Information and Acknowledgement tool to fall rates after implementation was used to measure this capstone outcome. Fall rates could be used as evidence to determine if the system's output of quality care was met.

The third capstone project outcome was to evaluate if postpartum nurses completed the Newborn Safety Information and Acknowledgement tool as intended. The Newborn Safety Information and Acknowledgement tool was a new intervention implemented in the postpartum inpatient setting. When new factors or elements were introduced into a complex system, the system behaved differently (Cordon, 2013). Evaluating if postpartum nurses were documenting and using the Newborn Safety Information and Acknowledgement tool as it was designed and intended was important to the outcome of newborn falls (see Figure 1).

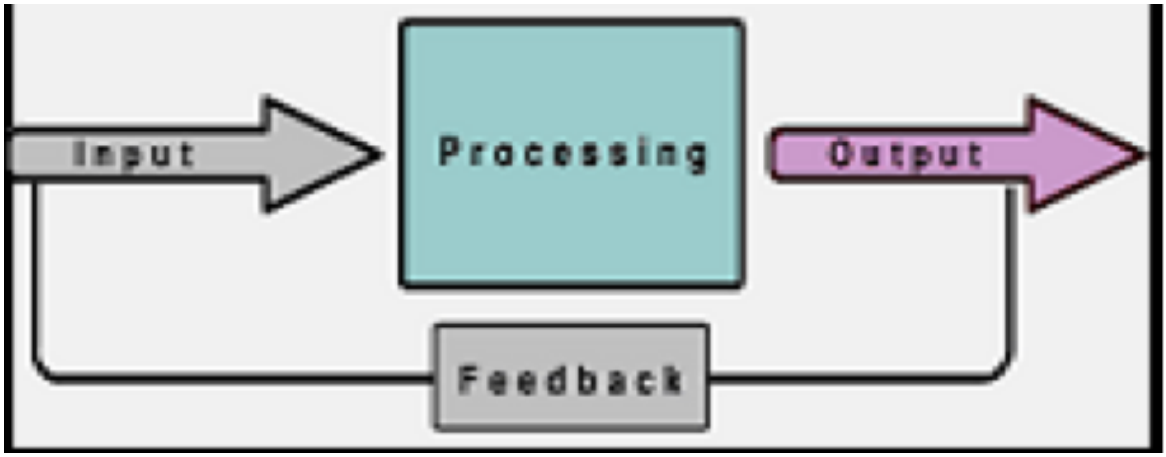

Figure 1. Systems Theory image. Figure from Hayajneh, Y. (2007). Management for health care professional series: Systems and systems theory. Retrieved from http://www.hayajneh.org/a/readings/systems-Theory.pdf.

Search Plan

The search plans for this literature review started by evaluating several databases to examine and obtain evidence. PubMed, ProQuest, and Cumulative Index to Nursing and Allied Health Literature (CINAHL) were the three databases searched. It was important to go beyond the nursing literature to identify how other disciplines were using the topic

concepts (Bonnel & Smith, 2014). PubMed was included in the database search to produce a more expansive search, containing journals, books and abstracts that covered a mass of science subject areas. CINAHL was a nursing research database reviewed to provide the largest and most in-depth evidence dealing with healthcare issues across multiple disciplines. Finally, the ProQuest database was searched to gain content related specifically for nursing and allied health disciplines (Melnyk & Fineout-Overholt, 2015).

The electronic data base search was supplemented with a Grey literature search of the capstone topic and reviewed the reference lists on previous found articles, to address the project purpose. Grey literature referred to material that was not formally published by commercial publishers or peer reviewed journals. It provided additional literature from organizations and government agencies (Bonnel & Smith, 2014). Through the use of PubMed, CINAHL, ProQuest, and Grey literature, a thorough review of literature was performed.

PICO Terms and Database Search Strategy

Keyword searching was implemented as the main search strategy across each database. The keyword search strategy related directly to the PICO question and was a quick way to find relevant evidence. Synonyms were identified for each portion of the PICO question prior to performing the search. Key words from relevant articles and search terms preprogramed into the specific databases were also used (Bonnel & Smith, 2014). Refer to Table 1 for a complete list of keywords searched. Boolean operators were used to expand and limit the search. The search started by using CINAHL, then was repeated by using ProQuest and PubMed. Each piece of the PICO question was searched separately using the Boolean operator “OR” to include the synonyms. After each

individual search, the Boolean operator “AND” was used to include the different pieces of the PICO question and other key words.

Table 1

PICO Key Words

PICO	**Keywords**
Population (P) In-patient newborns in the postpartum setting	Newborn Infant Newborn infant In-hospital newborn infant
Issue of Interest (I) Newborn Safety Acknowledgement	Newborn fall prevention Staff education
Comparison (C) No implementations	Terms included in the issue of interest
Outcome (O) Newborn falls impacted	Fall prevention Newborn falls Newborn drops Accidental falls
Other key words	Safe infant sleep Hospital Newborn safety Postnatal care

The “P” portion of the PICO question represented the population of in-patient newborns in the postpartum setting. The “I” portion of the PICO question addressed the issue of using a Newborn Safety Information and Acknowledgement. The “O” portion of the PICO question was the outcome of newborn falls. Five primary searches using different PICO key words were performed.

For the first search, the synonyms “infant, newborn” and “fall prevention” were used (672 results), then in addition “Hospital” (4 results). These results were obtained after each keyword was combined with the operator “AND”.

For the second search, newborn fall prevention and staff education were the keywords. The keywords were combined with the operator “And”, and the search yielded a total of 17 results.

The third search used the keywords “accidental falls”, “newborn OR infant”, and “hospital”. This search used three keywords combined with the operator “And”. The search yielded “accidental falls” (19,486 results), “newborn OR infant” (940 results), and “hospital” (299 results).

The fourth search used the keywords “postnatal care”, “newborn OR infant”, and “fall or drop”. This search used three keywords combined with the operator “And”. The search yielded “postnatal care” (6,791 results), “newborn OR infant” (4,432 results), and “fall OR drop” (37 results).

Finally, the fifth search used the keywords “infant falls AND safety” and “falls or drops”. This search used two keywords combined with the operator “And”. The search yielded “infant falls AND safety” (7.964 results) and “falls OR drops” (177 results).

The PICO key word search resulted in a total of 20 journal articles that pertained to the PICO clinical question, 4 Grey literature review findings, and one article from review of the reference lists, for a total of 25 results. A final 9 articles, all level of evidence 5, were kept for the literature appraisal based on applicability to the PICO question. This ensured relevance and transferability of the evidence to the specific population,

intervention and outcome (Melnyk & Fineout-Overholt, 2015). The full search Flow Diagram is viewed in Appendix E and resultant Matrix is viewed in Appendix F.

Inclusion and Exclusion Criteria

Bonnel and Smith, (2014) identified inclusion and exclusion criteria as what was included and excluded from the literature search to provide structure. The literature search inclusion criteria were limited to peer reviewed, involving human studies, newborn age, inpatient falls, articles published from 2010 - 2016, and articles written in the English language. The literature search exclusion criteria were foreign language, age other than newborn, falls other than inpatient settings and diagnostic articles.

Synthesis of Literature

The discussion about newborn falls in the literature began in the last ten years. In the literature, there was no consensus found on an appropriate policy to prevent newborn falls. There were also no standardized tools to assess newborn fall risk. Additionally, data tracked nationwide and published protocols were limited. Hospital reporting of infant falls was not required by regulatory agencies and there was no national benchmark for newborn falls (Abike et al., 2010; Ainsworth, Summerlin-Long, & Mog, 2016; Matteson et al., 2013). Therefore, the literature used to support this study was based on interventions, safety agreement, fall case review, fall rates and education.

Interventions. The literature revealed, that targeted interventions for reducing infant falls most commonly used by researchers were newborn fall policies, parent safety agreements, staff educational tools, newborn fall debriefing forms and post fall

algorithms. Additional interventions used were promotion of maternal rest periods, no co-sleeping policies, and parent educational tools. Visual reminders for parents, hourly nursing rounds, and environmental changes were also common targeted interventions for reducing infant falls (Ainsworth et al., 2016; Galuska, 2011; Hodges & Gilbert, 2016; Slogar et al., 2013).

Safety agreement. As evidenced in the literature, a parent/newborn safety agreement (contract, acknowledgement) tool was used as a way to educate new parents and support other caregivers about newborn fall prevention and safe sleep practices. Specially, the tool was used to educate and ask parents to partner with staff nurse to keep the newborn infant safe. Fall safety information was reinforced daily and as needed for the duration of stay with the hope of establishing safe care practices while in the hospital and at home. The literature indicated that health care settings that used a safety contract in the newborn fall prevention programs had success in decreasing or eliminating in-hospital newborn falls. (Galuska, 2011; Helsley et al., 2010; Magri, Brassil, Cleary, & McGuire, 2013). However, evaluating whether the safety agreement tool was used as intended and if postpartum nurses documented its use had not been examined in the literature.

Fall case review. Results from several studies indicated there were benefits in thoroughly evaluating newborn fall cases. Patient specific fall prevention interventions could be developed through understanding the specific population's risk factors, pattern and trends in newborn falls. (Ainsworth et al., 2016; Galuska, 2011; Hodges & Gilbert, 2016; Monson, Henry, Lambert, Schmutz, & Christensen, 2008; Wallace, 2015). Information from the literature review revealed that education was an essential component for nursing staff because nurses needed to understand why newborns were at-

risk for falls. Data also supported practice change, post educational program implementation and further analyzed newborn fall cases (Ainsworth et al., 2016; Hodges & Gilbert, 2016; Slogar et al., 2013).

Fall rates. The literature also stressed the importance of understanding newborn fall rates (Monson et al., 2008; Wallace, 2015). Helsley et al., 2010 estimated that anywhere from 600 to 1600 newborn falls in United State hospitals occur yearly. This is a rate of approximately 1.6-4.14 per 10,000 live births. The true prevalence of newborn fall rates was unknown because hospitals were not required by any regulatory agency to report infant fall rates. In addition, the fall rates could have been under-reported by healthcare professionals and parents (Helsley at al., 2010; Hodges & Gilbert, 2016; Monson et al., 2008). The literature found that fall rates must be measured before and after interventions to assess impact on inpatient newborn falls (Helsley et al., 2010).

Education. Teuten, Bolger, & Paul (2015), identified that health care providers caring for newborns lacked the education and understanding about how newborn falls could occur and the potential consequences of newborn falls. The literature also showed parents lacked awareness of environmental and maternal risk factors that increased newborn fall risk. Educating nursing staff was noted to be a priority so the health care setting could implement policy and practice changes (Teuten at al., 2015).

In summary, the review of the literature revealed there was some evidence on newborn fall prevention; however, there was only a small amount of information specifically about a parent/newborn safety agreement tool. In addition, there was incomplete material related to risk factors of newborn falls, targeted risk assessments tools, fall prevention interventions, methods and policies that may eliminate newborn falls. Therefore, further

evaluation of newborn fall cases and evaluation of evidenced-based practice changes are needed to further improve practice and make enhancements in fall prevention practices in the hospital setting (Ainsworth et al., 2016; Hodges & Gilbert, 2016; Matteson et al., 2013)

Organizational Assessment

The organizational assessment, for a Women's Hospital in a Mid-Western urban city, where the capstone project was carried out, included readiness for change, facilitators and barriers, risks and/or unintended consequences. Hospital nursing leaders and postpartum nurses demonstrated readiness for change and supported the capstone project as designed (see Appendix G). Due to recent cases of newborn falls at the setting, addressing newborn falls had great urgency (J. Gute, personal interview, March 4, 2016). Taking advantage of this readiness for change enhanced the probability of affecting patient outcomes. Change in policy and process assisted with a consistent message given to parents and increase culture of safety environment.

Facilitators and Barriers

Nurses were identified as both "facilitators" and "barriers" to the capstone project. First, as facilitator's postpartum nurses, nurse leaders and nurses on the Unite Based Council at the hospital voiced newborn fall prevention as priority. In response to the need to improve newborn safety, in November 2016, the use of a Newborn Safety Information and Acknowledgement tool was initiated with the goal of impacting newborn safety and possibly preventing newborn falls. One nurse stated, "The premise behind the Newborn Safety Information and Acknowledgement tool was to increase parent's awareness of the

potential of an infant fall. It focused on three main concepts; security, keeping baby safe, and safe environment" (J. Gute, personal interview, March 4, 2016).

Second, postpartum nurses, nurse leaders and nurses on the Unit Based Council expressed barriers and questioned if all stakeholders were committed to the implementation of the Safety Information and Acknowledgement tool. One nurse stated, "Health and safety outcomes of the newborns are of the highest priority in the care of this population" (J. Gute, personal interview, March 4, 2016). However, nurse stakeholders may have varying values, beliefs, and prioritize newborn safety differently.

Unintended consequences.

There were six unintended consequences related to the capstone project outcomes. First, postpartum nurses may focus attention on who or what is to blame for falls when reviewing newborn fall case review data. Second, non-injurious falls may be underreported when not observed by staff, which is one potential limitation in the accuracy of the total fall rate (Staggs, Davidson, Dunton, & Crosser, 2015). Third, the inaccuracy of fall results may exist when relying on chart reviews. Fourth, the postpartum nurses may not provide the education or use the Newborn Safety Information and Acknowledgement tool but still chart it as completed. Fifth, postpartum nurses could also use the Newborn Safety Information and Acknowledgement tool appropriately but forget to chart the intervention altogether. Sixth, inaccurate results, such as number of falls recorded, may influence safety practices.

Methodology

Methods

Research methodology as defined by Bonnel and Smith (2014), was how data was

collected and analyzed. The capstone project used a mixed method methodology.

Methodology steps were as follows: A Newborn Fall Prevention team was formed to address the issue of newborn falls following the identified increase in falls in 2015-2016. After a review of the literature, AAP guidelines, and review of safety contracts other hospitals had used, the investigator and a Newborn Fall Prevention team developed the Newborn Safety Information and Acknowledgement tool. Prior to implementation of the Newborn Safety Information and Acknowledgement tool the investigator presented newborn fall education during mandatory staff education sessions.

Process for using the newborn safety information and acknowledge tool. The Newborn Safety Information and Acknowledgement tool was then used to educate and ask parents to partner with nursing staff to keep the infants safe. The process for using the Newborn Safety Acknowledgement tool were: 1) on admission to the postpartum unit the nurse read through the education with the parents, 2) then the mother, support person, and nurse signed the acknowledgement, 3) the information was then reinforced by the nurse each shift with the family and 4) the document was then scanned into the patient's chart.

Sample

The primary target population was postpartum newborn fall case events at a Mid-Western Women's Hospital. Only events that occurred in the hospital from birth to discharge were included.

A convenience sample of all newborn fall events was identified where babies fell accidently on the mother/baby units from the time frame of June 2010 to March 2017. There were 10 case events retrospectively included. Fall event data was retrieved using Cerner, the Electronic Medical Records (EMR) system documentation of fall events, fall

huddle, and incident/variance reporting. This data included fall events six years prior to, and three months following the implementation of the Newborn Safety Information and Acknowledgement tool.

An additional population was the Mid-Western Women's Hospital postpartum nursing staff documentation on the use of the Newborn Safety Information and Acknowledgement tool. A convenience sampling of charts for review were randomly selected from two different time frames (1 and 2 months from the same time frame of February 2017 to April 2017) and from two different staff shifts (i.e. 7:00am to 7:00pm or 7:00pm to 7:00am) post intervention implementation. This sample was retrieved through Cerner, the EMR system.

Setting

The setting for this capstone project was a Women's Hospital in a Mid-Western urban city in the United States. This hospital was part of a large not-for-profit healthcare system that served high risk and normal obstetric and newborn patients. In 2015, this hospital had 5,413 births. The postpartum mother and baby unit had 31 private rooms where mother-baby dyad nursing care was provided. Access was gained to this setting through a collaborative partnership between the Doctor of Nursing Practice (DNP) student investigator and the Clinical Nurse Specialist (CNS) who was employed at the hospital.

Designs

An Evidence-based Practice (EBP), Quantitative Descriptive and Qualitative Case Study designs were used for this capstone project to collect evidence and gain knowledge about evaluating the effectiveness of the Newborn Safety Information and Acknowledgement tool to assess the impact of inpatient newborn falls in the postpartum

setting. The EBP portion of the study was used in the literature review, search flow diagram and matrix. The Quantitative Descriptive design was used to evaluate the impact a Newborn Safety Information and Acknowledgement tool had in data collection and analysis. The Qualitative Case Study design was used for data collected from the nurse's narrative documentation in the case records about the fall events.

Psychometric Properties of the Instrument

Based on the literature review, no objective tools were found to collect the needed data to measure the capstone project outcomes. The DNP student investigator developed all data collection tools for this study, so validity or reliability has not been determined. The developed tools allowed collection of data, which were specific for the clinical problem and could possibly measure the outcomes.

Evaluation of Outcomes

Data was collected to address the three outcomes: 1) to identify risk factors associated with newborn falls in the postpartum setting, 2) evaluate the effectiveness of the Newborn Safety Information and Acknowledgement tool, and 3) evaluate if postpartum nurses completed the Newborn Safety Information and Acknowledgement tool as intended.

Data collection using newborn case fall events. Newborn case fall events were used to collect data in identifying risk factors associated with newborn falls in the postpartum setting (see Appendix B, Newborn Fall Case Review Data Collection Table). Demographic data included the age and race/ethnicity of the mother. Additional quantitative data collected from incident reports included date of fall, time of fall, time elapsed since birth, type of delivery, feeding method, sedation medication mother

received prior to fall, physical findings and diagnostic workup. Qualitative data was collected from the nurse's narrative documentation about the fall events.

The CNS associated with the project setting provided the fall case event data to the DNP student investigator. Demographic and quantitative data about the fall events was collected from Cerner, the EMR system. Qualitative data was collected from the case records about the fall events.

Data collection using newborn fall incidence. To evaluate the outcome of the Newborn Safety Acknowledgement document, the DNP student investigator collected inpatient newborn fall rates 6 years before intervention of the Newborn Safety Information and Acknowledgement tool and fall rates 3 months after the event. The number of falls and the number of lives birth were used to calculate the rate of newborn falls per 10,000 live births, as reported in the literature. Measuring fall rates was the most direct measure of how well interventions and processes were in making patients safer related to falls (AHRQ, 2013).

The secondary investigator, CNS, obtained the number of falls from the Cerner computer, the EMR system on fall events, fall huddles, and incident/variance reporting. A health system administrator provided the total number of live births to investigators. The quantitative data was documented in table format as developed by the DNP student investigator (see Appendix C).

Data collection using chart reviews. For quantitative data collection, retrospective chart reviews of postpartum nursing staff's documentation was also conducted to evaluate if postpartum nurses completed the Newborn Safety Information and Acknowledgement tool as intended. The number and percent of staff nurses who documented the initiation

of the Newborn Safety Information and Acknowledgement tool on admission to the postpartum unit and reviewed the information with the mother once every shift was collected and recorded in the chart review table (see Appendix D).

Sampling of charts, for data collection, occurred randomly by choosing every 3rd chart for review. Charts were selected were randomly selected from two different time frames (1 and 2 months from the same time frame of February 2017 to April 2017) and from two different staff shifts (i.e. 7:00am to 7:00pm or 7:00pm to 7:00am) post intervention implementation. This sample was retrieved through Cerner, the EMR system. A sample size of 30 for each 1 and 2 month time frame post intervention implementation of the Newborn Safety Information and Acknowledgment tool was collected. Charts were excluded if the infant was less than 36 weeks gestation, stillborn, or transferred to NICU.

The following procedure was used to collect the quantitative chart review data. First, the deliveries for both 1 and 2-month time frames were searched. Selection occurred by choosing every 3rd delivery from the day shift and from the night shift until a total of 15 charts from each shift were obtained for a total of 30 charts. Data was obtained on the initial use of the Newborn Safety Information and Acknowledgement tool. The following three steps were used: 1) mother's chart opened, 2) the Form browser was clicked to open the Admission Newborn Safety Education and 3) the intervention was recorded as documented or not documented.

To obtain the data on documentation of review about education the following three steps were completed: 1) open mother's chart, 2) clicked Results review-Education-Newborn Safety Education and 3) recorded if newborn safety education was documented as reviewed each shift.

Ethical Considerations

Confidentiality of the retrospective data was protected in several ways: 1) all data collection tools were free of any names or Protected Health Information (PHI) and a random number was assigned to each case, 2) all pre-identified data was pre-collected data and cleansed of all PHI identifiers, 3) the chart review data was collected and reported as aggregate data only, 4) the risk factors assessed were based on the investigator's synthesis of literature, 5) the appropriate administrator at the organization where the actual records were maintained was consulted to ensure ability to access them for EBP project purposes, 6) all data was stored in a password-protected computer file, 7) only primary and secondary investigator had access to the data, and 8) upon completion of the EBP project, all data was deleted from the file and any papers were shredded and placed in appropriate recycling bins.

The DNP student investigator had successfully completed Collaborative Institutional Training Initiative (CITI) training. The DNP student's college and setting confirmed Institutional Review Board (IRB) approval for exempt research and all guidelines followed throughout the capstone project (see Appendix H and I). A letter of support had been received from nurse leaders at the setting of this capstone project (see Appendix J and K).

Data Analysis

According to Bonnel and Smith (2014), data analysis was done to find usable and useful information from the qualitative and quantitative data. Therefore, data analysis was an important aspect of this capstone project as it verified the project's outcomes and

supported that fall prevention was an important aspect of maternal/child care in the inpatient setting.

Qualitative approaches were appropriate in descriptive projects and in new study areas with limited research (Melnyk & Fineout-Overholt, 2015). In this project, qualitative data analysis was performed using data collected from nurse's narrative documentation in the case records about newborn falls (see Appendix B). This type of data analysis helped describe the circumstances surrounding newborn falls in this setting. Significant themes and details from the findings are provided in Table 2.

Quantitative data analysis was used for data related to fall incidence in determining fall rates (see Appendix C). Prior yearly newborn fall rates, 6 years before intervention of the Newborn Safety Information and Acknowledgement tool and fall rates 3 months after were analyzed. Incidence rate of newborn falls were reported by the number of falls per 10,000 live births. The analyzed data is reported in Table 3 and in Figure 6 displayed trends over time. The quantitative data included the number of newborn falls, number of live births, and rate of newborn falls per 10,000 live births for each year from 2010 through 3 months post intervention implementation.

Quantitative data analysis was also used when examining data from postpartum nurse documentation. Retrospective chart reviews were conducted to evaluate if postpartum nurses used and completed the Newborn Safety Information and Acknowledgement tool as intended (see Appendix D). Descriptive statistics (percentages) were used to analyze this data found in Table 4. Bar graph (see figure 5) compares results from the different time frames and shifts.

Quantitative data analysis was further used for data collected to examine the newborn fall case events to identifying risk factors associated with newborn falls in the postpartum setting (see Appendix B). Descriptive statistics (frequency and percentages) were used to analyze the data found in Table 2. Bar graph (see Figure 2) shows the most frequently occurring time of newborn falls. Bar graph (see Figure 3) displays the time (in hours) from time of birth until time the newborn fall occurred. Pie charts (see Figure 4) reported the characteristics of the type of delivery, race/ethnicity, feeding method, and sedating medication in newborn fall case events.

Excel was used for quantitative data management. Excel spreadsheet was used to organize quantitative data in Table 2, Table 3 and Table 4. The imputed data was analyzed using descriptive statistics (frequency and percentages) Excel was further used to develop charts to display significant results.

Results

Outcome One

The results of this project were directly correlated with the identified outcomes. The first capstone project outcome was to identify risk factors associated with newborn falls in the postpartum setting. The demographic, quantitative, and qualitative results from the newborn case fall events exposed common factors (see Table 2).

Table 2

Newborn Fall Case Review Data

Case Number	1	2	3	4	5	6	7	8	9	10
Month/year	6/10	3/11	8/11	4/13	4/15	5/15	7/15	2/16	5/16	7/16
Age of mother (range*)	(30-34)	(30-34)	(35-39)	(35-39)	(35-39)	(19-24)	(30-34)	(25-29)	(30-34)	(25-29)
Race/ ethnicity	Caucasian	Caucasian	Caucasian	Caucasian	Caucasian	African American	Caucasian	Caucasian	Caucasian	Caucasian
Time of fall	0300	0200	0645	0335	0200	1457	0135	0615	0215	1030
Time lapsed since birth (hours)	48 hours	38 hours	46 hours	33 hours	67 hours	60 hours	40 hours	33 hours	13 hours	55 hours
Type of delivery (cesarean vs. vaginal)	Vaginal	Primary cesarean	Repeat cesarean	Vaginal	Un-scheduled cesarean	Primary cesarean	Repeat cesarean	Primary cesarean	Repeat Cesarean	Vaginal
Feeding method (Breast, bottle, both)	Breast	Breast and formula	Breast and formula	Breast and formula	Breast and formula	Breast	Formula	Breast	Breast	Breast
Sedating medication mother received prior to fall/time	None	Percocet at 2337 (2 ½)	Percocet at 0603 (< 1)	None	Percocet 2 tabs @ 2003 (6)	Norco tabs @ 0815 (6 ½)	Norco @ 2021 (5)	Percocet 2 @ 0525 (<1)	Norco @ 2245 (3 ½)	Norco @ 0608 (4 ½)
Physical findings (injury)	No injury	No injury	No injury	No injury	No injury	No injury	No injury	No injury	No injury	No injury
Diagnostic workup	Ped notified, saw infant on rounds, no workup	Ped notified, no new orders	Ped notified, no new orders	Ped notified, no new orders	Ped notified, no new orders	Ped notified, no new orders	Ped notified, skull US ordered stat. Frequent neuro checks.	Ped notified, no new orders	Ped notified, no new orders	Ped notified, no new orders
Circum-stances surrounding fall (from narrative)	Sitting in bed holding infant, dozed off and baby fell.	Mom holding baby, fell asleep, baby fell to floor.	Mom was getting out of bed and laid baby on bed. Went to bath-room and baby fell from bed.	Mom was nursing twin B and holding twin A. Twin A fell out of moms arms from bed to floor.	Mom holding baby and dozed off. Baby rolled out of mom's arms onto bed and bumped side of crib.	Mom fell asleep and baby fell out of her arms to the floor.	Baby sleep-ing on mom's chest and fell to floor. Mom stated she fell asleep.	RN called to bedside. FOB states "dropp-ing" infant on acid-ent while holding infant on the couch.	Breast feeding and patient fell asleep. Infant rolled out of bed.	Mom fell asleep in bed holding baby on her chest when baby fell. FOB some-what caught the baby before he hit the

										floor but head still hit floor.

Demographics were similar in all fall events. Forty percent (n=4) of the mothers were in the age range of 30-34 years of age. Ninety percent (n=9) were Caucasian. Demographic data of the fall events were consistent with the population demographics of the setting. The majority of the setting population was Caucasian and the majority of postpartum mother were of childbearing age of 25-34.

A common time of fall occurrence was identified in the newborn fall case events examined. The majority of the time newborn falls occurred during the night shift (7pm-7am). Eighty percent (n=8) of the newborn fall events occurred between the hours of 1am-7am. The times of falls are presented in Figure 2.

Similarities were also seen when examining the time of fall since delivery, type of delivery, feeding method, and timing of sedating medication. Ninety percent (n=9) of falls occurred greater than 24 hours after delivery, with 24- 48 hours after delivery being the most frequent time in which falls occurred (see Figure 2). Seventy percent (n=7) of the fall events occurred after the mother delivered by cesarean delivery versus vaginal delivery. In 90% of the events the mother's feeding method was breast or breast/bottle feeding. Prior to the fall event, 70% (n=7) of the mothers had received sedating medication within the immediate 6 hours prior to the fall occurring (see Figure 4). In all cases there were no documented infant injuries. In one event additional diagnostics were

ordered after the pediatrician was notified of the infant fall.

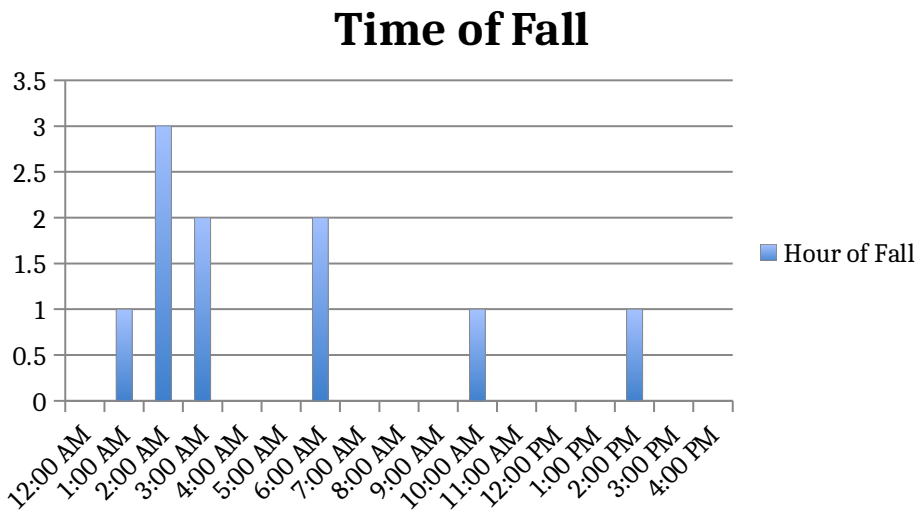

Figure 2. Time of falls occurrence in newborn fall case events. The vertical axis is frequency of fall events. The horizontal axis is the hour of fall occurrence.

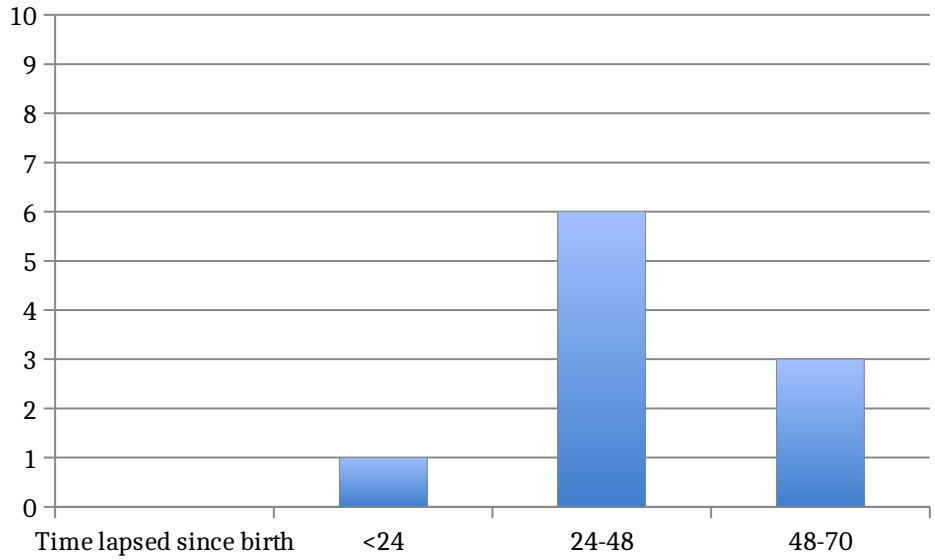

Figure 3. The time (in hours) from birth until time of newborn fall. Data from the newborn fall case events.

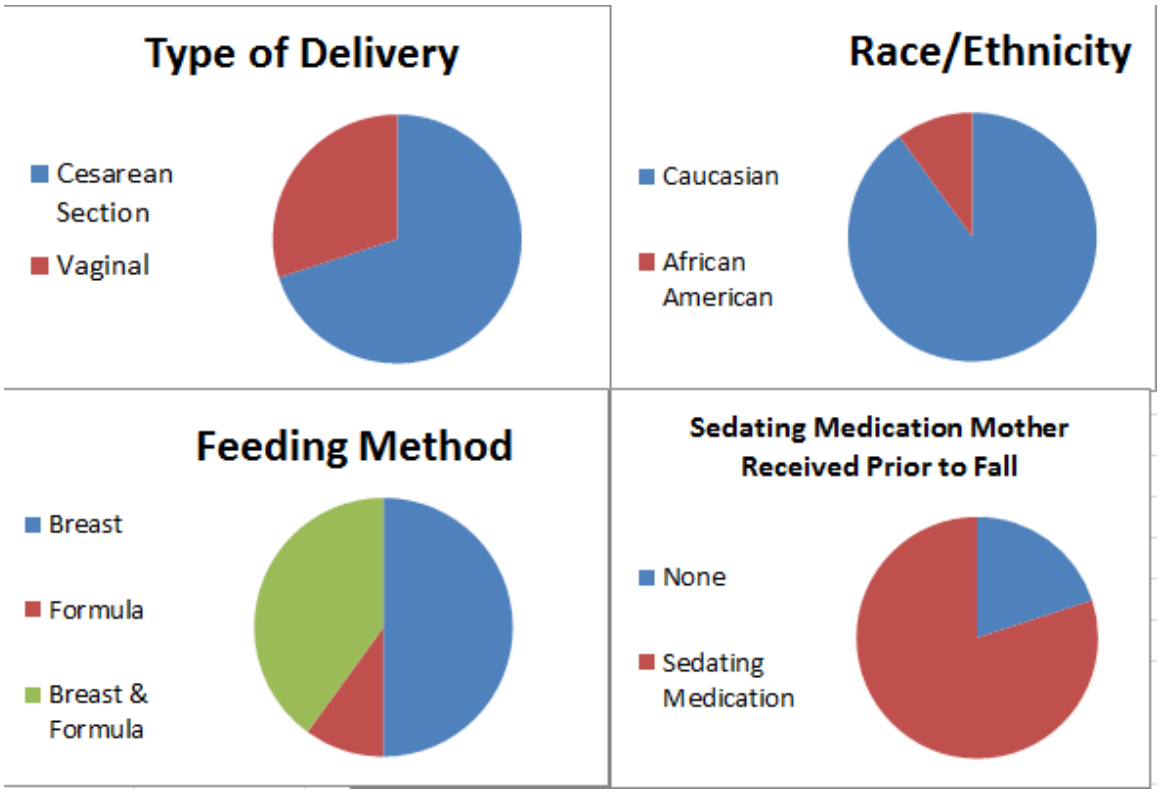

Figure 4. Characteristics of type of delivery, race/ethnicity, feeding method, and sedating medication in newborn fall case events.

The nurse's narrative documentation in the case records about the fall events showed a frequently occurring circumstance. Seventy percent (n=7) of the falls occurred after the mother had fallen asleep while holding the infant. One case involved the newborn falling while the father was holding the newborn on a couch. Another circumstance involved a mother breastfeeding twins. One newborn fall occurred when the mother left the infant alone on a high surface.

Outcome Two

The second capstone outcome was to evaluate the effectiveness of the Newborn Safety Information and Acknowledgement tool. Results of inpatient newborn fall rates 6 years before intervention of the Newborn Safety Information and Acknowledgement tool and fall rates 3 months after the event, along with the rates of newborn falls per 10,000 live births are shown in Table 3. The number of falls per year varied from zero to three. The rate of newborn falls per 10,000 live births ranged from 0-7.1. Fall rates were higher in 2010 and 2011. This was followed by three years with no to low incidence of newborn falls. There again was an increased incidence of newborn falls in the most recent two years (2015-2016). There was a steady increase in the number of live births over the time frame evaluated. Zero falls have occurred since implementation of the Newborn Safety Information and Acknowledgement in January 2017.

Table 3.

Fall Incidence and Rate, 2010-2016

Year	No. of newborn falls	No. of live births	Rate of newborn falls per 10,000 live births
2010	1	1401	7.1
2011	2	3072	6.5
2012	0	3141	0

2013	1	3306	3
2014	0	3878	0
2015	3	4628	6.5
2016	3	4524	6.6
3 months post intervention implementation	0	January-March 2017 987	0

Outcome Three

The third outcome of the capstone project was to evaluate if postpartum nurses completed the Newborn Safety Information and Acknowledgement tool as intended. The number and percent of postpartum nurses who documented the initiation of the Newborn Safety Information and Acknowledgement tool on admission to the postpartum unit and reviewed the information with the mother once every shift were collected. Results came from two different time frames (1 and 2 months from the same time frame of February 2017 to April 2017) and from two different staff shifts (i.e. 7:00am to 7:00pm or 7:00pm to 7:00am) post intervention implementation (see Table 4).

Table 4

Chart review of postpartum nurse documentation and use of Newborn Safety Information and Acknowledgement.

Time frame	Charted on admission total	Charted on admission Day shift	Charted on admission Night shift	Charted reviewed every shift	Charted reviewed every day shift	Charted reviewed every night shift
1 months post intervention						
Number (out of N=30)	25/30	14/15	11/15	18/30	22/30	26/30
Percent	83.33%	93.33%	73.33%	60%	73.33%	86.67%
2 months post intervention						
Number (out of N=30)	29/30	15/15	14/15	10/30	14/30	25/30
Percent	96.67%	100%	93.33%	33.33%	46.67%	83.33%

Figure 5 shows the percent of nurses who documented the Newborn Safety Information and Acknowledge tool on admission to the unit. Nurses improved their documentation from 1 month to 2 months post intervention implementation (83.33% to 96.67%). The frequency of the Newborn Safety Information and Acknowledge tool that was documented also increased from 1 month to 2 months on both day and night shift.

The percent of nurses who reviewed newborn safety information with the mother once every shift decreased from 1 month to 2 months post intervention implementation. The percentages decreased over all from 60% to 33.33%. Day shift documentation of newborn safety information decreased from 73.33% to 46.67 % from 1 month to 2 months post intervention implementation. Night shift documentation of newborn safety information decreased from 86.67% to 83.33% from 1 month to 2 months post intervention implementation. Night shift nursing staff charted the newborn safety information more frequently than the day shift nursing staff (see Figure 5).

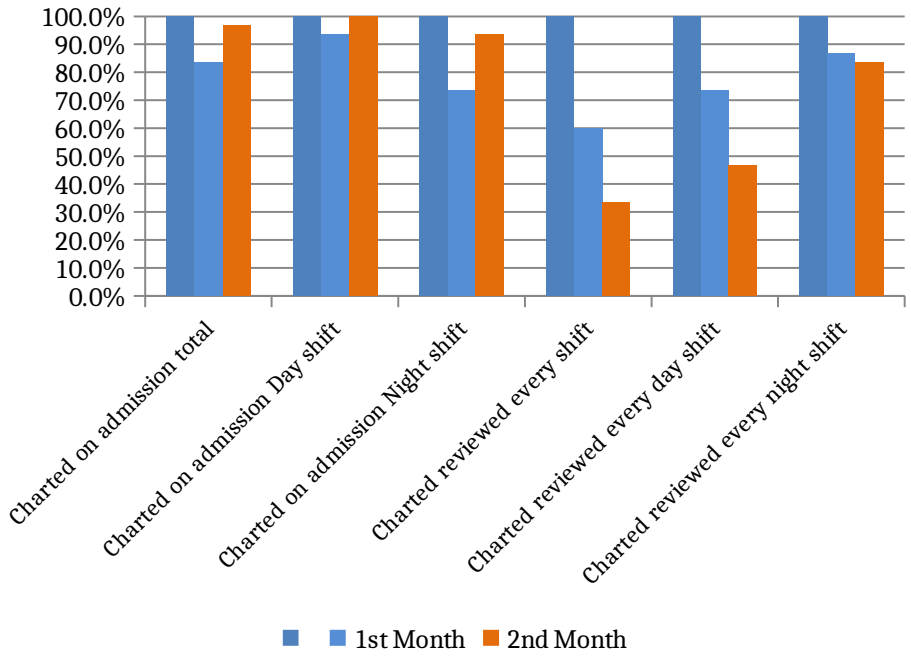

Figure 5. Documentation of the Newborn Safety Information and Acknowledge tool on

Admission and percent of newborn safety information documented as reviewed every shift, every day shift and every night shift 1 month and 2 month after implementation of the Newborn Safety Information and Acknowledge tool compared.

Discussion

Since implementation of the Newborn Safety Information and Acknowledgement tool no newborn falls have occurred. The data, from this study, then suggested the tool may have impacted inpatient newborn falls and may help answer the clinical question, can implementation of a Newborn Safety Information and Acknowledgement tool impact inpatient newborn falls in the postpartum setting as opposed to no implementation of a Newborn Safety Information and Acknowledgement?

Fall Rate Pattern

The fall rates for this project population varied greatly within the 6 years evaluated. There was an interesting pattern noted. The first two years the fall rate was high, then dropped for three years, then increased again in the last two years (see Figure 6). The project population's newborn fall rates of 0-7.1 per 10,000 live births, were in some years lower and in some years higher compared to the estimated United States newborn fall rate reported in the literature. Helsley et al., 2010 estimated that anywhere from 600 to 1600 newborn falls in United State hospitals occur yearly. This is a rate of approximately 1.6-4.14 per 10,000 live births. The true prevalence of newborn fall rates is unknown because hospitals are not required by any regulatory agency to report infant fall rates. In addition, the fall rates may be under-reported by healthcare professionals and parents (Helsley et al., 2010; Hodges & Gilbert, 2016; Monson et al., 2008). Therefore, this interesting

pattern has no formal explanation. However, pertinent questions about this phenomena may be 1) What was the staffing like during the years where higher fall rates occurred? or 2) Where there more novice nurses during the years when the higher fall rates occurred? or 3) In the years when the fall rates dropped, was there informal education on the unit?

How Systems Theory was Used to Evaluate the Data

The Systems theory was used to examine the fall rate increase or decline trend. Evaluation involved using systems theory to first understand that every part of a system was interrelated and then to examine how health care inputs, environment, and processes that impacted each newborn fall case event.

The hospital opened in the year 2010, so did this opening of a new hospital contribute to the higher fall rate in 2010. In addition, it could also be asked what other factors contributed to the increased fall rate in 2015-2016. Factors to consider that could help explain the impact of fall rates in the postpartum inpatient setting included undocumented falls in the previous years, leadership stability, nursing staff experience, staff knowledge and education, staffing ratios, policies, and clinical practice priorities.

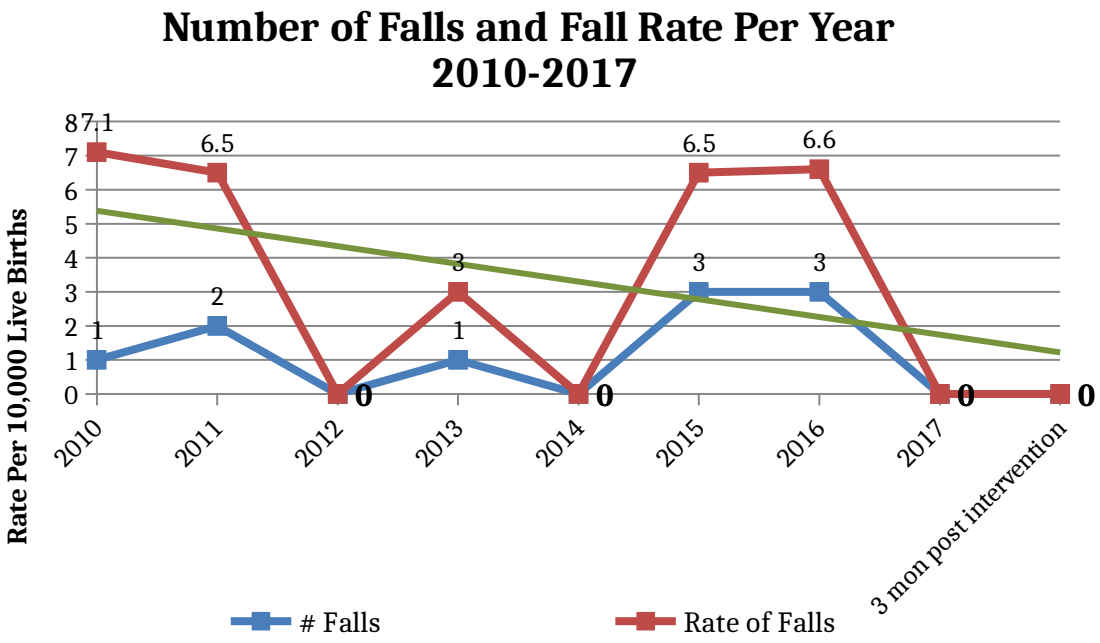

Figure 6. Number of newborn falls and fall rate per year, 2010-2016.

Newborn Fall Cases and Risk Factors

An examination of the newborn fall case events suggested the risk factors for this capstone project population were mothers who breastfeed or breast and bottle feed and delivered by cesarean section. Newborn falls were most likely to occur during the early morning hours between 1-7am, after 24 hours from delivery time, and within 6 hours of receiving sedating medication. These findings were consistent with previous literature (see Table 5).

There is limited research on risk factors for newborn falls, however the common reported characteristics of mothers whose newborns fell in the hospital included second postpartum night exhaustion, opioid administration, breastfeeding or a combination of breast and bottle feeding, and surgical delivery. Additional risk factors which have also been identified in previous case reviews but not seen in this capstone population were

maternal history of substance abuse and cultural diversity (Ainsworth et al., 2016; Galuska, 2011; Helsley, et al., 2010; Hodges & Gilbert, 2016; & Monson et al., 2008; Sloger, et al., 2013; Wallace, 2015).

Table 5.

Identified risk factors in newborn fall events compared to capstone project data.

Risk factors from literature	Infant fall events, 2010-2016
Second to third day post-delivery	(n=9) 90% after 24 hours
Fall between 12 a.m. and 9 a.m.	(n=8) 80% between 1-7a.m.
Surgical delivery	(n=7) 70% cesarean delivery
Mother received opioids	(n=7) 70% sedating medication w/in 6 hours prior
Breastfeeding	(n=9) 90% Breast or breast/bottle feeding
High level of fatigue	(n=7) 70% reported fatigue
18-34 years old	21-38 years old
Cultural diversity	(n=9) Caucasian
Maternal substance use	none

The most common circumstance surrounding newborn falls was the mother falling asleep while holding the newborn. This occurrence was reported in the reviewed literature. Several studies looked at circumstances surrounding inpatient newborn falls and found the most common scenario to be a parent falling asleep while holding the newborn in a hospital bed or chair and dropping the newborn to the floor (Ainsworth et al., 2016; Galuska, 2011; Helsley, et al., 2010; & Monson et al., 2008; Slogar, at al., 2013, & Wallace, 2015).

The identified risk factors from the newborn fall case events are all closely related. Maternal exhaustion escalates by the second night postpartum. The literature suggested, childbirth can be exhausting for parents because mothers may have several nights with little sleep and frequent interruptions from nurses, visitors and other medical staff during

the hospital stay. Additionally, mothers and caregivers hold the newborn during feeding sessions. This event, coupled with maternal exhaustion, and experiencing additional sedating side effects of opioids leads to an increased risk of falling asleep while holding or feeding the newborn.

Newborn Fall Cases and Injury

Newborn falls can result in a range of injuries from no reported injuries to minor bruises and abrasions, head injuries such as skull fractures and in very rare cases death (Helsley et al., 2010; Galuska, 2011; Ruddick, Ward Platt, & Lazaro, 2010). However, no injuries occurred in these 10 newborn fall case events. In all of the newborn fall cases, the pediatrician was notified. Only in one case were there additional orders (skull ultrasound and frequent neurologic checks).

Chart Reviews

Retrospective chart reviews completed at both 1 and 2 months after initiation of the Newborn Safety Information and Acknowledge tool showed most postpartum nurses charted the tool on admission to the postpartum unit. Nurses improved the frequency of this occurring from 1 month to 2 months post tool implementation. This data extracted from the chart reviews supported the notion that the Newborn Safety Information and Acknowledgement tool might impact safety issues on the postpartum mother's admission to the unit.

In addition, as found in the chart reviews, the postpartum nurses were not consistently reinforcing the newborn safety information education with postpartum families. The frequency of the newborn safety information being reviewed every shift decreased from 1

month to 2 months after the tool was implemented. This decrease was seen both in the day and night shift charts reviewed. However, the night shift nurses were more consistent than the day shift nurses in reviewing the education.

Limitations

There were six identified limitations of this capstone project. The first limitation of the capstone project was the short time frame of post intervention evaluation. The impact the Newborn Safety Information and Acknowledgement tool had on inpatient newborn falls had only been evaluated for three months. The Newborn Safety Information and Acknowledgement tool appeared to be successful however continued use of the tool and evaluation of impact is needed. A longer time frame of use and evaluation might further correlate the tool's use to prevention of inpatient newborn falls in the postpartum setting.

Limitation number two was the fact that the Newborn Safety Information and Acknowledgement tool has not been validated. Further research is needed to use and validate the tool. Additional studies are needed to assess if the Newborn Safety Information and Acknowledgement tool reduces newborn fall rates long term and in other inpatient postpartum settings.

The third limitation, non-injurious falls may have been underreported when not observed by staff, which is one potential limitation in the accuracy of the total fall rate (Staggs et al., 2015). Due to the rarity of newborn fall events comparative statistical analyses is impossible for many years. Continued assessment and documentation of yearly newborn fall rates need to occur.

Limitation number four was the inaccuracy of fall results may exist when relying on chart reviews. The fifth limitation was that the postpartum nurses may have not provided

the education or used the Newborn Safety Information and Acknowledgement tool but still charted it as completed. Limitation number six questions whether postpartum nurses used the Newborn Safety Information and Acknowledgement tool appropriately but forgot to chart the intervention.

Implications

There were several implications of this study. The Newborn Safety Information and Acknowledgement tool may aide in communication between parents of newborns and postpartum nursing staff. Partnering with patients and families may also enhance quality care and safety for newborns. Because understanding parent's concerns, needs, strengths, and capabilities of the family are at the center of providing family-centered nursing care, newborn fall risks become a priority issue (Lowdermilk, Perry, Cashion, & Alden, 2016).

By assessing the impact of the Newborn Safety Information and Acknowledgement tool, newborn fall rates can be used as a measurement of both intervention effectiveness and safety outcomes. Measuring past newborn fall rates provides a baseline measurement (AHRQ, 2013). Measuring fall rates after implementation of the Newborn Safety Information and Acknowledgement tool also provides evidence of impact. Reporting newborn fall rates may help nursing staff visualize and "see" the impact made in improving newborn safety. Newborn fall rates can also be compared to other health care settings and used to set benchmarks within the hospital.

Additional implications based on capstone project findings are:

- development of a newborn fall algorithm to further improve newborn safety;
- development of a newborn fall risk assessment tool to validate newborn fall risk;

- development of patient specific fall prevention interventions through understanding the specific population's risk factors;
- a thorough examination of the patient's environment to assess impact on safety;
- future newborn fall prevention education for postpartum nurses;
- changes to the EMR documentation to improve documentation consistency and compliance.

Practice change is needed to prevent newborn falls and provide a safe environment for infants. Although, the results of this study cannot be generalized, nurses, nurse leaders, health care providers, and fall and safety hospital committees, that care for inpatient postpartum mothers and newborns can conduct similar newborn fall case event reviews, track and report newborn fall rates and evaluate postpartum nurse charting of newborn fall prevention interventions.

Plan for Sustainability

Sustainability occurs when the capstone project has made a difference both inside and outside of the organization through collaborative and networking relationships. "In contemporary health care, no single discipline can operate effectively and achieve sustainable value independent of its relationship with other disciplines, which it depends on for its own contribution or success" (Porter-O-Grady & Malloch, 2015, p. 130).

The plan for sustainability in this capstone project, as it related to the capstone project's outcomes, involved all stakeholders. The first effort in sustainability this capstone project may have is on the impact on one hospital system. However, there is the potential to impact other populations, organizations and systems. One overarching goal of

the capstone project was the creation of innovation that is sustainable, the Newborn Safety Information and Acknowledgement tool.

Postpartum nurses can continue to use the Newborn Safety Information and Acknowledgement tool and seek feedback from parents to revise the tool as needed. By using the same methodology and data collection tools as used in the capstone project, involved stakeholders can continue to measure the same outcomes and adapt interventions to meet the evolving safety needs of inpatient newborns influenced by the current system.

Conclusion

Newborn falls occur in the immediate postpartum period (Slogar, Gargiulo, & Bodrock, 2013). It is estimated the national infant fall rate is 1.6 to 4.4 falls per 10,000 live births (Helsley, McDonald, & Stewart, 2010). However, newborn falls remain one of the least researched newborn care events in the acute care setting. The topic of inpatient newborn falls was significant to investigate, as the majority of newborn falls are preventable. Therefore, the purpose of this capstone project was to evaluate the effectiveness of the Newborn Safety Information and Acknowledgement tool in impacting inpatient newborn falls in the postpartum setting. The outcomes were threefold; 1) to identify risk factors associated with newborn falls in the postpartum setting, 2) evaluate the effectiveness of the Newborn Safety Information and Acknowledgement tool, and 3) evaluate if postpartum nurses completed the Newborn Safety Information and Acknowledgement tool as intended. Using Systems theory was justified and relevant for measuring the outcomes of this capstone project because

improvement in newborn fall prevention required a purposeful system focus to make changes.

The reviewed literature revealed further evaluation of newborn fall cases and the needed practice changes to further improve patient safety and make enhancements in fall prevention practices in the hospital setting. The organizational assessment included readiness for change, facilitators and barriers, risks and/or unintended consequences.

A mixed methods design using EBP, Quantitative Descriptive and Qualitative Case Study were utilized. The primary target population was postpartum newborn fall case events and postpartum nursing staff documentation on the use of the Newborn Safety Information and Acknowledgement tool at a Mid-Western Women's Hospital. A convenience sample of all newborn fall events was identified where babies fell accidently in the mother/baby units from the time frame of June 2010 to March 2017. A convenience sampling of charts for review were randomly selected from two different time frames and from two different staff shifts post intervention implementation. The setting for this capstone project was a Women's Hospital in a Mid-Western urban city in the United States.

Data was collected to evaluate each outcome. Newborn case fall events were used to collect data in identifying risk factors associated with newborn falls in the postpartum setting. To evaluate the outcome of the Newborn Safety Acknowledgement document, inpatient newborn fall rates 6 years before intervention of the Newborn Safety Information and Acknowledgement tool and fall rates 3 months after the event were collected. Retrospective chart reviews of postpartum nursing staff's documentation was

conducted to evaluate if postpartum nurses complete the Newborn Safety Information and Acknowledgement tool as intended.

Results were examined after quantitative and qualitative data analysis. The results of this project were directly correlated with the identified outcomes. Since implementation of the Newborn Safety Information and Acknowledgement tool, no newborn falls have occurred. Therefore, the data from this project may suggest that the tool may have impacted inpatient newborn falls and may help answer the clinical question, can implementation of a Newborn Safety Information and Acknowledgement tool impact inpatient newborn falls in the postpartum setting as opposed to no implementation of a Newborn Safety Information and Acknowledgement? An examination of the newborn fall case events suggested the risk factors for this capstone project population were mothers who breastfeed or breast and bottle feed and delivery by cesarean section. In addition, newborn falls were most likely to occur during the early morning hours between 1-7am, after 24 hours from delivery time, and within 6 hours of receiving sedating medication. Therefore, the identified risk factors from the newborn fall case events from this project were supported by the literature.

Currently, the Newborn Safety Information and Acknowledgement tool is somewhat used as intended. It is initiated on the postpartum mother's admission to the unit. However, postpartum nurses are not consistently reinforcing the newborn safety information education with all postpartum families.

Limitations of the capstone project included timeframe of intervention evaluation, lack of tool validity, and underreporting of newborn fall events. Additionally, rarity of fall events and use of chart reviews for data collection were limitations.

There were several implications of this study. The Newborn Safety Information and Acknowledgement tool may aide in communication between parents of newborns and postpartum nursing staff. Newborn fall rates can be used as a measurement of both intervention effectiveness and safety outcomes. The Newborn Safety Information and Acknowledgement tool could be used as the primary intervention for impacting inpatient newborn falls. Postpartum nurses who care for inpatient postpartum mothers and newborns could conduct similar newborn fall case event reviews, track and report newborn fall rates and evaluate postpartum nurse charting of newborn fall prevention interventions. Therefore, the PICO question helped to discover that the implementation of a Newborn Safety Information and Acknowledgement tool can impact inpatient newborn falls in the postpartum setting as opposed to no implementation of a Newborn Safety Information and Acknowledgement.

Additionally, the overarching goal of the capstone project was the creation of innovation that is sustainable, the Newborn Safety Information and Acknowledgement tool. This study reinforced that the Newborn Safety Information and Acknowledgement tool can aide in communication between parents of newborns and postpartum nursing staff to prevent falls and improve the safety of newborns in the inpatient setting.

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Appendixes

Appendix A: Newborn Safety Acknowledgement Tool

Document Type: Acknowledgement

ACN001

METHODIST WOMEN'S HOSPITAL

Newborn Safety Information and Acknowledgement

One of the goals for the staff at Methodist Women's Hospital, is for you and your baby to be safe. With you and your family's help, we can reach this goal. To help reach this goal, we ask that you abide by the following:

Security

- You, your baby and your support person will have matching verification bands.
- While we do not recommend your baby leaving your room, should you believe your baby must leave your room, the staff will match the numbers on your band with the numbers on your baby's band when your baby returns.
- Do not give your baby to anyone who is not wearing a Methodist Women's Hospital name badge with a pink stripe. Be sure the photo on the badge matches the person wearing the badge.
- If in doubt about anyone in your room, do not give your baby to them. Call your nurse immediately.
- Only staff, you or your primary support person may have the baby outside your room
- Do not leave your baby alone in your room while you shower, go for a walk, or leave your room for any reason. If you are unable to watch your baby at these times, we suggest your support person or family member(s) watch you baby. If your support person or family member(s) are unable to watch your baby, discuss other options with your nurse.

Keep Your Baby Safe

- Get as much rest as you can, when you can. Cat naps are great!
- Because sleeping with your baby in your hospital bed, chair or couch puts your baby at risk for falling, we strongly suggest you do NOT do this.
- When you feel sleepy or plan on sleeping, place the baby in the crib in your room. Always put your baby on his/her back in the crib.
- Exhaustion and medicine can cause a new mother to unknowingly doze off. If you happen to fall asleep with your baby, your nurse will gently nudge you and place the baby in the crib.
- Make sure you and anyone handling the baby is fully awake and aware.
- Never leave your baby on the bed or other surface and walk away as the baby may roll and fall.
- Babies are moved to and from your room in the crib and may not be carried in the hallways.

Safe Environment

- Your bed will be kept in the lowest position and locked.
- Any items on the floor may be moved by the hospital staff to the closet or other areas so that the floor is clutter free.
- We strongly suggest that you keep a night light on when your baby is in your room ("rooming in") with you at night.

If you have any questions, please feel free to talk with your nurse, midwife or doctor. Thank you for helping us reach the goal of safety for you and your baby.

I have read and understand the above information.
Martti System used for Interpreter

Mother / Legal Guardian Signature	(Relationship to patient)
Support Person Signature	(Relationship to patient)
Date/Time	Date/Time

Patient Label

PERMANENT PART OF MEDICAL RECORD

NEWSAFEACK
Rev 12/2016

Appendix B: Newborn Fall Case Review Data Collection Table

Case Number	1	2	3	4	5	6	7	8	9	10
Month/year										
Age of mother										
Race/ethnicity										
Time of fall										
Time lapsed since birth (hours)										
Type of delivery (cesarean vs. vaginal)										
Feeding method (Breast, bottle, both)										
Sedating medication mother received prior to fall/time										
Physical findings (injury)										
Diagnostic workup										
Circumstances surrounding fall (from narrative)										

Appendix C: Fall Incidence and Rate

Year	No. of newborn falls	No. of live births	Rate of newborn falls per 10,000 live births
2010			
2011			
2012			
2013			
2014			
2015			
2016			
3 months post intervention implementation			

Appendix D: Chart Review of Postpartum Nurse Documentation and Use of Newborn Safety Information and Acknowledgement

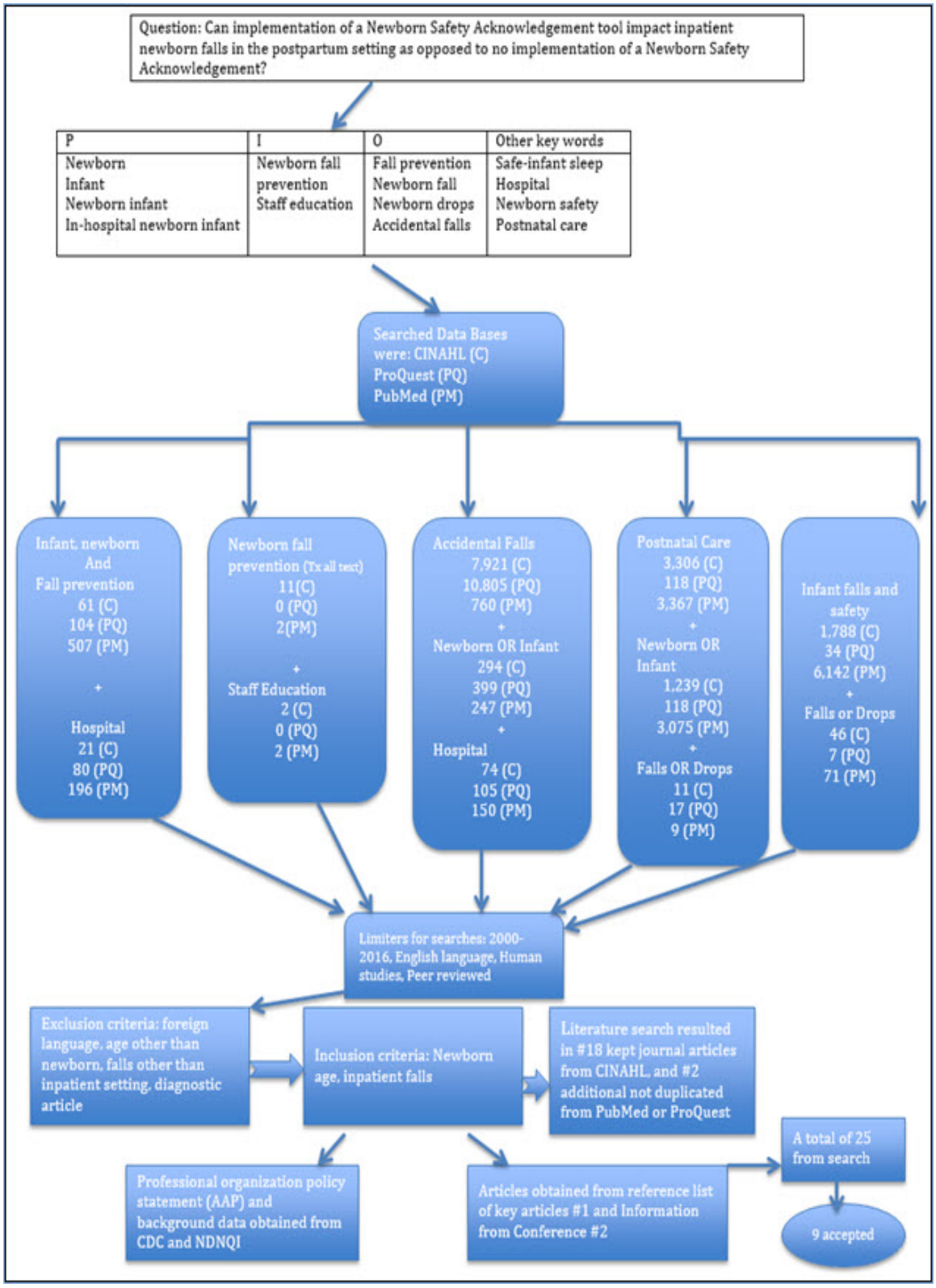
Table D1

Time frame	Charted on admission total	Charted on admission Day shift	Charted on admission Night shift	Charted reviewed every shift	Charted reviewed every day shift	Charted reviewed every night shift
1 months post intervention						
Number (out of N=30)						
Percent						
2 months post intervention						
Number (out of N=30)						
Percent						

Table D2

Date (1months post)						
Day shift 7a-7p	Charted on admission	Charted reviewed every shift	Charted reviewed every day shift	Charted reviewed every night shift		
Chart 1						
Chart 2						
Chart 3						
Chart 4						
Night Shift 7p-7a						
Chart 1						
Chart 2						
Date (2 months Post)	Charted on admission	Charted reviewed every shift	Charted reviewed every day shift	Charted reviewed every night shift		
Day shift 7a-7p						
Night Shift 7p-7a						

Appendix E: Search Flow Diagram


Question: Can implementation of a Newborn Safety Acknowledgement tool impact inpatient newborn falls in the postpartum setting as opposed to no implementation of a Newborn Safety Acknowledgement?
P
Newborn
Infant
Newborn infant
In-hospital newborn infant
I
Newborn fall prevention
Staff education
O
Fall prevention
Newborn fall
Newborn drops
Accidental falls
Other key words
Safe-infant sleep
Hospital
Newborn safety
Postnatal care
Searched Data Bases were: CINAHL (C) ProQuest (PQ) PubMed (PM)
Infant, newborn And Fall prevention 61 (C) 104 (PQ) 507 (PM) + Hospital 21 (C) 80 (PQ) 196 (PM)
Newborn fall prevention (Tx all test) 11(C) 0 (PQ) 2(PM) + Staff Education 2 (C) 0 (PQ) 2 (PM)
Accidental Falls 7,921 (C) 10,805 (PQ) 760 (PM) + Newborn OR Infant 294 (C) 399 (PQ) 247 (PM) + Hospital 74 (C) 105 (PQ) 150 (PM)
Postnatal Care 3,306 (C) 118 (PQ) 3,367 (PM) + Newborn OR Infant 1,239 (C) 118 (PQ) 3,075 (PM) + Falls OR Drops 11 (C) 17 (PQ) 9 (PM)
Infant falls and safety 1,788 (C) 34 (PQ) 6,142 (PM) + Falls or Drops 46 (C) 7 (PQ) 71 (PM)
Limiters for searches: 2000-2016, English language, Human studies, Peer reviewed
Exclusion criteria: foreign language, age other than newborn, falls other than inpatient setting, diagnostic article
Inclusion criteria: Newborn age, inpatient falls
Literature search resulted in #18 kept journal articles from CINAHL, and #2 additional not duplicated from PubMed or ProQuest
Professional organization policy statement (AAP) and background data obtained from CDC and NDNQI
Articles obtained from reference list of key articles #1 and Information from Conference #2
A total of 25 from search
9 accepted

Appendix F: Matrix

Article Citation	Level of Evidence Theoretical/ Conceptual Framework	Purpose of Research	Methodology	Analysis & Results	Conclusions	Implications for Future research	Implications For practice
Abike, F., Tiras, S., Dunder, I., Bahtiyar, A., Uzun, O.A., & Demircan, O. (2010). A new scale for evaluating the risks for in-hospital falls of newborn infants: A failure modes and effects analysis study. *International Journal of Pediatrics, 2010*, 1-9. doi: 10.1155/2010/547528	**Level of Evidence** 5 **Theoretical/ Conceptual Framework** A risk model can evaluate risks surrounding newborn falls and can function as a guide in forming fall prevention strategies to prevent newborn falls in the hospital.	To use Failure Modes and Effects Analysis (FMEA) in an attempt to identify risks before a newborn fall happens. The researchers aimed to develop a new scale for evaluating the risks and preventive measures for in-hospital newborns from admission to the discharge of the mother and newborn.	Case control study with control. Prospective using FMEA criteria. A multidiscipline-ary team identified N=15 risks for in-hospital falls of newborn from one hospital in Turkey. Risks were defined in accordance with FMEA. The preventive measures, their applicability and efficacy were reviewed. Risk Priority	FMEA scoring system used for each determined risk. The RPNs determined for each risk. Then preventive measures implemented for each and the RPNs repeated. Results: RPNs for all risks were reduced. Analysis showed that the risks having the highest RPNs were the mother with epidural anesthesia, holding of the	A scale developed using FMEA suggests that the most risky situation for newborn falls are the mother with epidural analgesia, holding of the baby at the moment of delivery, and transportation of the baby right after the delivery.	Newborn fall risk assessment tools can be developed or validated in order to detect fall risk and development individualized prevention measures.	This process for risk factor identification could be replicated to identify risks that are most likely to occur in another population. A fall risk evaluation scale for in-hospital falls of newborn infants could be a valuable tool.

			Numbers (RPNs) were determined by multiplication of the scores of severity, probability of occurrence, and probability of detection.	baby at the moment of delivery, and transportation of baby right after delivery.			
Article Citation	Level of Evidence Theoretical/ Conceptual Framework	Purpose of Research	Methodology	Analysis & Results	Conclusions	Implications for Future research	Implications For practice
Ainsworth, R.M., Summerlin-Long, S., & Mog, C. (2016). A comprehensive initiative to prevent falls among newborns. *Nursing for Women's Health, 20*(3), 247-257. doi:10.1016/j.nwh.2016.04.025	**Level of Evidence** 5 **Theoretical/ Conceptual Framework** A thorough evaluation of newborn fall cases to reveal common characteris-tics and themes.	The purpose of the article is to share the experience of how one hospital addressed and prevented falls and the continued challenges being faced.	EBP implementation and descriptive Incidence rates calculated and case review of fall events examined. Fall prevention program developed based on literature	Data collected included incidence and fall rate over 2 years prior to program evaluation and until 2 years after. Each fall case analyzed. Evaluated unit practices, responses to falls, assessed what literature said and what	Case review of fall events is important to evaluate since results revealed similarities and differences compared to prior literature. Findings can be used to develop preventive	Continued development of a standardized newborn fall risk scale, family and staff education, and post-fall treatment protocols will help the health system to better protect	There is value in open acknowledge-ment of newborn falls. Using a multi-disciplinary effort to develop policy, tools, staff and patient education may

	Effectiveness of a newborn fall prevention program in improving infant safety in the hospital.		review, communication from other hospitals and examination of each fall case at this hospital.	other hospitals were doing. Measured staff compliance with 2 surveys. Results: Case reviews of falls revealed some important similarities and differences from those described at other institutions. No falls in first 12 months following program im-plementation. Five falls in the following 2 years. Staffs were increasingly compliant with using the program.	interventions. Addressing newborn falls with a newborn falls policy, staff education and tools, caregiver education and tools, and using a multi-disciplinary effort were effect in decreasing newborn fall occurrence.	newborns and their families.	decrease newborn fall occurrence in the hospital.
Article Citation	Level of Evidence Theoretical/ Conceptual	Purpose of Research	Methodology	Analysis & Results	Conclusions	Implications for Future research	Implications For practice

	Framework						
Galuska, L. (2011). Prevention of in-hospital newborn falls. *Nursing For Women's Health*, *15*(1), 59-61. doi:10.1111/j.1751-486X.2011.01611.x	**Level of Evidence** 5 **Theoretical/ Conceptual Framework** Impacting in-hospital newborn falls through development of a prevention program.	The purpose is to further analyze the circumstances related to newborn falls and to design a program intended to reduce their incidence during the postpartum timeframe.	EBP implementation and descriptive Through a unit based staff nurse project team fall cases were analyzed, literature reviewed, and a program designed to prevent newborn falls.	Nine common characteristics noted from the fall cases reviewed. The most common being all of the infants had fallen from the arms of their mother in the early morning hours. Results: Based on this patient profile a universal program was made to prevent newborn falls. The interventions included adoption of a pledge form, parent teaching, signage for patient rooms, implementation of hourly rounds and increased commitment to promote	The common characteristics identified in case reviews can be used to develop preventive interventions. This program was successful in eliminating falls for the following 11 months after im-plementation.	Examining the effect of regular rounding on maternal rest and newborn fall prevention and developing the best practice to do so. Additional studies are needed related to critical factors contributing to newborn falls risk and which intervention or combination of interventions reduce fall risk and falls.	Success in eliminating in-hospital newborn falls could be a fall prevention program focusing on parent teaching, safety agreement, hourly rounds and promoting maternal rest.

				rest for new mothers.			
Article Citation	Level of Evidence Theoretical/ Conceptual Framework	Purpose of Research	Methodology	Analysis & Results	Conclusions	Implications for Future research	Implications For practice
Helsley, L., McDonald, J., & Stewart, V. (2010). Addressing in-hospital 'falls' of newborn infants. *Joint Commis-sion Journal On Quality & Patient Safety, 36*(7), 327-333.	**Level of Evidence** 5 **Theoretical/ Conceptual Framework** Understand-ing newborn falls through examining fall cases and determining incidence rate. Responded to data through a newborn falls committee recommend-ing preliminary interventions to reduce newborn	To generate a report summarizing newborn falls in a seven-hospital system in Oregon for the purpose of developing a template for understanding how and why infants occur in hospitals. Also to help others address the issue by eliminating the risk of newborn falls.	Case series. Descriptive and correlational. Utilized a 2-year retrospective time frame but also used real time for another 2 years. Fall incidence, trends, failure mode and effects analyses (FMEA). A newborn falls committee developed initial interventions to reduce newborn falls.	Case reports of 9 fall cases analyzed for several variables and commonal-ities identified. Collected further data from reports from 22 of the health systems hospitals for trends. The FMEA showed 9 situations of highest risk. Results: Newborn fall rate 3.94 to 4.14 per 10,000 live births. More than half of newborn falls occurred in the early	An estimated 600-1600 falls per year occur in the United States. True prevalence is unknown. Past and real time review of newborn fall cases will reveal valuable data. Interventions used to prevent newborn falls may be effective but have challenges too.	It is recommend-ed that reporting of newborn falls is needed to know the true prevalence. Standardized evaluation and management guidelines need to be developed to guide health care provider care after a fall. Safer mother/baby beds need to be developed.	Fall rates need to be measured before and after interventions . Factors surrounding newborn falls can be evaluated further. Some effective interventions for a fall prevention program include using a patient safety contract, frequent rounding, staff and provider education and use of a standard post

	falls.			morning hours. Case narratives reflect parental reluctance to report the fall. 2 of the 9 falls resulted in newborn injury.			fall guideline.
Article Citation	Level of Evidence Theoretical/ Conceptual Framework	Purpose of Research	Methodology	Analysis & Results	Conclusions	Implications for Future research	Implications For practice
Hodges, K. & Gilbert, J.H. (2016). Eliminating infant falls. *Nursing Made Incredibly Easy!*, *14*(1), 20-25. doi:10.1097/01.NME.0000475169.08103.7e	**Level of Evidence** 5 **Theoretical/ Conceptual Framework** Fall prevention interventions developed using the analyzed fall event data, literature review, health care provider ideas, and	To describe an evidenced-based infant fall intervention developed and implemented by an intra-professional team on a mother-baby unit.	EBP implementation and descriptive Fall case review with interview and medical record review. Post-program fall cases review with extensive interviews with the parents and health providers involved in their care.	Identified risk factors in infant fall events that were consistent with risk factors identified in previous literature. Two additional risk factors were identified. Upon patient interview the mother reported not being aware of infant fall risk	Continuous risk awareness and open communicat-ion with parents during the postpartum time frame supports a safe environment. Infant safety is interwoven into the professional practice of the nursing team.	Further research on risk factors for newborn falls and comparison to past literature findings. Exploring the use of interviewing to gather qualitative data from nurses and patients after a fall event can be explored	It is valuable to collect data, make a practice change and evaluate effectiveness following intervention implementat-ion. If fall events occur post-program implementat-ion, further analyzes of these events can lead to additional

	reflecting on near miss situations.		Incidence rates monitored.	in all cases. 60% of the time the fall occurred during feeding or bottle or breast. After program interventions were implemented the mother-baby unit had more than 730 days without an infant fall (2012-2014). When 3 infant falls occurred in the spring of 2014. Findings from the interviews of these three events revealed the infant fall risk education was provided but the parents who experienced the infant fall still did not perceive an increased risk.	Newborn fall prevention strategies were effective in decreasing fall rates. A parent not perceiving fall risk is a risk factor for newborn falls.	further. Studying which interventions are most effective in preventing newborn falls in the hospital.	practice changes.
Article Citation	Level of	Purpose of	Methodology	Analysis &	Conclusions	Implications	Implications

	Evidence Theoretical/ Conceptual Framework	Research		Results		for Future research	For practice
Matteson, T., Henderson-Williams, A., & Nelson, J. (2013). Preventing in-hospital newborn falls: A literature review. *Maternal Child Nursing*, *38*(3), 359-366. doi:10.1097/NMC.0b013e3182a1fb91	**Level of Evidence** 5 **Theoretical/ Conceptual Framework** Integrating and synthesizing the findings from multiple research articles on the topic of newborn falls in order to summarize the current state of the literature on this topic.	This literature review is conducted to examine factors associated with in-hospital newborn falls, search preventive measures, and present best practices in policy implementation to prevent newborn falls in the hospital.	Literature review: Keywords identified and searched within 5 databases. Included qualitative and quantitative research between 10 years (2002-2012).	10 articles kept due to strength, clinical support, and applicability. A descriptive analysis of the articles provided. Key findings from each study summarized and discussion of their clinical implications followed.	Many clinical implications can be suggested based on the literature review. Further research on this topic is needed. The supporting information needed to successfully implement the prevention interventions is lacking. The true incidence of in-hospital newborn falls is lacking. No developed and validated newborn fall risk assessment	Further research is needed to understand the factors associated with in-hospital newborn falls, to explore preventive measures, and to present best practices to prevent newborn falls.	Conducting a literature review will identify what is known from the literature and where the gap in the research lies. It is important to disseminate own findings to build upon existing knowledge and help others who are addressing the same issue.

					tools or post fall algorithms. Some improvements in practice have been made to prevent newborn falls in the hospital but further EBP is needed.		
Article Citation	Level of Evidence Theoretical/ Conceptual Framework	Purpose of Research	Methodology	Analysis & Results	Conclusions	Implications for Future research	Implications For practice
Monson, S., Henry, E., Lambert, D.,Schmutz, N., & Christensen, R. (2008). In-hospital falls of newborn infants: Data from a multihospital health care system. *Pediatrics*, *122*(2), e77- e80. doi: 10.1542/peds.2007-3811.	**Level of Evidence** 5 **Theoretical/ Conceptual Framework** Understand-ing newborn falls through examining fall cases and determining incidence rate.	To discover and analyze the circumstances of each newborn fall that occurred in an 18-hospital health care system during a 3-year period so prevention strategies could be implemented based from	Case series study. Descriptive. Data collected from an electronic chart repository and risk management files.	All inpatient hospital falls of a neonate examined during a two year period. Data of all 14 falls for incidence, demographic features, circumstances surrounding the situation, and outcomes of the neonates.	Few scenarios exist to explain the majority of the falls. Based on the most prevalent factors, suggestions for practice change that may eliminate newborn falls can be	Further research on prevention strategies and effective guidelines is needed. Guidelines to evaluate newborns after an in-hospital fall are needed.	Identifying commonali-ties in fall cases to identify possible prevention interventions. Document-ing fall rates.

		this new knowledge.		Results: incidence of 1.6 falls per 10,000 births. Half of the falls occurred when parent fell asleep holding infant, and the time most likely to occur was between 1:30 am and 9:00 am. No deaths and one injured. 13 of 14 had normal exams at time of discharge. No specific protocols for preventing in-hospital falls were in place.	made. The incidence of neonatal falls in this study may be representative of the annual rate in the United States.		
Article Citation	Level of Evidence Theoretical/ Conceptual Framework	Purpose of Research	Methodology	Analysis & Results	Conclusions	Implications for Future research	Implications For practice
Slogar, A., Gargiulo, D., & Bodrock, J. (2013). Tracking 'near misses' to keep newborns safe from falls. *Nursing for Women's Health, 17*(3), 219-223. doi: 10.1111/1751-486X.12035	**Level of Evidence** 5 **Theoretical/ Conceptual**	To focus on a program developed to address near misses and to describe how	EMP implementation and descriptive study of near misses.	Information was gathered on 64 near misses. Results: 78% of them	Collecting data on near misses enhanced the program. This	Further studies need to be done to assess all circumstances	Tracking and analyzing of near misses will add to the knowledge

	Framework Tracking and analyzing near miss circumstances and its relationship to preventing newborn falls in the hospital.	parents and healthcare providers can work together to prevent newborn falls in both the postpartum and the home setting.	A multifaceted educational initiative involving healthcare providers to develop a newborn fall prevention program. Near miss cases documented on by selected unit champions of a postpartum floor and evaluated to enhance the program.	occurred on the night shift between 11pm and 7am. 98% occurred while the mother was holding the infant while sleeping in bed. 60% were among patients who had a vaginal birth. The average length of time from birth to event was 52.6 hours. The average length of time from when a staff member had last checked on the patient to the time of the event was 1.2 hours. The average length of time since last pain medication administration was 5 hours.	information was interpreted to mean the night shift is when events most often occur, the mother is usually holding infant in bed, and they can occur up to 2-3 days after birth. Even frequent checks by staff may not be sufficient to prevent infant falls. Additional enhancements to the newborn fall safety program were then made.	surrounding near misses and which component of the safety program are effective in decreasing near misses. These authors provide knew knowledge that can be used in the development of a fall risk assessment tool.	of the circumstances surrounding a high risk fall time so preventive measures can be implemented.
Article Citation	Level of Evidence	Purpose of Research	Methodology	Analysis & Results	Conclusions	Implications for	Implications For practice

	Theoretical/ Conceptual Framework					Future research	
Wallace, S. (2015). Balancing family bonding with newborn safety. *Pennsylvania Nurse*, *70*(2), 4-12.	**Level of Evidence** 5 **Theoretical/ Conceptual Framework** Understand-ing newborn falls through examining fall cases and determining incidence rate.	To examine the newborn safety events that occur while newborns were in the care of their families and how findings compare to previous literature studies.	Case series Nine years of data was collected from the PA-PSRS, which is a confidential web-based reporting system to which all hospitals in one state submit reports of patient safety incidents and serious events. Cases were further analyzed and categorized into 6 types based on the event description. Rates and times of falls were analyzed. These were compared with the rates and	288 events associated with newborn safety while the newborn was in the care of the family in the hospital identified. Results: The most common event affecting newborn safety was falls. Most falls occurred after a family member fell asleep in a bed or chair. The second most common fall type occurred when a newborn slipped out of the arms while family member was lying, sitting or standing.	The fall rate in this study is consistent with the rate in previous studies. The primary reasons newborns fall and the time of day they occur are also consistent with previous studies. The authors reviewed the literature and concluded that health care facilities have begun to recognize newborn falls as a concern for potential harm and have implemented initiatives	To examine if other populations have fall cases with similar characteri-stics.	Interventions can be targeted to focus on the primary causes surrounding newborn falls in the hospital, the types of injuries that can occur, and the time of day they usually occur.

			times noted in the literature studies.	The rate of newborn falls per 10,000 live births between the years of 2005 to 2013 ranged from 0.4 to 3.8. Most newborns falls occurred between midnight and 7AM. Injuries do occur.	and adopted strategies to help reduce or prevent newborn falls.		

Appendix G: Letter of Support from Nurse Leaders

Date: 10/12/2016

Dear: Nebraska Methodist Women's Hospital

You are invited to participate in a capstone project of a Doctor of Nursing Student enrolled at Nebraska Methodist College. The purpose of the project is to evaluate the effectiveness of a Newborn Safety Acknowledgement document in preventing inpatient newborn falls in the postpartum setting. The scope of this capstone project is to identify risk factors associated with newborn falls in the postpartum setting, evaluate the outcome of the Newborn Safety Acknowledgement document, and evaluate if postpartum nursing staff use and document the Newborn Safety Acknowledgement appropriately. The clinical question being asked is, Can implementation of a Newborn Safety Acknowledgement impact inpatient newborn falls in the postpartum setting as opposed to no implementation of a Newborn Safety Acknowledgement?

We are inviting you to be part of this capstone project because you provide nursing care to the postpartum inpatient newborn population. You are implementing the use of a Newborn Safety Acknowledgement document to prevent inpatient newborn falls.

If you agree to participate, we would like to exam postpartum newborn fall case events that have occurred prior to Newborn Safety Acknowledgement implementation and any that occur during the 3 months following implementation. Newborn fall rates would be calculated for the 6 years prior to implementation and compared to the rates 3 months following Newborn Safety Acknowledgement implementation. Lastly, we would like to evaluate whether the intervention is being used as intended by reviewing charts to assess nursing documentation of it's use at 2 and 4 months after Newborn Safety Acknowledgement implementation. All information will be kept confidential.

I am excited to be focusing on the issue of newborn falls and newborn safety. Nurses can impact the safety of their patient when it is made a priority. This capstone project can benefit the population of newborns and their families in the inpatient setting. It can improve nursing outcomes and increase patient satisfaction. A possible outcome from this project is knowing the true incidence rate of newborn falls in your facility. Rates can be compared to other health care settings and can be used as a measurement of intervention effectiveness. An examination of past newborn fall events will help identify risk factors. Patient specific fall prevention interventions can be developed through understanding the specific population's risk factors, pattern and trends in newborn falls. This also gives nursing staff the knowledge and ability to articulate this risk with patients and families.

An additional benefit could be gaining a measurement of whether key practices to reduce falls are actually occurring. Part of evaluating the effectiveness of the Newborn Safety Acknowledgement is assessing if nursing staff are using and documenting the intervention effectively. This will also guide future staff education and development.

I am asking for your support as I move forward with this capstone project. This capstone project is being submitted to IRB for approval. When approved I will notify you and get informed consent to begin data collection.

I support this capstone project and it taking place at Nebraska Methodist Women's Hospital.

Name/Title/Credentials [redacted] RNC - Team Lead Date: 10.13.16

Name/Title/Credentials [redacted] RNC Service Leader Date: 10-13-16

I support this capstone project and it taking place at Nebraska Methodist Women's Hospital.

Name/Title/Credentials [redacted] APRN-CNS Date: 10/18/16

Name/Title/Credentials _____ Date: _____

Investigator's Name: Carrie Dahl, MSN, RN
Advisor: Dr. Susie Ward, Phd, RN
Department Address: Nebraska Methodist College
720 N. 87 St
Omaha, Nebraska, 68114
Phone # 402-354-7000

Appendix H: College IRB Letter

NEBRASKA METHODIST COLLEGE
THE JOSIE HARPER CAMPUS

December 29, 2016

Carrie Dahl, MSN, RN
720 N. 87th Street
Omaha, Nebraska 68114

Dear Ms. Dahl,

This letter is to formally notify you that your research study, "*The Effectiveness of a Newborn Safety Acknowledgement in Preventing Inpatient Newborn Falls,*" **IRB # NMC2017_#1** has been approved and been given exempt status authorized by 45 CFR § 46.101. Your IRB Reviewers were Dr Fran Henton and Dr Lindsay Snipes.

You are authorized to begin this study on January 1, 2017. This approval is valid until December 31, 2017. If it should continue beyond that period, you will need to seek continuing review and update the IRB on the research project. You must also advise the IRB in writing when the project is completed or discontinued. If any unanticipated risks to the participants occur, these should be reported to IRB. Any changes in protocol will require that you submit a new IRB document.

If you have any questions, please contact April Horstman Reser, IRB chair at 354-7046, or e-mail at april.horstmanreser@methodistcollege.edu.

Sincerely,

April Horstman Reser, Ph.D.
IRB Chair

Appendix I: Hospital IRB Letter

METHODIST HOSPITAL
An Affiliate of Methodist Health System
8303 Dodge Street
Omaha, NE 68114
(402) 354-4000

February 28, 2017

Carrie L Dahl, MSN, RN
[redacted]
Omaha, NE 68114

Dear Ms. Dahl,

The Nebraska Methodist Hospital Institutional Review Board granted approval to the following minimal risk study:

The Effectiveness of Newborn Safety Information and Acknowledgement in Preventing Inpatient Newborn Falls

Date of Action: ***February 27, 2017***

Expires: ***February 27, 2018***

Type of review: ***Expedited Review*** ***x***

The Nebraska Methodist Hospital IRB operates in compliance with federal laws and regulations governing institutional review boards, including the federal Common Rule and FDA regulations. The Methodist IRB operates under the following federal-wide assurance number: FWA 00003377

Implementation/continuation of this study is subject to the requirements and standards set forth in the *Nebraska Methodist Hospital Handbook for IRB Members and Investigators*. You should particularly note the statements of Ethical Principles under Tab II of the *Handbook*, and the Investigator Responsibilities and Standards under Tab VI.

Should you have any questions please do not hesitate to contact the Chairman of the Institutional Review Board or the Medical Staff Office at 354-4038.

Sincerely,

[redacted]

William Lydiatt, M.D.
Chairman, Institutional Review Board
(402) 354-4038 – phone
(402) 354-4785 – fax

Appendix J: Capstone Setting Support Letter

METHODIST WOMEN'S HOSPITAL
An Affiliate of Methodist Health System
707 N 190th Plaza
Omaha, NE 68022

Date: 1-6-2017

Dear Carrie Dahl,

Based on my review of your DNP Capstone project proposal, I give permission for you to conduct the study entitled *The Effectiveness of the Newborn Safety Information and Acknowledgement in Preventing Inpatient Newborn Falls* on the Mother/Baby Unit. This permission is dependent upon approval of the study by the Methodist Hospital IRB. Nebraska Methodist College IRB has approved this project (Approval attached). I reserve the right at any time to suspend this Capstone project on my unit if I deem it necessary.

I understand your project will begin January 2017 and will end August 2017 and that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Nebraska Methodist College IRB and Methodist Hospital IRB.

Good luck on your project.

Sincerely,

Susan K. Korth, PhD, MPH, BSN
Vice President and Chief Operating Officer
Methodist Women's Hospital
Office: 402-815-1125
Sue.korth@nmhs.org

Appendix K: Co-investigator Letter of Support

Date: 1-11-2017

Dear Carrie Dahl,

Based on my review of your DNP Capstone project proposal, I agree to be your clinical partner at Nebraska Methodist Women's Hospital and co-investigator on the DNP capstone project entitled *The Effectiveness of the Newborn Safety Information and Acknowledgement in Preventing Inpatient Newborn Falls* on the Mother/Baby Unit. This agreement is dependent upon approval of the study by the Methodist Hospital IRB. Nebraska Methodist College IRB has approved this project (Approval attached

I understand your project will begin January 2017 and will end August 2017 and that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Nebraska Methodist College IRB and Methodist Hospital IRB.

Good luck on your project.

Sincerely,

[redacted] APRN-CNS

Jodi Gute, MSN, APRN-CNS, C-EFM
APRN-CNS, Methodist Women's Hospital L&D/HROB, M/B and Nursery, Gyn
402-815-1425
Jodi.gute@nmhs.org