EXPLORING NURSES' PERCEPTIONS ON THE USE OF KANGAROO MOTHER CARE TO REDUCE PAIN DURING HEEL LANCE PROCEDURES

by

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Submitted in partial fulfillment of the requirements
for the degree of Master of Nursing

at

Dalhousie University
Halifax, Nova Scotia
March 2011

DALHOUSIE UNIVERSITY

SCHOOL OF NURSING

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Dated: March 2, 2011

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DALHOUSIE UNIVERSITY

DATE: March 2, 2011

AUTHOR: Helen C. McCord

TITLE: EXPLORING NURSES' PERCEPTIONS ON THE USE OF KANGAROO MOTHER CARE TO REDUCE PAIN DURING HEEL LANCE PROCEDURES

DEPARTMENT OR SCHOOL: Dalhousie University School of Nursing

DEGREE MN CONVOCATION: May YEAR: 2011

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Signature of Author

Dedication

This thesis is dedicated to my family who have also lived and breathed this research. I love you all and thank you. An extra special thank you to Mark for having more faith in me than I had in myself, for not complaining about the papers on the table for the past 2 years and for being there with me at all times. Without his support, I would never be able to accomplish this work. Thank you for all of your encouragement and never-ending support, I love you more than you will ever know. To my beautiful son, Jackson, the love of my life, thank you for showing me what life is truly all about. His beautiful face brightened the days that I needed it most. My deep love for him motivates me to set the best example I can. May my love for learning be something you have inherited.

I would also like to give my heartfelt appreciation to my parents, who brought me up with their love and encouraged me to pursue this degree. I would like to give my heartfelt appreciation to my Dad who has accompanied me with his love, unlimited patience, understanding and encouragement. My Dad also believes that he is graduating with a masters in nursing, after all the nursing papers and research he has read along with me! Thanks Dad, you will always be my number 1 hero! Thank you to my brother, Ewan for all of his technical support and endless answers to my questions! Thank you to my sister, Fiona for all of her support, no matter how far away she may be!

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Abstract

Infants in the NICU undergo many painful procedures and literature supports KMC as an effective intervention to diminish pain however, it is not used routinely in NICUs. The purpose of this qualitative study is to provide NICU nurses an opportunity to describe their experience of utilizing KMC for pain, and to interpret this experience with the goal of generating patterns that explain this understanding. The findings can be used to formulate interventions that foster the use of KMC. Using Interpretive Description as a philosophy of inquiry and research methodology, 8 NICU nurses were interviewed and participated in a focus group. Four patterns emerged: (1)*"Seeing is Believing"*; (2) *Human Heartedness: "It's the Least I can do"*; (3) *Playing it Safe*; and (3) *Creating the Possibility within Constraints.*

List of Abbreviations

NICU	Neonatal Intensive Care Unit
KMC	Kangaroo Mother Care
UVL	Umbilical Venous Line
UAL	Umbilical Artery Line
ID	Interpretive Description
PI	Principal Investigator
PARIHS	Promoting Action on Research Implementation in Health Services
PVL	Periventricular Leukomalacia
IWK	Izaak Walton Killam
AAP	American Academy of Pediatrics
CPS	Canadian Paediatric Society
PIPP	Premature Infant Pain Profile
EBP	Evidence-based Practice

Acknowledgements

As my thesis supervisor, Dr. Margot Latimer's thoughtful diligence helped me stay on task and her patience and insight through the long stages of writing my thesis are especially appreciated. Not only did Dr. Latimer mentor me in my graduate work but also taught me life lessons on how to be a better student, nurse, researcher and mother. Dr. Latimer has influenced not only my graduate studies, but my whole life. She encouraged me without pressure, treated me with respect, and supported my work. I developed confidence in my abilities and my progress as a researcher through Dr. Latimer's vigilance, attention to detail, and her commitment to empowering me. Her passion for my research was a constant in every one of our interactions, and that passion inspired me to work harder and aim higher. Dr. Latimer is my true mentor and I aspire to one day become the incredible researcher, professor, nurse, friend and mother she is today.

I also wanted to thank Dr. Marilyn MacDonald who guided my qualitative research every step of the way. Her knowledge of the research process continues to amaze me, and I am honored to have been a beneficiary of that expertise.

Dr. Dora Stinson's quiet belief in me and my work motivated me to keep her trust. I also knew I was able to call upon her extensive knowledge of my topic at any time and she would respond immediately. Dr. Stinson was always patient with and positive about my progress. Thank you for all of your support.

I am forever indebted to Brenda Hewitt for her knowledge, expertise and friendship. Brenda helped me draw upon my inner strengths and capabilities, stepping in and giving encouragement and suggestions when necessary. Thank you from the bottom of my heart.

A special thank you to Jackie Gilby, the Graduate Programs Secretary in Dalhousie University School of Nursing. Jackie's knowledge, kindness and patience were truly appreciated over the years. Thank you for always answering my phone calls and all of your answers to my endless questions and helping me to navigate through the graduate program.

Thank you to my family and friends who have supported me in this endeavor as I filled my days with reading and writing. I thank you for listening and your support and never giving up on me.

Finally and most importantly I am eternally grateful to the nurses who so generously gave me their time and shared their honesty, opinions and experiences with me. I offer my heartfelt thanks to them, because without them this research would never have been possible.

I would like to acknowledge the financial support received throughout my master's program. The Margaret Ferguson Award and a Category A grant from the IWK Health Centre, all greatly contributed to my ability to complete this research and my Masters of Nursing program. A special thanks to the CIHR Team in Children's Pain for the master fellowship they awarded me in support of my research. This enabled me to devote more time to my research. I would also like to thank the Pain in Child Health (PICH) group under the sponsorship of CIHR, which enabled me to join as a trainee in the area of pediatric pain and provided training and education to strengthen my preparation to become an independent investigator. It has only furthered my commitment to pain in child health.

Chapter One

Introduction

"Advances in technology have dramatically changed health care in recent decades, and the pace of innovation shows no signs of abating" (Gordin, 1999, p. 401). These advances have had a great impact on the health care of all ages, especially neonates in Neonatal Intensive Care Units (NICU's) across North America (Wikstrom, Cederborg & Johanson, 2007; Bakalis, 2006). Technology has revolutionized the way we care for infants over the past 40 years; although survival has improved, quality of life has not kept pace with the rate of survival (Charpak, Ruiz & Figueroa, 2000; Aita & Snider, 2003). Infants, who would have previously died, are now surviving at very early gestations. The diagnostic tests and procedures required for management (that are likely life saving) may be causing adverse effects because of associated pain. Consequently there has been a great increase in the number of painful invasive procedures performed on neonates.

The physiological instability and underlying health conditions of these infants necessitate various invasive procedures which cause pain as part of their care, such as intubations, heel lancing and the insertion of venous and arterial catheters (Simons et al., 2003). There is evidence that newborn infants can detect, process and respond to painful stimuli (Anand, 2007; Cong, 2006; Johnston et al., 2008).

Animal studies report that the preterm animal is hypersensitive to pain and is at an even greater risk for the consequences of pain because of immature mechanisms at birth (Fitzgerald & Beggs, 2001). "Excessive and/or prolonged unrelieved pain in human infants can cause adverse physiological effects in all major organ systems that can have long-term cumulative effects and be life-threatening" (Cong, 2006, p. 1). The infant's

inability to verbalize pain and the inherent variability of pain (depending on its source and duration) complicate the study of pain in the neonate (Anand, 2007).

Regardless of the clinical advances over the past 10 to 15 years, neonates experience up to 14 painful procedures per day (Simons et al., 2006). Astonishingly, more than half of the procedures are not associated with steps to decrease pain (pharmacologic or nonpharmacologic) (Latimer, Johnson, Ritchie, Clarke & Gilin, 2009; Johnston et al., 2007; Johnston et al., 2008; Latimer et al., 2009; Stevens, Yamada & Ohlsson, 2010). Heel lances are the most common painful invasive procedure in neonates, and 40%-90% of infants do not receive any effective treatment to alleviate pain despite its routine use in the NICU (Axelin, 2009; Cong, 2006; Lago et al., 2005; Latimer et al., 2009).

Both pharmacologic and nonpharmacological strategies have been demonstrated as effective to reduce pain from necessary procedures. Some evidence indicates that healthcare workers, mainly doctors and nurses believe that pain management strategies are unnecessary and/or dangerous for preterm infants (Cong, 2006; Dodds, 2003) while other evidence indicates healthcare practitioners recognize procedures as painful (Simons et al., 2006) but may not necessarily do anything about it. Finding optimal non-invasive and nonpharmacological techniques to reduce neonatal pain is an important topic and challenge for neonatal healthcare providers (Cong, 2006).

Nonpharmacologic interventions are effective alternatives for relieving pain during minor invasive procedures and may include feeding of breast milk, breastfeeding, non-nutritive sucking (pacifier), facilitated tucking, sugar coated pacifiers, rocking, swaddling, music and Kangaroo Mother Care (Cong, 2006; Franck, 2002; Franck &

Lawhon, 2000). KMC is one simple and effective nonpharmacological option to be considered.

Kangaroo Mother Care (KMC) has received strong support as an effective infant care technique used to improve infants' physiological instability and decrease pain during minor invasive procedures (Charpak et al., 2005; Ludington-Hoe, Nguygen, Swinth & Satyshur, 2000; Cong, 2006). KMC consists of skin-to-skin contact between the mother and the naked infant in a strictly vertical position, between the mother's bare breasts (Ludington-Hoe et al., 2000). Despite over 30 years of evidence identifying the many benefits of KMC for both infants and their mothers, it continues to be a practice that is not widely implemented within the NICU by health care providers. KMC continues to be seen as a "nice thing" to do rather than a "necessary thing to do" in nursing (Cong, 2006; Charpak et al., 2000; Chia, 2006).

Nurses play an integral role in pain management of neonates because they are responsible for performing the procedures that cause pain, and are in a position to assess and provide pain analgesia. "In collaboration with physicians, nurses have a responsibility to learn how to manage the pain; however, the evidence indicates this is not being done" (Latimer et al., 2009, p. 76). Therefore, development of a standard approach to decrease pain is a central issue in neonatal intensive care nursing to "promote the wellbeing and unimpeded development of the neonate" (Cignacco, Hamers & Stoffel, 2007, p.140). In particular, the use of non-pharmacological interventions is crucial, as they are based on nurses' clinical assessment of pain and can be carried out without an order from a physician (Cignacco et al., 2008).

Purpose of the Research

The purpose of this qualitative study is twofold: first, to provide NICU nurses an opportunity to describe their experience of utilizing KMC for painful procedures, and second to interpret these experiences by constructing patterns that explain participant understanding with the goal of formulating interventions that increase use of KMC for procedures in neonates. Using interpretive description as a philosophy of inquiry and research methodology, the ultimate goal of this research is to understand how we can support nurses to facilitate optimal management for procedures known to cause pain in neonates.

Reflexivity: Coming to the Research Question

The reflexive process is a valuable means to make visible the researcher's positional knowledge prior to the development of relationships with study participants. Reflexivity is a continuing process in which the researcher explores and examines their own values, assumptions, characteristics and motivation to see how they influence data collection and interpretations of findings (Creswell, 2007; Gilgun, 2010). Reflexivity urges researchers "to explore the ways in which a researcher's involvement with a particular study influences, acts upon and informs such research" (Nightingale & Cromby, 1999, p. 228).

This study evolved from my nursing practice with neonates and their families. I am a neonatal intensive care nurse with experience in different roles within the NICU. These roles include: staff nurse, clinical educator, clinical nurse specialist and graduate student. Many of the neonates I cared for were enduring many routine painful procedures on a daily basis. The most common routine procedure I saw in my practice was heel

lances that received very little to no effective pain relief. I have always had an interest in nonpharmacological pain interventions for management of pain in neonates. KMC was an intervention that really piqued my interest. I have extensively read the literature surrounding KMC and its effect on pain. After gaining this knowledge through reading and attending educational seminars on the subject, I began to use it in my practice. I saw firsthand the effects it had on reducing pain from heel lances but it became apparent that I was one of very few nurses who utilized it, despite the available evidence. I also recognized neonatal nurses have a tremendous influence on pain management in the NICU. I began thinking about why KMC was perceived so differently in the clinical area in which I practiced. These were questions, which up until that point, I had not thought about.

KMC in the unit in which I practiced appeared occasionally and was perceived merely as a "nice thing to do" for the mother, but certainly not "necessary" for the infant. KMC is a practice that is not highly valued as compared to that of other more highly technological interventions. KMC is implemented as limited sessions with mothers and babies usually lasting one or up to a few hours, not necessarily every day. KMC implementation depends on the nurse caring for the infant. If the nurse is comfortable with KMC and comfortable with the stability of the infant then it may be used. Many nurses use KMC for babies who are considered "stable" however, the term "stable" may vary from nurse to nurse. At the time of this research there was a KMC policy for the NICU in progress but yet to be released, therefore KMC is not viewed as a standard of care but more of a nice thing to do, and not specifically for painful procedures.

I also work in a unit where KMC has been strongly advocated by a nurse champion who has worked using both formal and informal methods to change practice in the NICU. KMC is an easy, cost-effective strategy and it does not have to be prescribed by a physician. It is usually a decision made by nursing staff to use at their own discretion. I decided that it would be important to explore the views of nurses (as stakeholders) in regards to the practice of KMC within the NICU. It is my hope that this study will explore nurses' perceptions on providing KMC, and to better assist nurses to implement this more frequently. As I reflect on the practice of KMC within the NICU I wonder why, despite the plethora of available evidence identifying the many benefits of KMC, it continues to be a practice that is underutilized in the NICU.

It was important to note that as the Principal Investigator in this research, I was familiar with the PARIHS model (Promoting Action on Research Implementation in Health Services) and had considered using it as a guiding theoretical framework for this research. I did incorporate it into my original proposed thesis however ID locates itself outside of the "social science theoretical traditions" (Thorne, 2008) and therefore it is not necessary for research studies to have a guiding theoretical framework when using ID as a methodology. Therefore after some consideration and reflection I decided to maintain the integrity of the ID approach and not include a guiding theoretical framework for this study.

Chapter Two

Literature Review

This literature review will discuss the history of neonatal pain, the long-term effects of neonatal pain, interventions for analgesia (pharmacologic and nonpharmacologic), the Gate Control Theory, explore both the parental and healthcare professional perspective on KMC and the relationship between KMC and neonatal pain. Studies in this literature review were chosen from articles written between 1980 and 2009, in an attempt to identify research that studied KMC as a nonpharmacologic intervention for painful procedures in neonates. The search was conducted in the MEDLINE, CINAHL, PUBMED, EMBASE and Cochrane Library databases for relevant research studies. The Izaak Walton Killam (IWK) library electronic database was also utilized. Key words included neonatal, Neonatal Intensive Care Unit (NICU), pain, Kangaroo Care, Kangaroo Mother Care, skin-to-skin contact, skin contact, mother-child relations, crying, heel lance, capillary bloodwork and infant. Bibliographies and the most recent relevant neonatal journals were searched manually.

Background and Significance of Neonatal Pain

Historical Background on Neonatal Pain

Historically, newborn infants were believed to lack the capacity to feel pain like adults (Cong, 2006). Infants were considered comparable to a semi-anesthetized adult (Swafford & Allen, 1968). For many years, physicians and pediatricians largely accepted that pain pathways were not fully developed in the newborn. "Infants were considered to be neurologically immature, not able to perceive or locate pain, and to have no memory of pain" (Sredl, 2003; Cong, 2006). This assumption justified inhumane situations.

Often surgery was conducted without anaesthesia, postoperative pain was rarely treated, and circumcisions and insertion of chest tubes were performed without local anesthetics (Arditi, Feldman & Eidelman, 2006; Schecter, 2006). Both physicians and nurses were hesitant to use analgesia in infants because it was believed that they could not be given safely without adverse effects (Cong, 2006) or that giving a local anesthetic by needle could be just as painful as the invasive procedure (spinal needle, chest tube). Our knowledge of the experience of pain in neonates has increased in the past two decades (Banos, Ruiz & Guardiola, 2001).

In standard pediatric texts, infant pain had not even been mentioned in the literature prior to 1998 (Ferrell, Virani & Grant, 2000). "Neonatal pain was a neglected subject in the research literature until the mid-1980s" (Cong, 2006, p.4). This situation started to change when studies clearly showed that nociceptive systems are fully developed in newborns (Fitzgerald & McIntosh, 1989) and that severe and dangerous consequences are related to the avoidance of full anesthesia in neonates (Anand & Hickey, 1987). These severe consequences may include "altered pain sensitivity and permanent neuroanatomic and behavioral abnormalities", as found in animal studies (American Academy of Pediatrics and Canadian Pediatric Society Position Statement, 2007; Grunau, Oberlander, Whitfield, Fitzgerald & Lee, 2001). There is a great deal of research indicating that term and preterm infants possess the ability to perceive and respond to pain and remember pain experiences (Cong, 2006).

Painful Procedures in the NICU

Infants being treated and cared for in a NICU cannot escape from having painful procedures applied to them. Simons et al. (2003) reported that on average, infants in the

NICU were subjected to 14 +/- 4 painful procedures per day, during the first 14 days of life, within a period of 24 hours. Stevens et al. (2005) reported that all neonates underwent greater than 10 painful procedures per day and most recently, 13 NICUs in France were surveyed and it was reported that neonates undergo an average of 16 painful procedures per day (Carbajal, Nguyen-Bourgain & Armengaud, 2008). Carbajal et al. (2008) reported that only 2% of 42,413 procedures were performed with pharmacological interventions, 18% with nonpharmacological interventions, and 0.4% with combined interventions; 79% were undertaken without analgesia. This continues to rise as more invasive technology becomes available. Shah & Ohlsson (2007) reviewed the nature and frequency of invasive procedures in a NICU and showed that heel lancing was the most common routine painful procedure in both preterm and term infants. During heel lancing, the healthcare professional will prick the infant's heel with a lancet and then squeeze the foot in a "milking" fashion, allowing blood to escape. Neonates undergoing this procedure experience pain (Johnston et al., 2008; Shah et al., 2007). Although strategies to manage pain during surgery and medical illness exist, the means to prevent or reduce pain from routine daily painful procedures, including heel lances, are lacking (Malloy, 2004) and these frequent painful procedures have the potential for negative consequences.

Long-term and Short-term Effects of Neonatal Pain

Early exposure to pain is known to cause immediate and permanent changes in the structure and function of an infant's brain (Akcan, Yigit & Atici, 2009; Castral, Warnock, Leite, Haas & Scochi, 2007; Fitzgerald et al., 2001). "Painful invasive procedures in neonates may cause major physiological disturbances and many have longterm

cumulative effects. The pain that premature infants experience is associated with increased heart rate, blood pressure and oxygen consumption, all of which are associated with marked fluctuations in intracranial pressure, which could lead to Intraventricular Hemorrhage (bleeding in the brain) and/or Periventricular Leukomalacia (PVL)" (Cong, 2006, p. 6). PVL is a condition in which the brain tissue around the ventricles is damaged (Larroque et al., 1998). Both IVH and PVL increase a baby's risk of developing neurological disabilities ranging from mild learning or gross motor delays to cerebral palsy (Volpe, 2008). Pain may also have specific adverse effects on cognition, memory and behaviour (Stevens et al., 2009).

These problems have negative effects on the clinical course of an illness, on an infant's adaptation to extrauterine life, on brain development, and on family-infant interaction, and can cause a delay in the infant's growth and development (Ludington-Hoe, Hosseini & Torowicz, 2005; Reyes, 2003; Efe & Oncel, 2005; Canadian Paediatric Society, 2000). Therefore, all our efforts to treat pain properly in newborns to avoid the risks previously described should be considered.

Pain Management Strategies in Neonates

The treatment of neonatal pain during procedures has become mandatory, not only for humanitarian reasons but also because repeated and prolonged pain may have longterm consequences in the neonatal population (Carbajal, Lenclen & Jugie, 2005). Both pharmacologic and nonpharmacologic interventions have limitations for effectively treating pain. The following will include a discussion of the merit and challenges of each strategy along with measurement of infant pain.

Measuring Infant Pain

Pain assessment in the NICU is an essential and difficult process. The subjective nature of pain makes measurement in infants challenging (McNair, Ballantyne, Dionne, Stephens & Stevens, 2004). Infants, incapable of verbal self-report, provide behavioral and physiological cues to indicate pain (Hummel, Puchalski, Creech & Weiss, 2008). Hospital accreditation guidelines (i.e. IWK Health Centre Acute Care Standard # 7) identify the healthcare professional's responsibility for the delivery of optimal pain care for routine procedures such as heel lancing (Canadian Council of Health Services Accreditation, 2005). National health care agencies such as the American Academy of Pediatrics and the Canadian Paediatric Society and national accreditation agencies have established hospital-based standards that include assessment as necessary in pain care (American Academy of Pediatrics, 2007; Canadian Paediatric Society, 2007). The Canadian Paediatric Society et al.(2000, 2006) policy statement on, *The prevention and management of pain in the neonate*, recommends routine pain assessment in neonates, and summarizes nine commonly used pain assessment scales, including the Premature Infant Pain Profile (PIPP) (Hummel et al., 2008). The PIPP is the current pain assessment scale used in the NICU at the IWK Health centre and is recommended by the Canadian Accreditation Guidelines.

The PIPP tool, developed by Stevens, Johnston, Petryshen & Taddio (1996), is a multidimensional measure developed to assess acute pain in preterm and term infants (McNair et al., 2004). It measures gestational age, behavioral state, heart rate, oxygen saturation, and 3 facial reactions (brow bulge, eye squeeze, and nasolabial furrow) (Carbajal et al., 2005; Stevens et al., 1996). The PIPP tool creates a score from 18 to 21

depending on gestational age, with 0–6 reflecting no pain, 6–12 reflecting mild-moderate pain, and above 12 indicating severe pain (McNair et al., 2004; Stevens et al., 1996).

Pharmacological Interventions for Neonatal Pain

Although effective pharmacological pain relief is now usually provided for neonates during and after a major surgical procedure (Johnston et al., 2008; Porter, Wolf, Gold, Lotsoff & Miller, 1997), pain-reducing therapies are often underused and ineffective for the most common minor procedures (i.e. heel lances) in neonates (Johnston et al., 2007; Latimer, Johnston, Ritchie, Clarke & Gilin, 2006; Stevens et al., 2009). Topical anesthetics, opiods and sucrose are the most common pharmacologic pain interventions used in the NICU.

Topical anesthetics can effectively reduce pain from some minor procedures such as a venipuncture and intravenous catheter insertion in neonates. "These agents must be applied for a sufficient length of time before the procedure (usually 30 minutes for neonates), and they are not effective for a heel-stick blood draw because the pain from heel sticks is primarily from squeezing the heel and not from the lancet" (American Academy of Pediatrics, 2007, p. 154). There is also limited available evidence around the use of topical anesthetics in the preterm population.

Opioids like fentanyl and morphine are the most studied and most used pharmacologic methods in the pain management in neonates (Debillon et al., 2002; Axelin, 2009). Opioids have been increasingly used for sedation and analgesia in ventilated preterm neonates and often for post operative situations. The analgesic effect of opioids on the acute pain caused by minor invasive procedures in neonates remains controversial, as there is evidence that opioids may not be effective for procedural pain

(Carbajal et al., 2005; Axelin, 2009). Thus, the administration of opioids in neonates does not "eliminate the need for other analgesic approaches that are effective against acute pain" (Carbajal et al., 2008, p. 1619).

The administration of oral sucrose has been the most frequently studied intervention for neonatal pain in neonates (Stevens et al., 2010; Gibbins et al., 2002; Johnston, Collinge, Henderson & Anand, 1997). "Sucrose is a sweet disaccharide consisting of fructose and glucose. The effects of sucrose are thought to be mediated by endogenous opioid pathways activated by sweet taste" (Cong, 2006), and endure after sucrose is orally administered (Gibbins et al., 2001). Sucrose may diminish the pain response but it does not decrease the oxygen use or energy expenditure (American Academy of Pediatrics, 2007). There is evidence to support the combination of sucrose and "non-nutritive sucking" as the most effective intervention for heel lancing in infants (Stevens et al., 2010).

A wide range of sucrose doses have been used in neonates for pain relief, but an optimal dose and the safety of multiple doses has not yet been established (American Academy of Pediatrics, 2007; Stevens et al., 2010). Studies regarding the long term effects, i.e. neurological outcome for neonates who have received sucrose at one year post NICU and beyond are not available (Stevens et al., 2010).

Further research is required to understand the mechanism of action and optimal dose of oral sucrose in neonates. Available data suggests that this is an effective method to alleviate pain for minor neonatal procedures. Because oral sucrose reduces but does not eliminate pain in neonates, it should be used with other nonpharmacologic measures

to enhance its effectiveness (American Academy of Pediatrics, 2007; Stevens et al., 2010).

A large variety of analgesics are being used in the clinical area however, gaps remain in our knowledge on providing effective pain relief from minor invasive procedures in neonates. As a result, the interest around discovering a safe, non-pharmacological pain management method has increased (Cignacco et al., 2007).

Nonpharmacologic Interventions for Neonatal Pain

A non-pharmacological pain intervention is a prophylactic and complementary approach to reduce pain (Franck & Lawhon, 1998; Stevens et al., 2010) and some authors have indicated there are fewer concerns regarding the risk of adverse effects (Field, 2001; Harrison, Williams, Berbaum & Stem, 2000). The nonpharmacological interventions described which "comprise environmental and behavioural interventions have wide applicability for neonatal pain management. These interventions are not necessarily substitutes or alternatives for pharmacological interventions but are complementary, and should be considered as useful for all pain management" (Carbajal et al., 2008, p. 1618). The non-pharmacological interventions can reduce the total amount of noxious stimuli to which the infant is exposed, by blocking nociceptive transduction or transmission, or activate descending pain-modulating systems (Frank et al., 2000) comparable to pharmacological interventions. These interventions can also activate the attention of neonates, distracting them from the pain, and thus modifying the pain perception (Bellieni et al., 2001). It is assumed that non-pharmacological interventions activate the Gate Control mechanism (Melzack & Wall, 1965).

The Gate Control Theory of Pain describes the role of the brain in pain perception. Before pain messages reach the brain, those messages encounter "nerve gates" in the spinal cord that open or close depending on a number of factors (Dickenson, 2002). When the gates are open, pain messages "pass through" more or less easily and intense pain is felt; when the gates close, pain messages are prevented from reaching the brain and pain may not be experienced (Melzack et al.,, 1965). Both pharmacological and nonpharmacological interventions can affect the Gate Control mechanism in similar ways that will be discussed in more detail later. Non-pharmacologic interventions include positioning, feeding mother's milk, non-nutritive sucking, breastfeeding, decreasing environmental stimulation, rocking, touching, music, massage, being held by the mother, and KMC (Akcan et al., 2009; Cignacco et al., 2007; Derebent & Yigit, 2006; Golianu, Krane, Seybold, Almgren & Anand, 2007). Non pharmacological interventions have been studied in the neonatal population.

Twelve randomized control studies and two meta-analyses were considered with regard to the question of current nursing practice related to nonpharmacologic pain management methods (Johnston et al., 2008; 2009). Eleven studies examined heel lancing, and one study focused on endotracheal suctioning. The two meta-analyses focused on interventions for the heel stick (Cignacco et al., 2007). In Johnston et al's (2006) review, all nonpharmacologic interventions have been shown to be effective for reducing pain responses to heel punctures. The evidence has demonstrated significant positive outcomes to decreased pain perception in the infant population when breastfeeding is used as an intervention (Carbajal, Veerapen, Couderc, Jugie & Ville, 2003; Shah, Aliwalas & Shah, 2006).

A Cochrane Review by Shah et al. (2007) examined eleven studies on breastfeeding and breastmilk as an intervention to decrease pain in neonates. It found that breastfeeding and breastmilk were effective in decreasing pain in neonates undergoing a single painful procedure compared to placebo, positioning or no intervention. The Cochrane Review concluded that breastfeeding or breastmilk can be used to alleviate pain in neonates undergoing painful procedures. Administration of sucrose had a similar effectiveness as breastfeeding for reducing pain (Carbajal, Veerapen, Couderc, Jugie & Ville, 2003; Potter & Rindfleisch, 2003; Shah et al., 2006).

Summary of Neonatal Pain

In summary, the existing methods used to decrease neonatal pain responses are underutilized. Neonates continue to experience procedural pain along with harmful behavioral and physiological reactions. Finding optimal non-invasive and nonpharmacological techniques to reduce neonatal pain is an important topic and challenge for neonatal healthcare providers (Cong, 2006). Once identified, determining the mechanisms to implement what in practice are the next logical step to reducing procedural pain in these vulnerable babies.

Kangaroo Mother Care

Historical Background on KMC

KMC was introduced in the literature as the method of skin-to-skin contact provided by mothers in third world countries, 24 hours a day, seven days a week, as a means of increasing the survival rate of neonates (Anderson, 1986). Rey and Martinez originated the term "Kangaroo Mother Care" (Rey & Martinez, 1983) due to its similarity to marsupial maternal care, where the immature (or preterm) kangaroo is guided into the

mother's pouch until maturation (Ludington-Hoe, Thompson, Swinth, Hadeed & Anderson, 1994). During KMC, "a diaper-clad infant is held upright, at an angle of approximately 60 degrees, between the mother's breasts, providing maximal skin-to-skin contact between baby and mother" (Johnston et al., 2008, p. 3). KMC can provide an infant with a "uterine-like" environment (Cong, 2006).

During the 1980s and 1990s, KMC was initiated in hospitals in industrialized countries, and parents used KMC to promote bonding and attachment (Cong, 2006; Johnston et al., 2003; Ludington-Hoe, 2003). KMC enabled mothers to use their bodies to correct overcrowding, prevent cross-infection and cold stress for low-birth weight infants (Cong, 2006). There are over 400 published reports (Ludington-Hoe et al., 2004) illustrating the benefits, efficacy and feasibility of KMC for preterm and term neonates (Engler et al., 2002). The evidence indicates that the use of KMC has had a major, positive impact on the physiological stability of neonates and the emotional well-being of their parents and these are discussed in the following sections.

General Physiological Effects of KMC

Numerous studies, including two systematic reviews have documented the benefits of KMC contact in both the term and preterm populations (Conde-Agudelo, Diaz-Rossello & Belizan, 2003; Moore, Anderson & Bergman, 2007). "KMC has a stabilizing effect on the respiratory and circulatory systems and improves physiological functions" (Cong, 2006, p 8). During KMC, infants have a more stable heart rate and decreased apneic and bradycardic episodes (Cong, 2006; Ludington-Hoe et al., 2004), improved oxygenation, stable body temperature, improved weight gain and no increase in infections (Johnston et al., 2008). Babies that experience KMC also had more mature

sleep, smooth transitions between sleep and wake states, and increased the frequency and duration of their quiet sleep (Bergman & Jurisoo, 1994; Feldman & Eidelman, 2003; Ludington-Hoe et al., 2000; Ludington-Hoe, Anderson, Swinth, Thompson & Hadeed, 2004; Ludington-Hoe et al., 2006; Ludington-Hoe & Swinth, 1996; Whitelaw & Sleath,1985).

In summary, KMC with preterm and term infants has been demonstrated to improve cardiorespiratory stability, oxygen and energy expenditure, behavioral, development, and maternal attachment (Castral et al., 2007; Cong, 2006; Johnston et al., 2008; Ludington-Hoe et al., 2006). KMC empowers mothers as primary providers of the physical and emotional needs of their infants (Akcan et al., 2009; Charpak et al., 2000). Furthermore KMC does not require expensive, high-tech equipment. Because of these promising outcomes, KMC is considered a safe and effective intervention in infants (Cong, 2006; Johnston et al., 2008).

KMC as an Intervention for Pain Control

Current literature supports the use of KMC as an intervention to diminish pain in infants during painful tissue breaking procedures (Castral et al., 2007; Gray, Watt & Blass, 2000; Hosseini, 2005; Johnston et al., 2003; Johnston et al., 2006; Johnston et al., 2008; Ludington-Hoe et al., 2005). In these studies, the effect of KMC on pain response was evaluated in infants with gestational age 28-40 weeks and the most studied painful situation is heel lance (Axelin, Salantera, Kirjavainen & Lehtonen, 2009). In these studies mothers were asked to hold their babies for 15 minutes of undisturbed time prior to and throughout a painful procedure. This ensures time for the infants to be in a true baseline state (Johnston et al., 2008).

Randomized controlled studies by Johnston et al. (2008), Akcan et al. (2009) and Castral et al. (2008) reported that preterm neonates between 28–32 weeks gestational age can benefit from KMC to decrease pain from heel lance procedures. These researchers recommended that KMC be used as a nonpharmacologic intervention to relieve acute pain in infants. Freire, Garcia & Lamy (2008) assessed the analgesic effect of KMC compared to oral glucose on the response of healthy preterm neonates to heel lancing. This study found that KMC produced an analgesic effect in preterm newborns during heel lancing comparative to sucrose. Furthermore, Carbajal, Gall & Annequin (2004) found that KMC was just as effective as sucrose in decreasing pain in newborns during heel lancing. This evidence supports the notion that direct maternal contact is effective in providing comfort to infants undergoing painful procedures, and that parents want to participate in the management of their infant's pain (Carbajal et al., 2004; Freire et al., 2008; Johnston et al., 2006). Current literature supports the use of Kangaroo Mother Care (KMC) as an effective intervention to diminish pain in infants and has benefits for moms however it is not used routinely in the NICU and no published reports were found providing recommendations for implementation.

Pain Reduction in KMC: How does it Work?

The Gate Control Theory of Pain (Melzack et al., 1965) suggests that there is a "gating system" in the central nervous system that opens to let messages (pain) through to the brain and closes to block them (Akombo, 2006). This theory is central to our understanding of how KMC works. At the spinal cord there is a "gate", and pain is determined by interactions among three systems: (1) the cells of the substantia gelatinosa (SG) in the dorsal horn, which function as a gate control mechanism; (2) the dorsal

column fibers as a central control trigger which activates selective brain processes; and (3) through descending fibers modulate the gate mechanism (Cong, 2006). A pain response is activated when the number of impulses passing through the gate exceeds a critical level (Akombo, 2006). Therefore, the dorsal horns are not merely passive transmission stations but sites at which inhibition, excitation and modulation occur (Dickinson, 2002).

Heel lancing causes tissue damage which activates receptors called nociceptors, which are at the end of nerve endings that respond to intense stimuli (Cong, 2006). Impulses in small diameter nerve fibers tend to open the gate (facilitate transmission of pain), and impulses traveling along large fibers tend to close it (depress transmission of pain) (Cong, 2006; Kandel, Schwartz & Jessell, 2000). The use of KMC which provides full body contact and other sensory stimulation with the heel stick, may "activate a non-nociceptive tactile nerve impulse, closing the gate in the dorsal horn and inhibiting nociceptive transmission, thus reducing infant pain experience and responses" (Cong, 2006). Stimulating visual, auditory, touch and taste senses are used to activate the gate control mechanism to prevent nociceptive transmission (Cignacco et al., 2007). KMC thus likely decreases pain by activating the Gate Control Mechanism. Parents can play a role in using strategies to close the gate.

Mothers and Pain

When an infant is in intensive care and experiencing pain, the parental role of comforting the child may be assumed by healthcare workers however, parents need to be aware that they can have a role in easing pain in infants. The most stressful experience reported by parents of infants in the NICU is witnessing their infant in pain (Miles &

Holditch-Davis, 1997). Gale et al. (2004) examined 12 parent's views of their experiences observing and coping with their infant's pain in the NICU. An explanatory approach was used to interview parents regarding their infant's clinical course, pain, and the parenting experience during and after the NICU stay. Eleven out of the twelve parents identified their infant's pain as their main source of stress. "Memories of the infant's pain and the mothers' inability to protect the infant from pain may continue to be a source of stress long after their infant's discharge from the NICU" (Gale, Franck, Kools & Lynch, 2004).

Simons, Franck & Roberson (2001) investigated both the parents' and nurses' perceptions about the involvement of parents in the management of their infant's pain. Using a qualitative approach, 20 nurses and 20 parents were interviewed about their perceptions of parent involvement in pain management. The research indicated that parents wanted to participate in their infant's pain management efforts and the decision-making process (Simons et al., 2001). Klaus & Kennell (2001) responded that involvement in their infant's care in the NICU helped to decrease stress related to the loss of their parenting role. This involvement contributed to feelings of competency and aided in their adaptation to the role of parenting for their child.

Many mothers of infants in the NICU are discontented with pain management and wish to participate in comforting their infants (Franck, Cox, Allen & Winter, 2005). In a recent United States and United Kingdom study of 11 NICU's consisting of 200 parents, almost all reported that their infant had experienced moderate to severe pain that was worse than they had expected (Franck, 2002). Franck, Scurr & Couture (2001) surveyed 95 parents over a period of 11 months for their views on infant pain assessment and

management in the NICU. They reported that 87% of parents whose infants were in the NICU stated that they wished they could participate in managing their infant's pain. Similarly, in a study conducted by Johnston et al. (2006), all mothers except one stated that they would participate in managing their infant's pain again if this was offered.

Given the desire mothers express to aid in the management of a child's pain, KMC may be considered an effective pain- and stress-relieving method. KMC appears to be a method which could decrease the pain response (Campbell-Yeo, Johnston, Filion & McNaughton, 2008; Johnston et al., 2008) and enhance parent's involvement and feelings of positive participation. Furthermore, it may provide mothers an autonomous opportunity to comfort their infant during painful procedures.

Health care providers caring for neonates are recognizing the value of a mother's intensive and immediate involvement in the care of her newborn infant (Browne, 2003; Browne, 2004). Thus it is important we understand healthcare workers such as nurses, experiences in an effort to explore other means of pain control that involves mothers to provide comfort during painful events (Johnston et al., 2008).

The Role of Nurses in Facilitating Pain Management

In the last decade the nature and frequency of neonatal procedural pain has been actively researched. Two areas where health clinicians can intervene is with pain assessment and management. Nurses are involved in many of the painful procedures performed on neonates in an NICU. Nurses have a responsibility to manage procedural pain; however, the evidence indicates this responsibility is not regularly exercised (Latimer et al., 2009).

Pain management is now considered a critical outcome when evaluating the effectiveness of nursing care. The duty to alleviate pain is recognized by the majority of healthcare professional organizations as one of the most fundamental roles of a healthcare provider, despite this, healthcare providers including nurses, who spend more time with patients in pain, are sometimes cited as major contributors to the problem of inadequate pain management. Precisely why pain is underassessed and undertreated is not entirely understood. However, some reports from the literature suggested that this may be attributed to clinicians' personal barriers such as knowledge, empathy, beliefs, and values (Campbell-Yeo, Latimer & Johnston, 2007; Coffman et al., 1997; Latimer et al., 2009; Van Hulle, 2005). For this research, the role of empathy, attitudes and beliefs will be discussed.

Nurses and Empathy

Empathy is defined as the ability to perceive the pain of others and provide comfort on that basis. Empathy appears to be an innate response that has important implications for pain management practices (Goubert et al., 2005; Latimer et al., 2008). Decety and Jackson (2004) suggested that individuals have "a hard-wired nervous system that is capable of experiencing physical and neuronal autonomic empathetic response driven by environmental forces that mediate our ability to be self-aware and regulate our emotions to recognize and understand the feelings of others" (Latimer et al., 2009).

The accuracy of conscious empathetic interpretation of pain is highly variable and the literature suggests that it is also underestimated (Chambers & Craig 1998; Kristjansdottir, 1992). It has not yet been discovered as to what the impact of this unconscious empathetic response may have on nurses' assessment and management of

pain (Redinbaugh, Baum, DeMoss, Fello & Arnold, 2002). However, according to Tschudin (1989), increasing degrees of empathy can result in better nursing care.

It is perplexing that nurses can identify pain indicators and not appear to translate empathy perceptions or knowledge to care practices (Latimer et al., 2008). The issue of learned suppression of empathetic responses is of particular interest in nursing practice because care providers may be socialized within their profession to believe that sharing of physical distress should be suppressed in order to maintain a professional relationship (Banja, 2006; Prkachin, Solomon, Hwang & Mercer, 2001).

Nurses are key players in facilitating the implementation of KMC from painful procedures. In order for them to be motivated to involve the parent in this type of pain reducing strategy they need to be empathetic to the notion that the infant experiences pain and believe that KMC can reduce the pain of the procedure. Attitudes and beliefs of the healthcare workers could play a fundamental role.

Attitudes, Beliefs and Knowledge

Healthcare professionals play a significant role in the care of infants in the NICU. Nurses are involved in many, if not all of the painful procedures that neonates undergo (Johnston et al., 2007). NICU Nurses are responsible for assessing, treating, and monitoring pain and advocating for unrelieved pain. Nurses have the ability to advance and promote optimal pain management in the NICU (Bellweg, 2008). Pain management is affected by individual factors such as knowledge, personal beliefs and attitudes (Loveman & Gale, 2000), and by the growing technical skills and rapidly changing situations typical of intensive care units (Hamill-Ruth & Marohn, 1999). Nurses' attitudes and/or inadequate knowledge as well as clinician-related barriers have been

implicated as reasons for undermedicating in the neonatal population (Byrd, Gonzales & Parsons, 2009; Simons et al., 2003).

In studying nurses' knowledge and attitudes about pediatric pain relief, knowledge deficits about adequate pain relief have been identified as, a) dosing, safety and scheduling; b) how to achieve therapeutic levels; and c) likelihood of addiction and respiratory depression (Byrd et al., 2009). Schafheutle, Cantrill & Noyce (2001) investigated the perceived barriers to effective pain management and reported that nurses have subconscious barriers to adequate pain relief. These include the subjective judgments that nurses make about patients' pain and what Manias, Botti & Bucknall (2002) deemed nurses' 'persistent negative attitudes' to pain management. Current research has discovered disconcerting inconsistencies between knowledge and practice. Simons et al. (2003) reported that despite the fact that nurses and physicians believed most newborn procedures cause moderate to severe pain, more than 65% of the infants in the study did not receive adequate analgesic therapy. Porter et al. (1995) indicated that most neonatal clinicians believed infants experience pain equal to or greater than that experienced by adults. Porter et al. (1997) reported that physicians and nurses both believed that pharmacologic and nonpharmacologic interventions should be used more frequently in the NICU than they currently are. Nurses who value nonpharmacologic approaches to pain management are more likely to decide to use these techniques in clinical practice (Cignacco et al., 2008).

Improving methods of pain management and increasing knowledge about pain mean that nurses today are better placed than ever before to effectively control children's pain (Salantera, 1999). Changing preconceived ideas and beliefs may be the catalyst to

providing a greatly improved outcome. Development of nurses' ability to assist in the appropriate management of pain needs to come from an accurate knowledge base. This knowledge base will provide a framework for behavioural change, and the resulting behavioural change should then be reflected in an increased positive attitude that may be exhibited in patient care through more successful pain control (Young, Horton, & Davidhizar, 2006).

In summary, attitudes, beliefs, empathy and knowledge appear to have a major impact on the way in which nursing care for pain is delivered, and patients can be exposed to different approaches to nursing care depending on the nurse. Understanding the beliefs and attitudes of health care professionals who directly manage the pain of neonates is crucial because attitudes concerning pain have been shown to influence health professionals' assessment and treatment of children's pain (Breau et al., 2006).

Summary of the Literature Review

This literature review has explored the history of neonatal pain, the long and short-term effects of neonatal pain, interventions for pain (pharmacologic and nonpharmacologic), the mechanisms involved in pain control (Gate Control Theory, Melzack et al., 1965), the healthcare professional perspective related to empathy, attitudes and beliefs on KMC and the relationship between KMC and neonatal pain. Painful invasive procedures are frequently performed on infants admitted to a NICU. During the past decade there have been major scientific advances in understanding pain and its management in the neonatal population however research indicates that procedural pain is still undertreated in this population" (Gharavi, 2007).

KMC is a low technological effective approach to pain management that is simple and cost effective. Appropriately used, it offers no side effects, unlike pharmacologic treatments, however it is not used routinely within a NICU setting. Absent from the literature is information surrounding why it is not practiced. "The prevention of pain in neonates should be the goal of all caregivers because painful exposures have the potential for deleterious consequences. Although there are major gaps in our knowledge regarding the most effective way to prevent and relieve pain in neonates, proven and safe therapies are currently underutilized for routine, yet painful procedures" (Canadian Paediatric Society, 2007, p. 137).

There is evidence that parents are distressed by painful procedures and want to be involved in reducing the pain. Nurses are key to including parents in care. Nurses' knowledge, attitudes, beliefs and empathy level may influence their use of effective pain management. An important way to improve neonatal pain, and ultimately improve quality of patient care, is to explore nurses' perceptions on utilizing KMC as a routine nonpharmacologic pain intervention for minor procedures in the NICU.

Chapter Three

The Methodological Framework

Qualitative research has made significant contributions to nursing knowledge and provides the means to ask important questions regarding experiences that need to be explored by nurses and nursing research. Interpretive description (ID) is one methodology that can be applied to qualitative inquiry into human health and illness experiences for the purpose of developing knowledge in nursing (Thorne, Kirkham & MacDonald-Emes, 1997). ID was developed to generate knowledge with an applied use. As such it is ideally suited to address the proposed question asked to the neonatal nurses in this study; what is your experience in using KMC as a nonpharmacologic pain strategy for neonates?

Interpretive Description (ID)

Historically, the uptake of qualitative research methodologies for answering many of the compelling questions relevant to nursing has been rapid, and nursing scholars have drawn inspiration from a broad range of inquiry approaches deriving from diverse disciplines and perspectives (Thorne, Kirkham & O'Flynn-Magee, 2004; Thorne, Jensen, Kearney, Noblit & Sandelowski, 2004). Borrowing from grounded theory, phenomenology and ethnography, nurse researchers have attempted to fit the methodological rules of sociology, philosophy and anthropology to the study of applied health and clinical problems (Morse & Chung, 2003). These methodologies proved useful in exploring some clinical questions however, nursing scholars often found their inquiries constrained and began to push the methodological rulebooks (Thorne, 1991).

Thorne at al. (1997) developed the method of ID in response to a need for an alternate method for generating knowledge pertaining to clinical nursing contexts (Thorne et al., 2004). This method departed from the specific methodologies dominating qualitative nursing research and reflected the evolution of qualitative methods within the disciplinary domain of nursing (Thorne et al., 2004; Thorne, Con, McGuiness, McPherson & Harris, 2004). This methodology was created to respond to needs within nursing to study problems originating in the clinical field and focuses on developing knowledge that will inform clinical practice (Hunt, 2009). ID is associated with a constructivist and naturalistic orientation to inquiry (Hunt, 2009), however has some distinct characteristics that will be discussed in order to better understand the applicability to this research study.

ID uses a naturalistic inquiry (Lincoln & Guba, 1985) which requires the researcher to investigate a phenomenon as it occurs naturally by observing the phenomenon in its natural setting, or by listening to people as they describe their experience of the phenomenon (Speziale & Carpenter, 1999). Naturalistic inquiry is carried out in a natural setting (Lincoln & Guba, 1985) and has been defined as a methodology useful in investigating phenomena in their natural setting free of manipulation (Speziale and Carpenter, 1999). Naturalistic inquiry and constructivism serve as the basis of ID (Thorne et al., 1997).

The constructivist research paradigm offers a new approach to health research. ID is based on a belief that knowledge is the result of a "constructive" process through which learners develop their own understandings. Denzin and Lincoln (1994) define constructivism as understanding the complicated world of lived experience from the point

of view of those who have lived it. Brooks and Brooks (1993) describe constructivism as a theory about knowledge and learning. "Constructivist learning theory draws on the developmental theory of Piaget (1964; 1977) and suggests that learning is an active process and that learners construct and reconstruct information to learn" (Hunter, 2008, p. 355).

Researchers may use constructivism to gain insights into people's experiences of a particular issue (Tetley, Grant & Davies, 2009). Constructivism acknowledges that peoples' understandings of their lives and situations are multiple and complex (Guba & Lincoln, 1994). "To appreciate how personal understandings and life experiences shape individuals' actions, constructivism requires investigators to find ways of working that enable them to work in partnership and negotiate meanings and interpretations with relevant stakeholders" (Tetley et al., 2009, p. 1275).

This theory "asserts that the learner constructs new knowledge through a process of relating new information to prior knowledge and experience" (Olgren, 1998, p. 81). Constructivism claims humans are better able to understand the information they have constructed by themselves. Constructivist researchers have a subjectivist and transactional approach and seek understanding, not just descriptions (Appleton & King, 1997). ID acknowledges the experience and the knowledge that researchers bring to a project (Hunt, 2009; Thorne, 2008).

Hunt (2009) explains that "the researcher's foreknowledge of the phenomenon under study is considered to be a platform on which to design the project, and helps to establish its anticipated boundaries" (p. 1285). Clinical expertise is acknowledged as a useful starting place for research (Hunt, 2009). Evidence-based practice is an important

factor within the ID paradigm and can aid in exploring how decisions are being formulated in healthcare. In undertaking qualitative research, it is important to identify one's own biases and knowledge prior to data collection and analysis to bring them to consciousness i.e. PARHIS model (Rycroft-Malone, 2004) in the reflexivity section (see Chapter 1, page 4). As the analysis proceeds, one can check to see if the researcher is really listening to participant perspectives. Personal interest and biases of the researcher regarding this topic included a view that KMC is an effective nonpharmacologic intervention for neonates and should be used more routinely by NICU clinicians. This was discussed in more detail in the *Reflexivity: Coming to the Research Question* section in Chapter 1.

The evidence-based practice context in which health decisions are being made on a daily basis makes it increasingly important that we have access to methodologies that allow us to critically interpret why evidence is not being used in practice (Thorne, 2008). New research is desperately needed on the subjective, experiential, tacit, and patterned aspects of human health experience, not only to advance theorizing, but to have sufficient contextual understanding to guide future decisions that will facilitate the use of evidence in the lives of real people (Thorne, 2008; Thorne, Paterson & Russell, 2003).

While ID is considered a new approach to qualitative inquiry, it has already been used and published by several researchers to examine health related questions. Topics of study have included: women who have been battered (Irwin, Thorne & Varcoe, 2002), the client-nurse relationship as experienced by public health nurses (Paavilainen & Astedt-Kurki, 2007), health professional communication (Thorne et al., 2004) and

cultural influences on breast-feeding choices (Chen, 1998). These examples of ID research studies indicate it's usefulness in health care research.

Purpose of the Research

The purpose of this qualitative study is twofold: first, to provide NICU nurses an opportunity to describe their experience of utilizing KMC for painful procedures, and second to interpret these experiences by constructing patterns that explain participant understanding with the goal of formulating interventions that increase use of KMC for procedures in neonates. Using interpretive description as a philosophy of inquiry and research methodology, the ultimate goal of this research is to understand how we can support nurses to facilitate optimal management for procedures known to cause pain in neonates.

Setting

This research study took place in the Neonatal Intensive Care Unit (NICU) at the Izaac Walton Killam Health Centre (IWK) in Halifax, Nova Scotia. The IWK Health Centre provides primary, secondary and tertiary level health care services to women and children who live in the region and tertiary care to high risk, clinically complex women and children in the Maritime Provinces. The NICU is a level 3 nursing unit, which has 40 funded beds, but has the capacity to provide 58 beds if required. There are approximately 1000 admissions per year. Babies are admitted to the NICU when they are born at 35 weeks gestation or less, weigh less than 2500 grams at birth, or required any medication or resuscitation in the delivery room. Besides prematurity and extreme low birth weight, common conditions cared for in a NICU include perinatal asphyxia, chromosomal anomalies, major birth defects, jaundice and respiratory distress syndrome due to

immaturity of the lungs. The length of time an infant is required to stay in the NICU is dependent upon the severity of the infant's condition. The duration can vary from as little as hours to several months. The NICU is directed by Neonatologists and staffed by a wide array of caregivers including Registered Nurses, Neonatal Nurse Practitioners, Clinical Nurse Specialists, discharge planner, Clinical Educators, Resident Physicians, Respiratory Therapists as well as many allied health professionals. The largest cohort of health care professionals is nurses with a population of 170 on staff. The nurses do the majority of routine painful procedures on neonates. The NICU environment is dedicated to research and values evidence-based practice. Family-centered care is a standard of care in the IWK. It recognizes and respects the patient and family as partners in the health care process, and their cultural and personal values.

Sample Selection

Eight Registered Nurses who work in the NICU at the IWK Health Centre were recruited using purposive sampling. Based on recommendations from Field & Morse (1985) every attempt was made to include nurses who openly support the practice of KMC as well as those who do not. In this study, purposive sampling was used and this meant that the PI aimed to have six (of the eight) participants who have had previous experiences facilitating mom, dad or designate to provide KMC to a baby in the NICU. Purposive sampling was used because according to Creswell (2007), individuals who understand the research problem and central phenomenon of study should be purposefully selected.

ID can be conducted on samples of almost any size, although the vast majority of studies within this approach are likely to be relatively small (Thorne, 2009) and

samples have ranged from five to thirty participants. The sample included 8 nurses and this was based on other health research using this methodology (Hunt, 2008; Thorne, 2008). Although not all qualitative researchers agree that it is possible to saturate human experience, most concur there is a point at which no new insights are illuminated with respect to the phenomenon of interest (Field & Morse, 1985). Interpretive descriptive methodology does not advocate for sample saturation. In health research, the idea that no new variation could emerge seems the opposite to foundations of practice knowledge. Interpretive description suggests that smaller studies are justified in having set arbitrary sample limits, as long as they show recognition that there would always be more to study (Thorne, 1997). A sample of eight nurses is acceptable to conduct a qualitative analysis (Creswell, 2007) using this methodology.

Inclusion Criteria

For the purpose of the study the following inclusion criteria were utilized.

Registered Nurse participant inclusion criteria included the following:

1. Registered Nurses practicing in the NICU at the IWK Health Centre who worked in the NICU for at least two years and completed level 2 (intensive care) orientation. This ensures that participants have experience caring for infants and mothers who would have exposure to procedures that cause pain.
2. Registered Nurses must work at least 0.6 of a full time position within the NICU.

Study Procedure

This study was conducted in the following format:

1. Obtained Ethics Approval (IWK Health Centre and Dalhousie University).

2. Consulted managers to gain support for the study and have it introduced at NICU staff meetings (Appendix A).

3. Recruited participants (Appendix B) and obtain informed consent (Appendix C).

4. Data collection

    a) Organize, conduct and audiotape individual interviews using the interview guide

    (Appendix D) and the demographic sheet (Appendix E).

    b) Data analysis

    c) Information from participant interviews shared in focus groups

    (Appendix F).

    d) Field notes

5. Enhancing credibility of the study

1. Ethical Approval and Consideration

Institutional ethics board approval was obtained from the IWK Health Centre's Research Ethics Board and Dalhousie University. At the time of the interview, informed consent and permission to record the interview was obtained from the study participants. The PI explained that participation in the study was voluntary and that the confidentiality of the nurse with respect to individual interviews would be maintained and that they could withdraw their participation at any time, and their employment would not be affected.

All the participants were invited to participate in one focus group. Although confidentiality was requested and encouraged from all members of the focus group, it

could not be guaranteed amongst the focus group participants, who are also coworkers. This was made clear during the introduction of the focus group and in the consent documents as a risk.

Assigning numbers to each individual's interview assured confidentiality of participants. A separate document was created linking the names with the numbers. This document was stored in a separate locked file in Dr. Latimer's office in the Center for Pediatric Pain Research at the IWK Health Centre. This information will be kept for five years, as per the IWK guidelines adhering to the Tri-Council policy agreement. After that time all data will be destroyed. Before the interviews were transcribed, the transcriptionist was asked to sign a letter of confidentiality (Appendix G). Once audiotapes had been transcribed they were destroyed by the PI. The PI wrote field notes after each interview. The field notes were treated in the same manner as the other collected data. The notes were uploaded to the PI's personal laptop. Participant names were not used and no identifying data was stored on the laptop.

No participants experienced significant distress or requested to be withdrawn from the study. All eight participants requested to receive a copy of their transcript by checking a box on the consent form.

2. *Consulted Managers to Obtain Support*

After ethical approval had been granted, the NICU manager was consulted to seek support to recruit IWK NICU nurses. The manager was provided with a detailed description of the study including the purpose, research question and ideal participants for the study. Some participants were interviewed during work time, which required manager approval, while others were interviewed outside of work time.

3. *Recruited Participants and Obtained Informed Consent*

Potential participants were recruited in three ways: first, in a letter from the manager and second, by introducing the study at a NICU staff meeting and finally, invitations were posted on an electronic bulletin board. The NICU manager introduced the Principal Investigator (PI) and the study details in a letter to all staff in the NICU (Appendix A). The letter of introduction was posted to the NICU nursing staff via the electronic mailing system to introduce the study. Following the introduction of the study, participants were provided with a detailed description of the research at a staff meeting. The PI attended a staff meeting to explain the purpose of the study and to answer any questions.

Third, NICU nurse participants were recruited by placing letters of invitation (Appendix B) to participate in the study via electronic bulletin board for NICU, and in the 170 NICU nurse's mailboxes in the staff lounge. Attached to the letters of invite were slips that could be detached indicating in participating in the study and asking if they thought KMC was useful as a pain intervention. These slips, once filled out, were to be placed in a sealed box labeled "Exploring Nurses' Perceptions on the use of Kangaroo Mother Care to Reduce Pain during Procedures." This box was kept in the nursing lounge and checked frequently for slips indicating an interest to participate in the study. At the end of three weeks there were 8 slips from interested participants in the box. The PI drew out the eight slips. Of the eight interested participants, 6 felt positively about using KMC for pain and 2 participants did not. If all the participants had indicated that they felt positively about KMC or all felt negatively, the PI would wait for more interested participants in order to have a diverse sample representing both perspectives. Only the PI had access to the sealed box. Only nurses who indicated interest were

contacted. Additional names would have been drawn if any of the first eight nurses chose not to participate. When contacted the study purpose and their role in participating was explained prior to consent.

Consent

Prior to undertaking data collection, a written consent form (Appendix C) was reviewed with potential participants who had expressed interest in participating in the study. A Registered Nurse with research recruitment experience was employed to obtain consent from participants. The consent outlined: the purpose and intent of the study; considerations used to protect confidentiality; and the option to withdraw without penalty at any time. A copy of the consent was provided to each participant. The consent form also outlined the participant's participation throughout the process (i.e. one individual interview and one focus group with all participants). Staff were free to disclose their study involvement however, by virtue of the focus groups their colleagues knew who participated in the focus groups. Participants received a small honorarium of $10 to refund parking if they drove in from home for the interview.

4. *Data Collection*

There were three forms of data collection in this study: i) the information shared by the participants in the one-to-one interviews, ii) focus groups and iii) field notes.

i) Interviews

Each participant was invited to share their experiences in a one to one interview format to gain insight into their experiences of using KMC. This research study utilized the technique of minimally semi-structured open-ended individual interviews. Utilizing

semi-structured interviews as a primary data collection method provided an opportunity to listen to and obtain a level of understanding of NICU nurses experience of collecting bloodwork while babies were in KMC with their mothers. In order to obtain this degree of information the researcher, using an interview format, listened to both the words of the participant and how she told the story which is a recommended strategy by Benner (1994).

a) Interview Format

Individual audio-taped semi-structured interviews were conducted. To ensure that the flow of the interview was not interrupted and that all relevant demographic data were collected, a short demographic profile (Appendix E) was included at the end of each interview session. Interviews were conducted by the principal investigator (PI) and only the PI and the participant were present. Each participant was interviewed once using the same interview guide (Appendix D) and occurred in a private room and arranged at the convenience of the participants. During the initial phase of the interviews, in an effort to gain trust and build a relationship, participants were asked to generally share their various experiences of providing KMC for painful procedures in the NICU. The interviews ranged from 35 to 65 minutes and occurred over a two month period. Interviews were transcribed verbatim to ensure accuracy of data.

Interview guide development

b) Interview Guide Format

An interview guide (Appendix D) was developed to pose a series of broad questions based on the nature of the inquiry, the evidence, context and facilitators for KMC known to the PI. The interview guide is an integral tool in the process of collecting data in

qualitative research. Although the researcher is the instrument in the ID research process, Creswell (2007) suggests the guide be used to help the researcher to engage participants in conversation about the topic, i.e. KMC, in such a way that participants freely share their perspectives. Any prepared questions were open-ended and broad so that they did not unduly influence the participants' answers (Baker, Wuest & Stern, 1992). Probing and reflection was used when necessary to facilitate further discussion.

c) Interview Guide Content

The interview guide used in this research study provided the invaluable link between the research topic (understanding the use of KMC by NICU nurses as a nonpharmacologic pain analgesia), research questions (what are the facilitators/barriers in implementing KMC), past relevant KMC literature and the sought after data that can fill this identified gap. The interview guide was developed based on the principles of constructivism and the PI's experience and knowledge under the guidance of the thesis committee members.

The interview guide questions were open-ended about the participant's role in planning and implementation, perceived barriers and facilitators and recommendations for future interventions. The interview consisted of two questions and three probes. The goal was to create interview questions that helped the nurse participants explore their own experiences and responses.

d) Interview Process

The interview process commenced with a discussion of the intent and purpose of the study and the background of the researcher. According to Field et al. (1985) conversations should begin at a fairly superficial level and as the relationship develops,

they will increase in depth. The constant sharing of information between participants and researcher allows the research findings to be participative, reflexive, interactive, empowering and transforming (Campbell & Bunting, 1991).

ii) Focus Groups

Following the individual interviews all 8 participants were invited to participate in a focus group (Appendix F) facilitated by the PI. Focus groups are defined as a qualitative research method in which a moderator interviews a small group of participants, typically six to ten, and uses the group process to stimulate discussion and obtain information on the beliefs, attitudes, or motivations of participants on a specific topic (Krueger, 1994; Morgan, 1997). In this case, six of the original eight interviewed nurses participated. The purpose of the focus group in this study was to provide the participants an opportunity to hear and validate the patterned experiences of other NICU nurses using KMC and to provide NICU nurses with a forum to identify and discuss possible strategies for using KMC in the future.

All participants were contacted individually by phone with a list of potential dates. The date that most people were available was chosen for the focus group. A conference room was reserved within the NICU at the IWK Health Centre to conduct the focus group. Coffee and lunch was provided to the participants and all the participants were seated at one long rectangular table. The focus group began with a verbal presentation outlining the findings from the data collected through the individual interviews. The commonalities, variations and identified patterns were shared with the group. Each pattern was explained in depth. The participants were asked how the patterns resonated with each participant and compare them to the definitions the PI had

developed. The nurses were given different anonymous quotes from the individual interviews on different coloured paper and asked to group them according to the three identified patterns. This was done to determine if the patterns the PI identified were given the same meaning as the nurse participants. Participants were encouraged to look at patterns and experiences in an attempt to identify what factors (i.e. facilitators/barriers) contributed to providing KMC in the NICU for procedural pain. The focus group lasted 45 minutes in length and was audio-taped for transcription.

iii) Field Notes

In addition to interviews, the PI kept field notes in the form of post-interview and post focus group comment sheets. Field notes using a private laptop enabled the PI to examine her own thoughts, understanding, and knowledge, and how they impacted the study. Field notes can include information such as time of day, description of the setting and the participant, the emotional tone, any difficulties encountered, and the feelings of the researcher following the interview (Lofland & Lofland, 1995).

5. Data Analysis Plan

The data analysis was planned in three steps, first the demographic data, second the interview data and focus group data and thirdly, the field notes which were considered in conjunction with the interview and focus group data. The audio-taped data collected in the interview, focus groups and field notes were analyzed in the same manner.

First Step: Participant Demographic Data

In step one the demographic data were reported based on the age of the participants, experience, gender, education level and the number of years they have been

employed in the NICU. These are important factors to consider when analyzing data. For instance, younger nurses or newer nurses who are more recently educated may have been exposed to information about KMC, while older, more experienced nurses may not have had the same opportunity to learn about KMC in practice. The demographic data will be presented in the findings section.

Second Step: Interview and Focus Group Data Analysis Plan

Data Transcription

Interviews with each participant were transcribed verbatim from the recordings into a computer program (NVivo, version 08) for analysis preparation. The interviews were typed single-spaced with a blank line between each speaker (Creswell, 2007). A large margin on both sides of the pages permitted a space for the PI's comments and analysis.

Data Analysis and Pattern Identification

Data analysis of the interview and focus group data began with the recognition that complex coding systems should not be used in ID. Rather, the intention was to get an overall picture of "What is happening here?" before any analysis begins (Thorne et al, 1997). Interviews in this study were digitally recorded and transferred as an audio recording through a USB port to a computer where they were protected under password. This ensured that the interviews could be assessed in their original form. Each recording of the interviews were listened to repeatedly and considered with the field notes. The interview transcripts were read in their entirety by the PI as soon as possible after the interview had been transcribed. The initial phases of data analysis was a time of allowing the PI to react to the initial pieces of data that seemed to take on a life of their own and "attract" attention. The PI self reflected and immersed herself in each interview. As each

interview was completed, the resulting transcript was read with the transcripts of the preceding interviews, in order to appreciate the commonalities among them using the constant comparative method (Lincoln & Guba, 1985; Thorne et al., 2004). The PI used different coloured highlighters to identify patterns in the margins of the transcripts so that commonalities were easily visible from the transcript. These commonalities were kept in mind as future interviews were conducted. As this process was repeated following each interview, consistent patterns appeared across the data. Once common patterns were identified, they appeared to become significant concepts that linked vital elements of the interview together. Pattern identification was kept broad initially and as the confirmation of certain patterns grew the number retained was reduced, the linkages between patterns were made. The PI used broad-based codes and meaningless labels initially entitled 'Category A' and 'Category B' because it explicitly defers inscribing meaning onto the data prematurely. Data that seemed to have similarities were grouped into category A and data that did not were grouped into category B. The data were organized into these various groupings, and the work of analysis involved making sense of what relationships the various groupings had to one another. After the first four interview transcripts were analyzed, the PI met with her thesis supervisor and qualitative research expert on her committee to review the PI's analysis process and discuss potential identified patterns.

The four remaining transcripts were then analyzed using the same process. After all the interviews had been conducted and transcribed, the interviews were uploaded into a qualitative data analysis computer program (NVivo, version 08) designed for qualitative researchers working with very rich text-based information, where deep levels of analysis are required. After common patterns were identified within the eight transcripts by hand,

the patterns were reviewed and discussed by four NICU colleagues not involved in the study. The PI met with each of the four colleagues privately and discussed the patterns and anonymous excerpts were shared. No identifiers to the actual identity of the participants were shared. The PI also had two other graduate students not working in the NICU review the identified patterns and analysis process. During the analysis process the PI met regularly with her thesis supervisor to discuss how the patterns were evolving and changing and reflected on her own clinical experience and that reported in the literature. All of the feedback from nursing colleagues and other graduate students was taken and used to further examine the patterns for richer descriptions. In addition, the PI flagged especially meaningful quotes early in the data analysis process, creating a "quotable quotes" file according to the ID recommendations. The total length of time spent in the data analysis phase was 6 months because it began with the first interview and ended with the focus group analysis.

Third Step: Field Notes Analysis

After each interview, the field notes were recorded and were considered simultaneously while interpreting the recorded interview. No areas of controversy were found between the PI's observations and the interpretation of the data.

Trustworthiness of the Study

Lincoln and Guba (1985) suggest that the trustworthiness of qualitative research be evaluated according to credibility, confirmability, transferability and dependability. Trustworthiness refers to the believability of data (Creswell, 2007). As with all qualitative methodologies, issues of trustworthiness are an important consideration in an ID study (Thorne, 2008).

a) Credibility

Credibility is demonstrated when research findings and interpretations are credible to the participants (Lincoln & Guba, 1985; Creswell, 2007). Credibility of the findings in this study is advanced through transparency in the description of the research process. The researcher affects and is affected by the process of coming to understand another's experience. Researcher bias can threaten the credibility of a study; therefore the PI's beliefs and assumptions were explained at the outset of the study and re-examined throughout the analysis process. This was done using available literature, experiences, self-reflection and field notes. This added to the credibility of the findings. Triangulation is a validation strategy recommended by Creswell (2007), that encourages the use of different sources, methods, and theories that can be used to provide evidence to shed light on a theme or perspective. Lincoln and Guba (1983) recommended that once a proposition has been confirmed by two or more data sources the uncertainty of its interpretation is greatly reduced. In this study the two data sources included: interviews and focus groups to get an in-depth understanding of the experience of KMC. The aim of the focus group was to increase the trustworthiness of the data analysis by confirming the research findings. Feedback from the participants was used to confirm identified patterns.

b) Confirmability

Confirmability is the extent to which the data and interpretations are grounded in events rather than the researcher's personal beliefs. To establish confirmability Lincoln et al. (1985) recommend that the data, findings, interpretations and recommendations be examined for internal coherency to ensure the final product be supported by the data. To achieve this, the findings of this study were supported by quotes from participants, a full

explanation of the process of analysis and the identification of the patterns that provided an interpretive description of the KMC experience of the participants.

Reflexivity must be emphasized during the research process. Reflection, as a part of reflexivity, is an active process that results in learning with the express purpose of changing behaviors, perspectives and practices, for it is more than merely replaying or thinking (Koch & Harrington, 1998; Cooney, 1999). Reflection on preconceived notions about providing KMC in the NICU was crucial so that the research would recognize and embrace bias.

c) Transferability

Transferability is used to judge the extent to which the findings can be applied to other contexts (Thorne, 2008; Morse & Field, 1995). According to Lincoln & Guba (1985) collecting thick, rich detailed descriptions of the research process, allows readers of this study to make decisions regarding transferability and to judge the applicability of the identified patterns in this study to other contexts. The presentation of the patterns that explain nurses' experiences with KMC accompanied by quotes will provide the information necessary for others reading the work to determine applicability in their practice setting. of the study. The PI attempted to diversify the sample to increase transferability by recruiting study participants regardless of their experience using KMC in practice or their belief in KMC being effective as nonpharmacological pain analgesia for neonates.

d) Dependability

Dependability refers to consistency and is typically demonstrated through replication (Creswell, 2007). In order to ensure dependability within this study, similar questions

were asked in multiple ways, allowing the PI to assess the consistency of participant's responses. No inconsistencies were revealed. The PI also returned to the original interview transcripts and carefully re-read each one. In keeping with ID research, various verification strategies (concurrent data collection and analysis, making field notes, the researcher being attentive to potential biases and constant comparative analysis) were utilized in this study to increase dependability. The study findings were also reviewed with experts from the NICU area and other neonatal nurses working there. Using these verification strategies has enabled the findings from this study to be trustworthy and credible.

Risk-Benefit Analysis

Risk-benefit analysis is the comparison of the risk of a situation to its related benefits. Obtaining ethical approval and adhering to the research methodology assured the findings and minimized the risk of harm associated with participating in this study. The potential benefits were seen to clearly outweigh the risk.

Chapter Four

Findings

In this chapter the participant demographic data and findings will be described in depth. The general KMC experiences from the interviews and the focus group data will be presented in pattern format using study participant's quotes.

Participant Demographic Data

All eight potential participants contacted by the researcher were willing to participate, and in fact were eager to talk about their experiences. Of these eight female participants all were Caucasian and ranged in age from 29-59. Three of the registered nurse participants were Diploma prepared, four held a Bachelor of Science in nursing, and one participant had a Masters degree in nursing. The sample had a broad range of experience, from three years to over thirty-five years of experience within the neonatology care area. Two of the eight participants have worked in other NICUs across Canada and in the USA. Four of the participants have previous experience working in different nursing care areas. All participants indicated they received some education on KMC by attending NICU-specific education days, classroom orientation, and informally from other nurses. Two nurses described reading research articles on KMC in their own off-work time. All participants used KMC at least once in their nursing practice.

Pattern Findings

All of the participants were able to clearly articulate their own attitudes and beliefs on using KMC for pain in the NICU and four main patterns were identified as present across all participants and reflected the nurses' experience of using KMC for procedural pain. The four patterns identified were:

1) “Seeing is Believing”

2) Human Heartedness: “It’s the Least I can do”

3) Playing it Safe

a) Calculating Risk: Assessing the Baby’s Physiological Stability and the Risk for Further Imbalance

b) Assessing the Mom’s Physical Presence and Ability for Emotional and Physical Involvement

c) Assessing the Necessary Work Supports: Context Feasibility

i) Human Support

ii) Space

iii) Policy

4) Creating Possibility Within Constraints

The first two patterns outline the nurses’ beliefs and assumptions regarding how and when they would use KMC.

1) “Seeing is believing” pertains to participants’ professional attitudes and beliefs about the direct implications of KMC in the NICU. Several participant quotes are included in Table 1 (Appendix H) to assist in the description of this pattern. The participants all stated they had received some education around KMC and its benefits, however they said they only actually believed in KMC and became motivated to use it after bearing witness to its effects. Study nurses comments indicated that witnessing the use of KMC to reduce pain motivated more nurses to actually change their attitudes about it and believe in its’ benefits.

Some of the participants discussed the NICU nursing culture as being very research-orientated and evidence-based but thought more realistically about using the evidence when they actually saw it in practice. They described their nursing interventions for painful procedures as being based on clinical research and evidence.

> "I'll believe it when I see it with my own eyes…that is the culture of nurses or even healthcare professionals today. We have hundreds of research articles saying one thing, then arguing another thing… but I think we need to see it in everyday practice to really know or identify what works. We need to see it work in order to believe it."

The participants believed that witnessing KMC in reducing pain causes more people to actually use it in practice and believe in its' benefits. Most of the eight participants only actually believed in the benefits of KMC for pain after seeing and bearing witness to its effects firsthand in their nursing practice, despite the available evidence. Witnessing KMC reaffirmed and reinforced the education they had received:

> "At first, I was like…yeah right…KMC decreases pain…no way, fentanyl decreases pain…but when I saw a baby who another nurse took out for KMC with a mother and drew a CBC from a heel poke…the baby barely flinched…I was in awe. I couldn't believe it…I wouldn't have believed it until I saw it with my own eyes."

Another nurse described how she began to believe in KMC and its effects after receiving education and reading through nursing journals and other articles identifying its benefit to the neonatal population:

> "After everything I read and had been taught…I was amazed on how it worked. I don't use it often in my practice for procedural pain…but I know it works…. the evidence is there."

Some nurses said they had knowledge or attitudes that KMC worked for pain but didn't consistently use it in practice. All the participants commented that using KMC, in particular using it with a critically ill neonate, was important and beneficial for both the mother and baby. The participants identified that critically ill neonates should be highest priority to receive KMC to manage pain as they are the ones who receive the most frequent painful procedures and seem to have less pain management. Most nurses interviewed focused on physiological parameters to signify benefit to baby.

> "I have some doubt about what I heard about KMC and pain…..until I saw the evidence with my own eyes, then I believed it's true. Seeing is believing and believing is seeing."

The nurses stated that they were knowledgeable about the use of KMC and its benefits. Although all the participants commented they used KMC at least once, and believe strongly in its benefits, less than half of the participants have used KMC as an option for procedural pain.

In summary, the pattern, "*Seeing is believing*" consists of nurses comments related to attitudes, beliefs and knowledge as a result of seeing KMC being used in practice. Nurses believe that KMC works for pain control. Nurses described needing to see it in practice. This pattern helps us to better understand how we can support nurses to use KMC for procedures known to cause pain in neonates.

2) Human Heartedness: "It's the Least I can do"

Some nurses' comments implied that when they did use it they felt KMC was a professionally satisfying experience for them by reuniting the mother and baby together. They felt empowered as a nurse to unite mother and baby together, that they were doing a good thing. Several participant quotes are included in Table 1 (Appendix H) to assist in the description of this pattern. One participant describes this,

> "I feel tingly when a mother holds their baby for the first time or in KMC. I feel like I have made that happen. There is so much crap with being a nurse…but this makes me so proud."

All eight of the study participants believed that having a baby held in KMC was the right thing to do, the humane and ethical thing to do for both the baby and the mother. Another participant described it this way;

> "I would have to say that my attitude is probably what has changed the most towards it... and it just feels like that's just where they belong, it's the most natural place for them to be...it is the least I can do for a mom and baby…"

All the participants were also able to describe the emotional and physiological benefits of KMC. One nurse explained,

> "I wish we'd, I wish I'd realized the significance of it sooner…20 years ago. I don't know if we were ready for it, but I know the mothers and babies were, I'm sure of that…"

The nurses' comments indicated they believed KMC contact was like an extension of the intrauterine experience and thought it was incredibly important for a mother to hold their baby. Five of the study participants commented that KMC contact might be a way to re-establish the relationship that began in the intrauterine period

between a mother and her infant. They acknowledge that a mother needs to hold and have contact with her infant and it is the nurse's responsibility to ensure it happens.

> "There's nothing more unnatural from our environment when we rip them (babies) from their moms and put them in the incubators...it is professionally satisfying for me…. to say the least…to unite a mom and baby back together. The baby was just inside the mother…they were one. My goodness…it's the least we can do as nurses, as healthcare professionals, as nurses really."

Five of the eight participants discussed the advances in technology and the impact that technology has had on babies, families and health care practitioners in the NICU. They discussed how they viewed nursing as focusing on tasks and skills in the ICU. Nurses described that the equipment and medications are the priority of nursing care and commented that often the developmental aspect of nursing care, such as uniting mother and baby or using more natural alternative pain methods such as KMC can be forgotten. Another aspect of the technology related to their comments was how technology can impede the use of KMC in practice, because simpler care approaches are not viewed as a priority. One nurse explains;

> "Getting bloodwork done by 0800, getting my checks finished, charting and giving meds all by a certain time. That has to be my priority."

Another participant commented;

> "It is really sad…when I think about all the skills and tasks that I have to do in the run of a shift…I have to set priorities but having a mother and baby together is not one of them or using it for pain…its almost a nicety…or a good thing to do if you can. My day revolves around checking equipment mixing up

medications…sustaining and saving lives. But reducing pain decreases morbidity in neonates…. I have to tell you…I am really happy that I am doing this interview; I can see that I am the only one that can change my practice. One person can make a difference."

Study participants commented that babies and their mothers truly are at the mercy of health care providers within the NICU who nurses believed are positioned to either facilitate or inhibit opportunities for close contact. Their comments were realizations of the magnitude of their own powerful influence over the mother-baby dyad.

"It's up to me…not the nurse that came on before me or after me…it's up to me. I can empower mothers or inhibit them. I can help to reduce pain using KMC, I have the power to influence three lives: the baby, the mother and my own. We can't take this lightly."

Nurses' descriptions indicated that in order for them to be motivated to involve the parent in this type of pain reducing strategy they need to be empathetic to the notion that the infant experiences pain and believe that KMC can reduce the pain of the procedure.

In summary, the pattern *Human Heartedness: "It's the Least I can do*," identified here consists of nurses comments related to attitudes, beliefs, empathy level and knowledge as a result of seeing KMC being used. Nurses in the study also indicated that they believed that having a baby held in KMC was the right thing to do, the humane and ethical thing to do for both the mother and baby. Nurses said they believed that using KMC for pain was the "least they could do" for mother and baby. Given these patterns implied that the nurses believed KMC was an important intervention for pain care, the

next pattern “Playing it Safe” seemed to follow logically as the decision making process to actually using it in practice.

3) Playing it Safe

All the nurses in this study commented on feeling hesitant to use KMC routinely for procedural pain in the NICU. They questioned, “How can we do it safely?” Nurses are confronted with many obstacles when assessing the possibility of utilizing KMC for pain. The nurses questioned the adequacy of practice standards of KMC care within the NICU. All eight of the nurses said they were confronted with many obstacles when assessing the possibility of utilizing KMC for pain. This pattern includes comments related to nurses’ critical-decision making about the delivery process of KMC, along with assessing the possibility. In addition to the data provided here to support this pattern additional data can be found in Table 1 (Appendix H). Within this pattern there appeared to be three sub-patterns; a) *Calculating risk: assessing the baby’s physiological stability and the risk for further imbalance,* b) *Assessing the mom’s physical presence and ability for and emotional and physical involvement* and c) *Assessing the necessary work supports: context feasibility.*

a) *Calculating Risk: Assessing the Baby’s Physiological Stability and the Risk for Further Imbalance*

It was important to discuss why and when KMC was utilized. Before a nurse would make the decision to use KMC for pain, they described needing to assess the health risk of the baby. The number one reason identified by all eight of the participants for not taking a baby out for KMC was the health stability and risk for further imbalance for the baby.

"The infant's safety is my number one priority over all else. I am the advocate for that baby."

Most painful procedures are completed by neonatal nurses, and nurses' comments indicated they recognized this pivotal position to use this type of intervention. Nurses ultimately decided whether KMC was used for a painful procedure or not.

"I pretty much do all the painful procedures to the baby…"

All nurses expressed concerns about KMC holding, especially when it involved very small infants (birth weight less than 1000 grams) and very premature infants (less than 28 weeks gestation). The nurses' comments indicated some self reflection on the topic;

"I would never take a baby that is under 800 grams or under 27 weeks out in KMC, let alone use it while collecting bloodwork."

Specifically, nurses appeared to be apprehensive about the possibility of apneic spells, extubations or dislodgement of lines.

"I am so scared when a baby comes out that they will lose their lines or they will extubate…that would be worse for the baby and worse for the mother."

Half of the participants stated that they would not use KMC to decrease pain in a baby that was critically ill or was extremely premature. However seven of the eight participants agreed that any infant receiving high frequency oscillation or inotropes would not be candidates for implementing KMC at all. While the remaining participant said they would not rule it out but that it would depend on the individual baby.

Some of the participants described the health status of the baby as being the deterrent, while other nurses described a certain age or experience and comfort level.

"Babies that come out for KMC must be at least 30 weeks gestation and about 2-3 days old before I would even consider it as an option."

Others mirrored this practice:

"I am totally comfortable taking out any baby in KMC. I have a ton of experience, over 20 years, however I am not comfortable in using KMC while collecting bloodwork….but why not? They are already out…";"I don't think a baby with umbilical lines should be belly to belly with a mother…I mean how can I assess the lines or the site. What if it came out and we didn't notice… it is a really safety issue. What if I am collecting bloodwork but I can't see the baby or how the baby is tolerating the procedure…I need to assess while I am doing a task"; "The baby needs to be physiologically stable, with no lines…", "And babies that are unstable, I may take out in KMC but there is no way I would want to do bloodwork while a mother is holding the baby."

Some participants who used KMC admitted that it was done generally upon the request of the parent. All participants identified that the most physiologically stressful part of KMC for the infant is the transfer to the parent's chest.

"It's not KMC itself…it's taking the baby out of an incubator that causes all the issues. You need help, the baby gets stressed out and sometimes the baby can deteriorate. So if you already have a baby that is doing poorly, how can I take the baby out and stress it even more? It may be enough to knock it over the edge…"

Infant physiological safety was identified as NICU nurses' first and main priority. Participants described it as the nurse's decision whether or not a baby will be taken out of an incubator to be held in KMC by a parent. Different situations were described where

they would or wouldn't use KMC. Some of the nurses identified that other nurses may take a certain baby out for KMC, while others may not. Inconsistencies within the NICU nursing practice and KMC were recognized. The next sub pattern that emerged pertained to the nurses' evaluation of the baby's mother.

b) *Assessing the Mom's Physical Presence and Ability for and Emotional and Physical Involvement*

Based on the nurses' comments before they decided to use KMC, they first assessed the health risk for the baby. Second to that, the nurses described assessing mother factors such as being physically and emotionally present in order to utilize KMC for procedural pain. Participants identified that bloodwork times and parental availability are not compatible. They explained that many mothers may have health complications, which do not allow them to be at the bedside, or due to their own medications, and needs they cannot be in the unit when routine bloodwork is assigned.

> "We do the majority of our bloodwork at routine times. This is usually first thing in the morning, like 0700 hours. Mothers are usually not visiting at the bedside at that time. It's hard to use KMC for pain when mothers are not available."

Parental presence played a key role in the decision making process of using KMC for pain.

> "It may also take multiple pokes when in KMC, when it would only take maybe one poke in an incubator."

Participants said that parental presence effects their decision for various reasons, both as the basic need to have a parent for KMC but also some said they were intimidated by performing in front of parents.

"I am excellent at drawing bloodwork from a baby or inserting IVs, however as soon as a parent is watching me over my shoulder or if I had to do it while they watched me like a hawk when the baby was on the mother, I would for sure tense up and I may need to poke several times when if the baby was in an incubator, I would have only had to poke once."

In addition to physical presence nurses said parent's emotional availability was crucial to the nurses' decision making process. Nurses described emotional availability as the level of parental responsiveness and referred to how the parent generally behaves and feels towards the baby.

"Some of our mothers have had stressful pregnancies and traumatic births-they have sick babies-they need to be emotionally available…we can't drain all that they have left…"

Seven of the nurses consistently made statements related to maternal stress and reluctance as a barrier to implementing KMC during a painful procedure. One nurse described;

"I don't think parents really want to witness their babies in pain. Why should we guilt them into that and put them in such a terrible position."

This pattern included the nurses' comments that were grouped as a mother related pattern describing how decision-making related to the use of KMC. Nurses described mothers' emotional and physical presence as factors that were vital in assessing whether KMC would be utilized. In short, participants identified that blood work times and parental availability are not always 100% compatible. Some nurses indicated their own apprehension at drawing blood from a baby in the presence of the mother. Some were intimidated. Regarding the mother's emotional availability, nurses highlighted maternal

stress and reluctance as a barrier to implementing KMC during a painful procedure-some mothers cannot cope with watching blood work or painful procedures be done on their babies, while others may be too stressed or emotionally drained themselves to actively participate. The next subpattern discussed is the context in which KMC is used by nurses.

c) *Assessing the Necessary Work Supports: Context Feasibility*

The third sub-pattern in *Playing it Safe* acknowledged by the study nurses, was identifying the unit-based or contextual factors that influenced the nurses' decision to use KMC for procedural pain. Nurses described the physical circumstances that supported or impeded their decision to remove a baby from an incubator for KMC. This subpattern is divided into 3 different sections, i) Human support, ii) Space and iii) Policy.

i) Human Support

Contextual factors existed that discouraged the study participants from using KMC for painful procedures and included increasing workloads and lack of time and adequate staffing. The Nurses all agreed that the increasing workload in the NICU affected the use of KMC. The focus of this pattern was on the amount of *time* it takes to use KMC and the increase in nurses' workloads as a result of using it or just in general. Nurses comments focused on the *time* needed to facilitate KMC, with one nurse describing the *time* required to explain KMC to parents and another emphasizing the *time* needed to prepare the environment. Assistance from another nurse was also required to transfer the infant from the incubator to the parent's chest and to monitor the infant's physiological status during the procedure.

Nurse four explained,

"When doing KMC....well it takes time. You have to wait for the parents, you have to find a KMC chair, draw the curtains, get pillows, explain to the mother and father what you are doing. Often times you need a second nurse or RT to assist you to take the baby out in KMC. It usually takes awhile to transfer the baby and get the baby settled on the mother....not to even mention getting bloodwork supplies, figuring out the ergonomics, collecting the bloodwork....in today's reality...we nurses just don't have the time to do this..."

After one study participant reflected on her practice and KMC, she explained the following which represents the overlapping content of several patterns,

"Many nurses even disagree on which babies should even come out for KMC. I think that for myself, it's just a matter of having a good stable baby, having the parent around, having someone to mentor me and having the time, having a good assignment and space to do it, having a unit policy to work from and having support from management. That's all! That sounds impossible doesn't it?"

Lack of support from other nurses, educators and management along with the lack of clear unit guidelines on using KMC for pain were also identified by the participants.

"There is no support from clinical leaders or management on supporting us to use KMC in practice; this is often reflected in our ridiculous workloads and poor staffing."

The nurses clearly articulated their feelings that there was little or no obvious support from colleagues, from the medical or allied health care team or even management to help them to implement KMC in their practice. Management level support was considered to be a prerequisite and would certainly be required to ensure adequate

patient-nurse ratios and staffing levels. Management commitment would also need to be confirmed and demonstrated through the introduction of clinical guidelines and unit policies, which were identified as being the key components for success and as having the greatest impact on practice changes within the unit.

ii) Space

Nurses described the physical circumstances that supported or impeded their decision to remove a baby from an incubator for KMC. Nurses reported that the physical space, the lighting and the technology in the NICU impeded the feasibility of KMC use.

> "I guess there are times when I feel like a baby could be out doing KMC, but then we don't take them out because perhaps the baby has, you know, a UAL (umbilical arterial line) or a UVL (umbilical venous line) and there is a lot of stigma that if a baby all of sudden, you know, if it gets dislodged than the baby is going to bleed out and so people are kind of opposed to that idea and then there are some people out there that say they can do it just not belly to belly, but then other nurses just say no because the risk is too high….I don't want to be the person that gets in trouble."

All eight of the study participants incorporated ergonomics as an inhibiting factor to using KMC for procedural pain. Again, the comments appeared to have safety considerations.

> "KMC works for pain…that being said, if someone has issues with their backs, being bent over, things like that, that would be an issue and things would have to be put in place...you can't expect a person to be bent over somebody and trying to

draw bloodwork, especially if they aren't comfortable, it also may take you longer. I could not get on the floor and draw bloodwork from a tiny foot."

The nurses in this study said that the mothers have inadequate privacy in the NICU. By not maintaining privacy for mothers, the nurses' comments indicated it made KMC highly difficult in many ways. One nurse described the intrusive glances from other healthcare professionals;

"Often times a mom may have a baby out in KMC…she is out in one of those KMC chairs which takes up the entire site anyway, and the pharmacist will be over at the chart, the RT will be in, the nurses will go in, the equipment will buzz off hourly…a ridiculous amount of people will be over there. The mother is never alone and never ensured privacy..."

Two of the study participants commented that although some of the nursing staff tried their best to not be intrusive, "it must be terribly awkward and give mothers an exposed feeling." Mothers may feel exposed as their bare chests are exposed in order for the baby to be held in KMC.

iii) Policy

The nurses in this study all acknowledged the need for KMC and pain-specific policies and protocols in clinical practice in the NICU.

Nurse two described,

"We need a policy…that would get everyone on board. Not all nurses support the practice of KMC…we need to get on the same page with everyone...management, administrators, researchers, nurses and physicians."

Nurse eight described,

"Policies that are specific to pain and KMC are needed to promote it…policies provide us with standards of care."

The third subpattern in *Playing it Safe* identified challenges with contextual factors and attitudes. In summary, inadequate space, lack of privacy, poor lighting and the impediments of the technological equipment itself presented difficulties in introducing KMC. Nursing time constraints and a perceived lack of support from other nurses, educators and management were also highlighted. The need for policies, procedures and clear unit guidelines for consistency in the use of KMC was considered essential to its introduction.

Before Nurses make the decision to place a baby in KMC with their mothers, they need to assess the risk for the baby. This pattern described the factors that affected the decision making process for nurses in the NICU. Infant safety was identified as nurse's first and main priority. Some of the nurses identified they may take a certain baby out, while others may not. They recognized inconsistencies within the NICU nursing practice.

In summary for this third major pattern of *Playing it Safe*, three sub patterns emerged: The first pattern, *a) Calculating Risk: Assessing the Baby's Physiological Stability and the Risk for Further Imbalance* described the safety factors that affected the decision making process for nurses in the NICU. Infant safety was identified as nurses' first and main priority. Secondly, *b) Assessing the Mom's Physical Presence and Ability for and Emotional and Physical Involvement*, the nurses reflected on the factors that involved the mother, such as emotional and physical availability. They also talked about their personal discomfort in doing KMC with mom present. Lastly the nurses assessed and described the current context of the NICU. The last pattern, *Assessing the Necessary*

Work Supports: Context Feasibility: consisted of contextual factors that the nurses identified were impeding the use of KMC for procedural pain care in the NICU. Nurses believed in the effectiveness of KMC but said they were confronted with many obstacles when assessing the possibility of utilizing KMC for pain; inadequate space and lighting; the physical impediments of the technology; nursing time constraints; a perceived lack of support from other nurses, educators and management; a lack of policies, procedures and clear unit guidelines for consistency in the use of KMC. The fourth and final pattern reflects the strategies and facilitators that the nurses identified to promote the use of KMC for procedural pain care in the NICU.

4) Creating Possibility within Constraints

Creating Possibility within Constraints represents what it would take for nurses to use KMC routinely within the NICU as an effective non-pharmacologic intervention and infant care technique for pain management. In essence, focusing on what the nurses themselves felt were the priorities and real "show stoppers" that would prevent the regular and routine use of KMC unless addressed from the outset. This pattern emerged from the discussions on how to support nurses' attitudes and beliefs and proceed to action within the NICU. Recommendations for taking action were identified by the study nurses and confirmed in the focus group. Several participant quotes are included in Table 1 (Appendix H) to further assist in the description of this pattern.

There was concern over the amount of time it takes to use KMC and the relative increase in nurses' workloads as a result of using it. The other significant nursing staffing related concern was the fact that assistance from a second nurse would be required to transfer the infant from the incubator to the parent's chest and to monitor the infant's

physiological status during the procedure. The nurses clearly articulated that they felt that there was little to no support from colleagues, from the medical or allied health care team or even management to help them to implement KMC in their practice for pain. The participants implied that support was required from a management level to have adequate patient-nurse ratios and staffing to have the time to provide KMC. If using KMC requires assistance from another professional then mentors and educators need to be available in order for this to be used in everyday practice.

> "There is very little support in our unit for using KMC for painful procedures. We would need support from the docs, from our leaders in order to do this. It wouldn't be easy."

All eight nurses made comments that can be translated into recommendations such as more education and on the job training.

> "I need education on how to even collect bloodwork while a mother is holding a baby….I need to learn more about it. The educators really need to provide us with some information."

Clinical guidelines and/or unit policies were identified by seven of the eight participants as having the greatest impact on practice changes in the unit. Nurses in this study acknowledged the importance of policies and protocols in clinical practice to support the use of KMC for procedural pain. More specifically the nurses commented that they needed guidelines indicating when KMC can be used for pain, what painful procedures it can be used with, other pain interventions that should be used and the population to use it with. Nurse three describes,

"A NICU policy is needed in order to tell us when KMC would be appropriate…is it with capillary bloodwork and IV starts or just heel pokes. We need to know how to actually collect bloodwork…what's the process?"

Seven of the eight nurse participants stated that they had never really considered using KMC as an option for pain every time they drew bloodwork or performed a minor invasive procedure. Their comments indicated it was pivotal for the neonatal nursing staff to even recognize and change their attitudes around KMC as an option for pain.

Nurse three described,

"Many nurses even disagree on which babies should even come out for KMC. I think that for myself, it's just a matter of having a good stable baby, having the parent around, having someone to mentor me and having the time, having a good assignment and space to do it, having a unit policy to work from and having support from management. That's all! That sounds impossible doesn't it?"

Creating Possibility within Constraints described strategies and guidelines for taking action in the NICU to better facilitate the use of KMC for procedural pain. Refer to Appendix I for Table 2: *Participants Recommendations for Facilitating the use of KMC for Procedural Pain.*

Comments related to strategies included necessary human resources and clinical guidelines, necessary physical space and practice supports for the NICU nurse as the major inhibitors for KMC and pain. The nurses described strategies that need to be implemented in order to facilitate and promote its use in the NICU.

In summary, the first pattern that emerged involved nurses' descriptions related to their attitudes, beliefs and empathetic response to using KMC for pain. They

acknowledged that seeing is believing and after seeing KMC work in practice, this increased their belief in KMC and its effects on pain. They also commented that it was a very minor strategy to implement in their practice which had huge benefits. In the second pattern *Human Heartedness*, they described the importance of uniting the mother and baby together and how they felt it was the humane and ethical thing for them to do and described the decision making process behind placing a baby in KMC. The third pattern, *Playing it Safe,* identified that KMC was not something that was used consistently in the NICU for pain for many reasons including the physiological status of the baby, the emotional and physical availability of the mother along with the current context of the NICU. Finally in the fourth pattern, *Creating Possibility within Constraints*, nurses described logical solutions and what they needed to translate/mobilize nurses' attitudes and beliefs related to KMC to action within the NICU.

Chapter Five

Discussion

In this study of eight neonatal nurses four main patterns related to KMC and pain emerged, they include 1) *"Seeing is Believing," 2) Human Heartedness: "It's the Least I can do," 3) Playing it Safe* and 4) *Creating Possibility within Constraints.* The majority of the neonatal nurses interviewed strongly support the idea of putting KMC into the NICU. In particular, they acknowledged the benefits of KMC in promoting parent-infant attachment, the physical well-being of the infant and parental confidence. However, only one of the participants used it consistently in practice. Participants identified a number of issues in relation to the overall idea of attitudes and beliefs of NICU nurses as well as increasing workload; privacy; parental presence and education. This chapter will compare and contrast the study findings with related literature. Some attempt will be made to discuss the findings as they relate to each pattern but due to the reality of care practices and setting, overlap among the patterns occur.

A growing number of research studies (Estabrooks et al., 2007; Estabrooks, Squires, Gustavsson & Wallin, 2011) identify barriers that interfere with the ability of nurses to utilize evidence in nursing practice. Research literature has focused on nurses' attitudes and beliefs about research to explain nurses' use of evidence for practice (Smirnoff et al., 2007). Rizzuto, Bostrum, Suter & Chenltz (1994) and Estabrooks et al. (2011) reported that nurses with positive attitudes and beliefs toward evidence-based practice (EBP) are more likely to utilize research and incorporate it into practice than nurses whose attitudes and beliefs toward EBP are negative.

Attitudes and Beliefs of NICU Nurses

A review of the literature indicated that there was little information available about the attitudes of neonatal nurses towards KMC. Only a few articles were located that described the response of nurses to KMC (Bell & McGrath, 1996; Gale et al., 1993), and the authors concluded that most NICU nurses responded positively and were keen to implement KMC in their practice. This was consistent with the findings from this study. While the nurses also believed KMC was an important intervention for pain care, it was noted that KMC was not used regularly or consistently in nursing practice within the NICU.

The finding that staff resistance was common is consistent with reports from other studies (Gale et al., 1993), and other research indicating some nurses expressed concerns about KMC holding, especially when it involved very small infants and those requiring mechanical ventilation (Bell & McGrath, 1996). Specifically, nurses were apprehensive about the possibility of apneic spells and dislodgement of lines (Victor and Persoon, 1994; Drosten-Brooks, 1993; Gale et al., 1993). Based on the results of this study, staff resistance may be too strong however staff apprehension and staff concern regarding infant safety more correctly represents the views documented in this study. Consistent with the research findings, nurses' concerns in this study had related to:

a) the physiological health stability and risk for further imbalance for the infant;

b) very small infants (birth weight less than 1000 grams) and very premature infants (less than 28 weeks gestation);

c) the possibility of apneic spells, extubations or dislodgement of lines;

d) any infant receiving high frequency oscillation or inotropes.

Evidence such as this would be helpful to consider in guideline development. Nurses must advocate for guidelines that specify the precautions needed to ensure the infant remains stable and to avoid inconsistent practices. Other factors that may discourage neonatal nurses from recommending KMC are insufficient knowledge, lack of clear practice guidelines (Gale et al., 1993) and parent anxiety (Affonso, Bosque, Wahlberg & Brady, 1993). Within this study, insufficient knowledge of KMC was not a factor influencing the participants. All were generally well informed and aware of the benefits of KMC on mother and infant. With this single exception, the additional factors the nurses in this study identified as facilitators and barriers to the use of KMC are consistent with the research but extend existing work and identify other meaningful factors not previously noted and while specific to the study site may well be transferable to other sites.

The nurses in this study appeared to be empathetic to the fact that infants in the NICU experienced pain and believed that KMC can reduce the pain from procedures. "Our babies endure so many painful procedures in a run if a shift….it's awful what we do to them. Their pain needs to be better managed." As the infant's primary care provider, neonatal nurses are in a position to either advocate or discourage the use of KMC in the NICU. Studies by Fenwick, Barclay & Schmied (1999) and Fenwick, Barclay & Schmeid (2001) on the context and nature of interactions between neonatal nurses and parents highlighted the need for neonatal nurses to develop quality interactions with parents. Their studies revealed that the attitudes, behaviors and practices of nurses greatly impacted on the woman's experience of mothering in the NICU. Empathy training is one

such strategy that has been implemented to foster and increase nurses' empathy regarding patient pain.

Empathy can be learned as a skill (Alligood, 2005) and recent research on empathy training suggested that a perspective approach where the nurse considers the value of the patient is necessary for one person to imagine the situation of another (Batson et al., 2007). Empathy is more than feeling sympathetic. Empathy training should take more of a cognitive approach to facilitate clinician empathy so they may perceive, describe and appraise the infant's pain situation rather than sympathize with the patient (Souba et al., 2002). Promoting KMC is one way neonatal nurses can enhance pain management in infants. Attitudes and beliefs of nurses in the NICU can play a fundamental role in pain management practice.

Playing it Safe

a) Baby Factors

Inconsistencies were found between nurses on which babies were considered good candidates for KMC and which were not. Nurses in this study also recognized that some infants may not be stable enough to tolerate handling during KMC, particularly infants weighing less than 1000 grams and requiring mechanical ventilation. It is because of these concerns that some authors (Bell & McGrath 1996; Gale et al., 1993) advocated guidelines that specify the precautions needed to ensure the infant remains stable and to avoid inconsistent practices.

Nurses in this study placed the highest value on their assessment of the infant's physiological stability to determine whether KMC was an option, yet the priority of physiological mom and baby assessment factors were inconsistent and varied among

participants. These findings are similar to the concerns discussed by Franck (2002), who found that perceived risks about infant safety were significant factors influencing staff decisions on KMC. It might be helpful to design nursing education opportunities that focus on the relationship of infant's physiologic stability assessments and the infants' ability to be held in KMC which may improve consistent and standard use of this intervention for painful procedures.

The one nurse in this study who consistently used KMC for procedural pain is an excellent exemplar for the model of those who would use KMC-knowing this practice environment-she would be described as an expert nurse who understands the benefits of KMC, is confident with her assessments of readiness, had an integrated support network of colleagues to assist in the implementation, and had the knowledge, education and practice skills to implement KMC.

b) Mother Factors

Other researchers identifed KMC as beneficial from a wellness perspective for parents of premature infants. A number of studies (Roberts, Paynter & McEwan, 2000; Neu, 1999; Smith, 1996) reported KMC holding provides mothers with a greater sense of well-being, personal fulfillment and confidence in taking care of their infant. However, as Neu (1999) noted, parents need support from nursing staff to allay their anxiety about handling the infant and to promote confidence in using KMC. The types of support found to be beneficial are information on KMC and the infant's response to stimulation, verbal encouragement and reassurance, and provision of a private and comfortable environment (Baker, 1993). It appears to be a cyclical issue because the attitudes of neonatal nurses are a major determinant of the degree to which KMC is a positive experience for parents.

Mothers depended on the nurses, nurses' use of KMC depended on the babies and the mothers and their own nurse colleagues and work environments. Nurses' decision making and action seemed central to the implementation of KMC.

Nurse participants' comments also indicated that basic human respect seems to be lacking in the hospital setting; mothers had inadequate privacy while in the NICU. Some mothers and healthcare staff were uncomfortable with the fact that mothers were exposed to strangers while learning the KMC position. KMC training in a collective setting (where healthcare staff works together as a team with the same purpose and goals) allows for easy interaction between healthcare providers, skilled KMC families and mothers and enhanced learning the technique. Provisions should be made to respect modesty and intimacy, for instance appropriate hospital gowns should be made available to all parents, private rooms if possible, or privacy screens can help. One possible solution would be to have one room dedicated for KMC and bloodwork for stable babies. Ideally single room patient care would be the gold standard however this is not currently feasible at the study site.

Nurses in this study identified that parents asked for KMC and received it positively as a strategy where they can be involved and this is consistent with other research (Johnston et al., 2007). The effects of KMC on parents have generally been positive, and have been reported by both fathers and mothers. The number of infants breastfeeding, length of breastfeeding, and amount of maternal breast milk produced has been shown to increase in mothers who practiced KMC (Anderson et al., 2001; Gloppestad, 2000).

More than half of the nurses in this study noted that parental presence is key to implementing KMC for procedural pain. The NICU has a routine bloodwork time of 0700 and most parents are not at the bedside. Nurses in this study offered ideas regarding how to change unit practice routines to support use of KMC. Nurses in this study wondered if routine bloodwork (if not urgent or STAT), could wait until the mother could be at the bedside. This would be an example of family centered care, which is the philosophy of the study site, to flex the hospital's routines to meet the needs of the family (Briguglio, 2007; Institute for Family Centered Care, 2008). A family-centered philosophy requires that rules and regulations that are imposed for the benefit of the organization or staff rather than patients or families need to be re-examined (Dokken & Ahmann, 2006).

Procedural communication with the mother along with basic assessments of willingness, capability and health (both physical and emotional) is crucial to implementation. The RN could have had a conversation with the mother the day before to let her know when to be in or to rearrange the bloodwork time if deemed appropriate by the medical team. If mothers knew, they may be able to come for the allotted time. By providing mom with the benefits of KMC and its' relation to pain, nurses are providing informed consent. Thereby enhancing their confidence and wellbeing while they learn to care for their newborn (Gloppestad, 2000). It is important to introduce more institutional flexibility around timings for routine or non-urgent bloodwork to coincide with the mother's availability, and this may have benefits beyond the baby's well-being.

Parental involvement in infant care while hospitalized in the NICU helps to decrease stress related to loss of the parenting role by contributing to feelings of

competency and healthy adaptation to parenting (Klaus and Kennell, 2001; Gale et al., 2004). In related research in pediatric populations, parents indicated they wanted to participate in comfort measures and decision-making regarding their child's pain management (Simons et al., 2001) and as healthcare professionals we have the responsibility to inform parents. NICU staff can anticipate that parents may experience stress related to their infant's pain. Parents may not expect to see their infant have pain in the NICU, may be unprepared to witness painful procedures being performed on their infant, and may have particular concerns about not being able to protect their infant from pain. NICU staff can be a source of relief from these stressors by acknowledging and encouraging expression of parental concerns, providing information and guidance regarding infant responses to pain and implementing pain management (Gale et al., 2004) such as KMC holding during procedural pain.

Nurses in this study worried about the mom's emotional stability and saw that as both a barrier and also a reason why they would want to help the mom and baby bond during something like KMC. Parents whose children are in the NICU are often in a fragile emotional state. The interaction between mother and child becomes subordinated to the child's health (Wigert, Johansson, Berg & Hellstro, 2006). The mothers often turn off their emotions as a strategy to handle the situation and to protect themselves against a possible loss (Eenfeldt, 1993; Wigert et al., 2006). When the infant is admitted to the NICU, the mother experiences difficulties in establishing a close relationship with her child and the natural behaviour of the mother ceases (Wigert et al., 2006) and the mother's self-esteem may be undermined and a feeling that the child belongs to the hospital arises (Lindseth & Norbeg, 2004). Research has shown that a mother who is

denied the opportunity to mother her child is left feeling confused and anxious (Fenwick et al., 2001). Negative effects arising from the separation of mother and child can be counteracted. When the mother receives extra contact with her child, she shows greater commitment and self-esteem in the caring of her child (Wigert et al., 2006) and more secure in her maternal identity. One way to foster the parental relationship is to use KMC in the NICU.

c) Actual Unit Context

Promoting KMC in the NICU is not without practical problems, particularly providing a suitable environment and dealing with time constraints. Nurses in this study identified an array of context related issues that included increasing workload, inadequate physical space, poor lighting and a lack of privacy. As noted by Gale & Franck (1998), the NICU environment often limits the parent's ability to care for their infant and to practice KMC. Most of the available space is taken up with high technology equipment: a barrier which some believed can directly affect the parent-infant attachment process (Gale & Franck, 1998; Walker, 1998). The patterns that emerged from the study certainly echoed this concern and nurses comments indicated that they focused on technology.

Physical facilities may not be ideal for providing appropriate care. Finding space for parents to sit quietly with each other, to talk with staff, or hold their baby in KMC can be problematic. The lack of space beside incubators can make prolonged KMC difficult or even impossible. Chia (2005) reported that 25% of mothers 'never' had an opportunity to use KMC with their infants, and 60% sometimes felt they were 'in the way'. In such settings, the promotion of humane care becomes problematic. It is widely accepted in the care of healthy, term infants that close contact between baby and mother is essential for

breastfeeding, for attachment and for the well-being of the baby and the mother and the lack of this contact adds to the vulnerability of mothers and infants in NICUs.

Human resource challenges were among the comments made by nurses in this study. Advances in technology and improvement in survival rates at all gestations mean that there are increasing numbers of infants with complex problems (Wikstrom et al., 2007). These issues are compounded by understaffing. The national shortage of nurses' means that the recommendations of one nurse to one NICU patient are seldom adhered to and KMC represents perceived extra work for staff. Study participants expressed frustration with increased workloads and low staffing levels and remarked it was difficult for them to find time to facilitate KMC effectively. Nurses need sufficient time and adequate collegial support to adequately prepare the infant for KMC and provide support to parents.

Healthcare professionals perceived implementation and monitoring of KMC as extra work. KMC may represent additional work however if reframed as an evidence-based technique and an accreditation standard it can become mainstream practice. Published reports show that KMC does not significantly increase nurses' workload (Ludington-Hoe et al., 1994). KMC may reduce the workload by producing more stable infant physiology and sleep (Ludington-Ho et al., 2006; Johnston et al., 2008), and by engaging parents more in the care of their infant (Klaus et al., 2001; Gale, 2004). Nonetheless, this perception persists. However, there is some evidence that the beneficial effects of KMC, such as the settling effect on the infant and greater involvement of parents in providing care, can result in less workload for the staff (Ludington-Hoe et al., 1994). However the nurses' collective message from the focus group was it is not about

'us' as healthcare professionals, it is about the babies and doing what is in the best interest of the babies.

In view of the many reports of the benefits of KMC to infants and parents, as well as to parent-infant interactions, and building on what the nurses collective comments and recommendations were, nurses may benefit from opportunities to learn to implement KMC safely and effectively in a work environment with certain constraints. Nurses from this study appeared to benefit from visual learning tools, such as actually seeing KMC being implemented. Once education has been reinforced by "hands-on" experience, barriers are often diminished or eliminated. Lack of evidence-based procedures and inconsistency in practice can be corrected by further publication and dissemination of samples of protocols and procedures in use at hospitals where KMC is successfully practiced (Bell & McGrath, 1996). Nurses also identified that guidelines would be helpful and this is consistent with the success of other knowledge translation strategies. In addition to protocols, systematic procedures and research-based guidelines have been published (Gale & Vandenberg, 1998; Ludington-Hoe et al., 1994). Protocols have been helpful in changing practice.

Knowledge and practice are not necessarily related: knowledge alone does not change practice. Attitudes and beliefs coupled with knowledge and collegial support predict better pain care in ill infants (Latimer et al., 2009). Nurses may be reluctant to implement new nursing care interventions, regardless of their demonstrated effects, if they do not perceive the value of the intervention or have the necessary resources or see it in practice.

Creating the Possibility – Participant Recommendations for Facilitating the use of KMC for Procedural Pain

Participants in this study offered recommendations for facilitating the use of KMC for procedural pain in the NICU. These recommendations have been arranged in Table 3 (Appendix I). The first recommendation focused on having a support person available to staff for KMC use. The Nurses felt that they needed a support person that was easily approachable and could assist with KMC when needed. Research indicates that nurses seek knowledge when they have specific problems and are in need of knowledge that is of immediate practical use (Estabrooks et al., 2005). The nurses in this study said they would need support in order to use KMC for pain due to increasing workloads and lack of time. Nurses identified the support people in the NICU as Educators, Clinical Nurse Specialists and Clinical Leaders. This finding is important because Clinical Nurse Specialists and Clinical Nurse Educators have been identified in the literature (Estabrooks et al., 2005) as potentially important mediums for knowledge transmission for nurses.

Nurses stated that they felt there was little to no support in the unit for using KMC for pain. The nurses identified needing to feel supported from a management level to have adequate patient-nurse ratios and staffing to have the time to provide KMC adequately. The third recommendation from the participants was education.

Nurses in this study requested further educational offerings highlighting the knowledge and skills needed to provide KMC for pain safely and effectively. These educational offerings should emphasize the value of KMC and pain to infants and parents. They should also emphasize combining nonpharmacological methods for best results (i.e. using KMC and breastmilk). Nurses recommend development of evidence-

based policies and procedures that will lead to successful KMC experiences. Finally, nurses could benefit from experiential knowledge such as supervised "hands-on" experiences in the practice of KMC, particularly in collecting bloodwork from an infant on the parent's chest. Experiential knowledge is knowledge gained through observations during regular nursing practice and is typically the product of nurses' observations (Estabrooks et al., 2005). Research indicates that social interactions and experience are the two most important sources of practice knowledge for nurses (Estabrooks et al., 2005; Estabrooks et al., 2007).

The final recommendation was to create NICU-specific policies and protocols in clinical practice to support the use of KMC. Lack of evidence-based procedures and inconsistency in practice can be corrected by further publication and dissemination of samples of protocols and procedures in use at hospitals where KMC for procedural pain is successfully practiced (Bell & McGrath, 1996). In addition to protocols, systematic procedures and research-based guidelines need to be published. Policies and procedures are vital resources for nurses use when they are having difficulties making decisions or requiring guidance in a procedure (Estabrooks et al., 2007). The recommendations from the study participants have been consistent with available research on how nurses learn. If implemented these recommendations may increase the use of KMC for procedural pain.

Knowledge translation is a term increasingly used in health care fields to represent a process of moving what we learned through research to the actual applications of such knowledge, in a variety of practice settings and circumstances (Sudsawad, 2007). Despite a strong endorsement for evidence-based practice in healthcare fields, the use of research for practice continues to be lacking (Bennett et al., 2003; Meline & Paridiso,

2003; Sudsawad, 2007). More attention is now being paid to context specific issues such as those study participants outlined (resources, policies, time) that may facilitate use of evidence in practice. Using guiding practice-based models such as the PARIHS (Promoting Action on Research Implementation in Health Services) to increase success in research utilization may enhance the likelihood of implementation of evidence such as KMC to practice. The PARIHS model is a multidimensional and dynamic framework which takes into account evidence, context and facilitation in developing successful systems of research implementation. Evidence, context and facilitation are evaluated and situated on a continuum from low to high and the higher these elements are situated on the continuum, the more successful it will be to implement evidence into practice. This framework can provide a comprehensive systems analysis for planners to determine where to concentrate efforts to achieve success in the research utilization process (Rycroft-Malone, 2004).

This model reflects some of the context and facilitator issues the study nurses identified as important in creating opportunity (Rycroft-Malone, 2004). The PARIHS model is a framework that can be used to understand the contextual factors that could play important roles in the success or failure of the knowledge translation efforts in the NICU.

Chapter Six

Conclusion

Pain is not a new concept to the neonatal area. What is new and emerging is the breadth and depth of how nonpharmacological interventions such as KMC can be used for better health outcomes for newborns. Nurses must now develop skills to integrate the potential of KMC into clinical practice and their caring for newborns undergoing painful procedures. The differing attitudes and beliefs of caregivers add to the complexity of the pain management issue. Nurses are knowledgeable and aware of the many benefits of KMC and its effect on neonatal pain however, KMC is not consistently used for procedural pain care in the NICU. Nurses in this study who consistently used KMC seemed to do so because they believed in its effectiveness after having seen it being used in practice. Nurses described conditions that increased use - including parents requesting it and being present and willing to use it, a 'safe' situation from a mother and baby perspective and also from a supportive context perspective. This is consistent with the evidence. This study provides valuable insights into the attitudes and practices of neonatal nurses in using KMC for procedural pain within the NICU.

Major barriers to the practice of KMC included concerns about the safety of the infant as the main limitation. This study also indicated the need to implement strategies to overcome practical constraints that have been identified by the nurses in this study. Practice challenges identified by the nursing participants cover the spectrum from privacy and workload through management commitment and a requirement for definitive policies, procedures and guidelines.

Given the evidence-based benefit of KMC and the simplicity of the procedure, it would be important to consider how to implement this intervention for all infants having procedures. These study findings may be useful to consider when developing strategies to support medical and nursing staff, as well as parents to understand the pain related benefits of KMC. The context and conditions of care are important to consider as well because caregivers also need time, guidance and encouragement to become comfortable in the use of KMC as a routine part of their daily care.

Clinical research is the foundation for evidence-based practice. It is important for nurses to provide their patients with care that is based on the best available scientific knowledge. As well, care should be consistent from clinician to clinician and from place to place. Health care professionals working with babies and their families in the NICU should always be trying to improve the care provided. Consistent with the objective of this study, this is best accomplished by using nurses own described perceptions to move research to guide practice based on evidence, which will continue to make progress in the quality of care provided.

Strengths and Limitations of the Study

The methodology of ID was appropriate to explore nurses' experiences of using KMC for procedural pain in the NICU. The research question did not fit well into other methodologies and ID is intended to fill a need within nursing research (Hunt, 2009). It allowed participants to reflect and explore their perceptions and personal experiences on KMC. It also enabled participants to describe strategies and recommendations that may be implemented to aid in the use of KMC for pain. ID allowed the PI to use her own clinical experience related to KMC and pain uninhibited by other theoretical frameworks.

ID includes a logical process for research development, along with revealing disciplinary biases. There were also limitations due to using ID as the methodology for this study. ID is a relatively new methodology and there was a limited number of studies completed to aid the actual research process.

Comparable with other qualitative research studies, a limitation in this study was the variability in the sample. The study site currently has 170 nurses (full-time and part-time) working within the NICU. The data collected from the study revealed patterns, although consistent among eight NICU nurses may not be representative of all NICU nurses. Yet it is believed that the findings from this study reflected concerns documented in other evidence and outlined in the discussion section. The study used purposive sampling which provided internal validity of the research however it may not be transferable to other sites or disciplines.

Interviewing and focus groups were used as the main methods of data collection. Interviews are a good way to gain information and can lead to further research using other methodologies. Interviewing enabled the PI to probe deeper into initial responses to gain a more detailed answer to questions. Therefore the richness of the data is entirely dependent on the interviewer, which may be seen as a limitation to the study. Interviews provide respondents with control and freedom to answer and share their experiences as they wish.

The focus group format worked well and the eight nurses were able to participate and equally share their perceptions, experiences and thoughts on KMC and pain. No one dominated the discussion. One identified weakness of the focus group was that not all

eight participants were able to attend due to scheduling conflicts. This became a study limitation as not all study participants were available to confirm the findings.

Finally, the PI is a healthcare professional who is directly associated with the study site thus there may have been some hesitation in disclosing information which may have been a limiting factor of the study. On the other hand, this could also be viewed as a strength as the participants may have seen the PI as an equal and may have felt more comfortable discussing their experiences.

Implication for Neonatal Nursing Practice

This study will provide new understanding related to nurses' perceptions of how evidence-such as the use of KMC to relieve pain in neonates- can better support nurses to facilitate optimal management for procedures known to cause pain in neonates. These findings may contribute to other literature that serves as the basis to develop strategies to overcome obstacles and lead to wider dissemination and implementation of practice within the NICU. Some of the novel findings highlight new information (for example the visual; "seeing is believing" and the identification of the need for a KMC physiological stability assessment tool) and re-emphasizes existing evidence that in order for knowledge to be translated, necessary support to nurses will assure optimal pain management for procedures known to cause pain in neonates. This study is the first qualitative research based on ID that asks nurses specifically about their experiences on using KMC with procedural pain in neonates. The PI has created recommendations based on research evidence and study nurses interpretations and feedback. These recommendations have been arranged in a Table entitled; *Integrated Recommendations: Implications for Practice* (Appendix J*).*

Family centered care in a neonatal unit involves health professionals actively considering how it feels for parents to have a premature or sick baby and working within a policy framework to improve the family's experience. This means being empathetic and willing to 'stand in the shoes of parents'. It involves introducing practices and providing facilities that encourage and support parents and families throughout the care pathway. It is vital that families are included at the centre of the care process, alongside their infant. Although research continues to confirm that KMC between a mother and her infant is an effective strategy to decrease neonatal pain, help diminish the emotional and physical harmful effects associated with separation and enhance family centered care; it continues to be a practice that is not widely implemented within the NICU environment. This research is undertaken with the goal of building a better understanding of the impact and significance of KMC as a simple yet imperative intervention for optimal neurodevelopment as well as for the promotion of the maternal child relationship. It is anticipated that there will be a deeper appreciation from health care providers of the significance of KMC for mothers who have been forcibly separated from their infants at a time when they are grieving the unexpected premature birth of their infant. The data may help to identify the barriers that potentially inhibit or challenge this practice from occurring within the NICU. This research, therefore, has the potential to raise consciousness and discourse potentiating change within the NICU that will ultimately improve neonatal care by influencing health care practice and policy. The research may heighten health care professionals' awareness to consider all aspects of maternal participation in pain management thereby positioning mothers as equal partners in the care of their infant. This research will lay the groundwork for future research based

guidelines in this area. The long term goal is to improve health services to infants and their families, while working to ultimately improve pain management for infants.

Provisions should be made to respect modesty and intimacy; for instance, appropriate hospital gowns should be made available, so that when mothers use KMC, their torsos are not completely revealed. A private room or at least a screen can help. Each site in the NICU has curtains, which can be drawn to ensure privacy of the mother and baby if requested. Ensuring privacy can be simple, like putting s sign on the curtain when it is drawn, "please knock before entering." Ideally the NICU would have separate rooms for each mother and baby dyad but that is just not feasible at this point so it is important to utilize the existing resources to best support mother and baby.

Nurses expressed concerns about KMC holding and health stability of infants. These concerns could be placed in a formalized scoring format and tested out to be of use for nurses determining the risk-benefit of implementing KMC. A formal scoring system can help categorize health safety issues by objective criteria. It could be a checklist of criteria that must be met in order for KMC to be used as an option for procedural pain. These scoring systems could be created with the involvement of NICU nurses ensuring successful implementation. Furthermore nursing education opportunities may be designed that focus on the relationship of the infant's physiologic stability assessments and infant's ability to be held in KMC, which may improve consistent and standard use of KMC for painful procedures.

Future Research

Through the experiences of the nurses, this study offers strategies to enhance or facilitate research utilization thereby guiding and improving clinical practice and

potentially stimulating future research. The next step could be implementing a KMC protocol for procedural pain in the NICU. Little research exists on the actual process of collecting bloodwork while babies are held in KMC with their mothers. Research is needed on making the process as efficient and nurse-friendly as possible. This research could investigate factors that the nurses have described as inhibitors and test the facilitators to KMC such as nurses' attitudes and beliefs, assessing safe situations, including nurses, baby, mother and context specific support.

The development of guidelines to standardize safe practices such KMC for procedural pain would be pivotal in facilitating its use. Unit standards or guidelines could be created with a plan for each infant's unique condition providing an essential cue to support and facilitate KMC. The parent's role was seen as pivotal to successful use of KMC. Conducting research that focuses on the maternal perspective and/or experience of having bloodwork collected while holding their infants could help healthcare professionals to empathize with families and help to decrease maternal anxiety. Human resources and physical comfort issues require some further exploration.

Dissemination of Study Findings

Knowledge transfer is an essential component of this research process. Effective knowledge transfer entails an ongoing exchange between researchers which include nurses and families, and research users (same group), often by means of traditional informal and formal methods. Some of these methods include journals, educational seminars, conferences, posters, unit-specific education such as lunch and learns and education days. In knowledge dissemination it is important to use a team approach that draws on all levels including management, researchers, nurses and other allied health

staff. Nurses are great ambassadors of information and parents were also recognized in this study. As this research inquiry addresses the experiences of NICU nurses, dissemination to various health care clinicians in the NICU is essential. Even moms who use the strategy may be a potent knowledge transfer agent.

Traditional methods of dissemination to inform health care providers will include poster and/or oral presentations at local and national conferences, provincial workshops, in addition to publication in peer reviewed journals (i.e. Journal of Obstetric, Gynecologic, and Neonatal Nursing, Neonatal Network) and Dalhousie University School of Nursing Scholars Seminar and Pain in Child Health seminars. Informal conversations, such as lunch and learns with IWK healthcare professionals and families will engage them in discussions that may increase the use of KMC for procedural pain.

The results of this study will be shared with the managers working within the Women's and Newborn Health Program. It would also be important to share results with other units in the hospital where newborns may be a patient, such as Children's Emergency, Birth Unit, Family Newborn Unit, Pediatric Medical Unit and the Pediatric Intensive Care Unit. Presenting the findings of this study to other allied healthcare professionals is also important therefore the PI will provide small seminars and lunch and learns for the IWK interdisciplinary staff. To share results with the public would be to publish the findings in parent magazines or newspapers. All of these strategies will be considered as effective to translating these results to those who may benefit.

Appendix A

Manager Introduction and Support Letter

Dear NICU Staff,

I would like to let you know of a new study being conducted by Helen McCord. Helen is a staff member at the IWK and is also a Master of Nursing student at Dalhousie University who is very passionate about the neonatal population. For her thesis work in the Masters program Helen has decided to focus her research on pain in the neonatal population. Keeping her research aligned with the mission and strategic goals of the IWK, Helen is interested in understanding how we can better understand how to support optimal pain management of infants in the NICU and in particular KMC. It researches those factors that have contributed to a delay in research evidence being put into practice.

What Will Happen

For her study, **Exploring Nurses' Perceptions on the use of Kangaroo Mother Care to Reduce Pain during Heel Lancing Procedures**, Helen would like to invite eight Registered Nurses who work with critically ill neonates in the Neonatal Intensive Care Unit at the IWK Health Centre to participate.

Nurses will be invited to participate in a study discussing your experiences of assisting mothers who wish to provide Kangaroo Mother Care (KMC), as nonpharmacologic pain analgesia to their infants while undergoing heel lances while they are in the NICU. Participants will share their perspectives first through an interview and then will be invited to join a focus group. Participation should take approximately 45 minutes in total for each and if work demands allow she will conduct the interviews and focus group during your work time.

If you have any questions please contact her at 405-8997 (hmccord@dal.ca) or her supervisor Dr. Margot Latimer, 494-2391 (mlatimer@dal.ca).

Sincerely,

Appendix B

April 10, 2010

Letter of Invitation for Nurses to Participate in Study

"EXPLORING NURSES' PERCEPTIONS ON THE USE OF KANGAROO MOTHER CARE TO REDUCE PAIN DURING HEEL LANCE PROCEDURES"

Dear Registered Nurse Colleague:

I am a graduate student at Dalhousie University and I am doing a research study to fulfill requirements for the Dalhousie University Master of Nursing Program. My supervisor is Dr. Margot Latimer of IWK Centre for Pediatric Pain Research and Dalhousie University School of Nursing. I would like to invite you to participate in my study. I am interested in discussing your experiences of assisting mothers who wish to provide Kangaroo Mother Care (KMC) to their infants while undergoing a minor painful procedure-the heel lance.

Participation is voluntary. The information collected from you during the interview will not be discussed in any way or at any time with your manager/clinical leaders. It will not be used to assess your clinical performance or to judge your practice. The information obtained is purely to gain data to help to further understand the phenomenon of KMC as nonpharmacologic pain analgesia within the neonatal population.

In order to be eligible to participate in the study you must have at least two years neonatal nursing experience, completed your intensive level orientation and work a minimum of 0.6 FTE. This will help to ensure that nurses who participate in this study have experience caring for infants and mothers who would have exposure to the NICU experiences that include procedures that cause pain.

Participating in the study will involve talking to me about your experiences. The interview will take 30-45 minutes and will occur at a time and place convenient to you. The interview will be audio taped. Following the interviews conducted by myself (the PI), you and all other participants will be invited to attend a pizza party focus group session whereby you and some of your colleagues have the opportunity to share your experiences about KMC. The focus group is expected to take at least 45 minutes and will also be audiotaped. Although confidentiality will be requested and encouraged from all members of the focus group, it cannot be guaranteed amongst the focus group participants, who are also your co-workers. During the focus group session you will have the opportunity to identify facilitators and strategies in utilizing KMC more frequently as a nonpharmacologic intervention for pain. There will be a written consent form with further information about the study provided to you. Participation in the study is voluntary and should you wish to withdraw from the study you may do so at any time.

Your audiotaped interview will be typed to paper copy. Once transcribed, the audiotapes will be destroyed. All information will be kept completely confidential and all identifying information will be removed from quotes and stories. Your privacy will be protected, as no real names will be used in the study. Electronic files will be password protected and stored on a computer in the IWK Centre for Pediatric Pain Research. All information will be kept for five years post publication and after that time will be destroyed. The only people with access to the data including myself will be my research committee.

If you are interested in participating in the study please complete the response slip (below) and return it to the sealed box in the staff lounge entitled "Exploring Nurses' Perceptions on the use of Kangaroo Mother Care to Reduce Pain during Heel Lance Procedures"

If you choose to participate and the interview and/or focus group occurs on your day off, you will be provided with a $10 parking voucher.

Thank you for considering participating in this research study.
Yours sincerely,

Helen McCord RN

Please detach this slip and place it in the sealed box in the staff lounge entitled "Exploring Nurses' Perceptions on the use of Kangaroo Mother Care to Reduce Pain during Heel Lance Procedures"

Nurse's name: _____ Telephone Number: _____

When is the best time to call? _____Morning, _____Afternoon, _____Evening

Do you think KMC is a useful intervention to reduce pain in neonates?_____

Appendix C

Consent Form

Research Title:

EXPLORING NURSES' PERCEPTIONS ON THE USE OF KANGAROO MOTHER CARE TO REDUCE PAIN DURING HEEL LANCE PROCEDURES

Researcher conducting the study: Helen McCord, RN
Principal Investigator
Master of Nursing Student
Dalhousie University

Research Supervisor: Margot Latimer, RN, PhD
Associate Professor, School of Nursing
Dalhousie University
Halifax, Nova Scotia B3H 3J5
(902) 494- 2391

Introduction

You are invited to participate in a research study at the IWK Health Centre, by Helen McCord. Helen is a student in the Master of Nursing programme at Dalhousie University. You are asked to read this consent form and ask questions of the interviewer if you do not understand what is being said.

Your participation in the study is voluntary. Taking part in the study is entirely your choice and you may withdraw from the study at any time. Participating in this study may not benefit you but we may learn information that, in the future, will benefit other nurses/healthcare professionals and/or neonates in the Neonatal Intensive Care Unit.

Purpose of the Study

The purpose of this study is to explore and to learn about your experiences of collecting bloodwork while utilizing Kangaroo Mother Care (KMC). I would like to better understand the circumstances that KMC is used as a non pharmacologic analgesic intervention for heel lances and other minor invasive procedures by nurses working within the NICU. It is important to gain the neonatal nurses' perspective so that we may further understand what some of the factors are that support or inhibit the practice in the clinical area. Findings from this research may help to identify how healthcare providers can further reduce neonatal procedural pain.

Study Design

This study will be conducted at the IWK Health Centre. It is a single site study using semi-structured interviews and the methodology of Interpretive Description (ID). ID is a qualitative research methodology. By using ID, the goal is to create significant knowledge that is relevant for nursing within the NICU.

Neonatal nurses who have a minimum of 2 years experience working within the NICU, as well as having prior experience with babies held in KMC, will be invited to participate in this study. Data will be collected from participants through interviews which will be lead using an interview guide developed by the principal investigator, and focus groups. The primary goal will be to analyze the data collected and to interpret the meanings shared by participants. Through dialogue the PI will confirm the themes identified with the interviewees through focus groups.

What Participation Involves

In this study, I am inviting you, a Registered Nurse working in the NICU at the IWK Health Center, to share your experiences of collecting bloodwork from babies who are held KMC with their mothers. Our conversations will be audio recorded and a written copy of the audiotape will be made.

Nurses who decide to participate in the study will be invited to attend one 30-45 minute face-to-face conversational interview at a time and place that is convenient for you. Only you and the interviewer will be present. Approximately one month after the interviews, all participants will be invited to attend one, 45 minute long focus group session where you and the other participants have the opportunity to learn from one another and dialogue about KMC. The themes from the individual interviews will be shared via compilation of stories and focus group participants will be asked to provide their feedback on how well the stories resonate with their actual activities, knowledge and practice.

Before being interviewed, the researcher will explain the research project and answer any questions you might have. The consent form will be explained and signed if you agree to participate by a Registered Nurse with research recruitment experience.

You will be asked a series of questions from an interview guide developed by the Principal Investigator (PI) about your experience with KMC as nonpharmacologic pain analgesia in the NICU at the IWK. You may refuse to answer any question or stop the interview at any time.

Your interview and the focus group will be audiotaped for later transcription by the researcher.

A private area will be chosen to conduct the interview which will allow you to speak freely and openly. The information you share through your interview will be confidential,

however it would be requested that highlights of the information obtained can be shared anonymously in the focus groups so that participants can learn from one another and to confirm the data interpretations of the researcher**.** The research assistant that transcribes the audiotapes will not know who you are but will have the tapes for transcription purposes. No personal identifiers will be included in the typed data. The transcriptionist will sign a letter of confidentiality.

What are the potential risks and benefits?

There are no anticipated risks involved in your participation in the individual interview process. Although confidentiality will be requested and encouraged from all members of the focus group, it cannot be guaranteed amongst the focus group participants, who are also your coworkers**.**
If you experience distress or are upset discussing your experiences you have had with KMC, support will be available for you through the Employee Assistance Program at the IWK Health Centre. There are absolutely no employment consequences that could result from this study.

The information that you may provide may not directly benefit you. Findings from this study may help health care providers gain greater insight into the importance of KMC as a nonpharmacologic analgesic for minor painful procedures in the NICU. It may also help health care providers define how we can better support mothers and nurses in this practice.

Withdrawal from Participation

The decision to participate in this study is entirely voluntary. If you wish to withdraw your participation in the study after your interview has begun, you may do so at any time. Any and all data collected up to that point will be removed. There will be no risk to employment in any way if you choose not to participate and your decision will not be discussed with anyone.

Costs and Reimbursement

Participation in this study will not result in any expenses to you. We will attempt to book the individual interview on a day that you are already working. If you are coming into the IWK Health Center for the conversational interview and/or focus group on your day off, you will receive ten dollars for parking.

Conflicts of interest

There are no conflicts of interest on the part of the researcher or the research supervisor. The researcher is not being paid for conducting the study. This research study is part of the PI's thesis work.

Confidentiality

Participation in the study is voluntary and the participants' confidentiality will be strictly maintained. Pseudonyms will used to protect the participant's confidentiality. Identifying information from the study will not be included in any presentation or publication. At no time will your name be revealed or communicated. All information gained will be strictly confidential.

The original audiotapes and all study paper-work will be securely kept under lock-and-key during the research study. Immediately after transcription, audiotapes will be destroyed. Other study records will be destroyed five years after the publication of the study as per Dalhousie University research policy.

Communication of Results

You will be asked during the interview if you would like to receive a summary of the study results after the project is complete. If you do wish to be informed of the results of the study, a summary of the findings will be sent to you by Canada Post or email.

You will also be asked if you would like to receive a copy of the transcript of your audio-taped interview. If so, it can be sent to you by Canada Post or email.

What are my research rights?

Signing and returning the consent form indicates that you have agreed to take part in this research and that your responses may be used. Your signature on this form will show that you have understood to your satisfaction the information about the research study. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institution from their legal and professional responsibilities.

If you have any questions at any time about these rights, or about research in general and you would like an independent opinion, you may contact the Research Office of the IWK Health Centre at 470-8765, Monday to Friday between 9AM and 5PM.

How will I be informed of the study results?

The results of the study will be available in the winter of 2011. Would you like to receive a summary of the study results via email?

Yes: ____ No: ____

Would you like a copy of your transcript?

Yes: ____ No: ____

Name: _____

Email address: _____

What if I have questions or concerns?

If you have any questions at any time throughout the study please do not hesitate to call:

a) PI
Helen McCord
405-8997
helen.mccord@iwk.nshealth.ca

b) Supervisor
Dr. Margot Latimer
494-2391

c) Dalhousie Research Services
Patricia Lindley
494-1462

Thank you,

Helen McCord

Signature Page

Study Title: Exploring Nurses' Perceptions on the use of Kangaroo Mother Care to Reduce Pain during Heel Lances Procedures

Participant ID: _____ Participant INITIALS: _____

Participant Consent

I have read, or had read to me, this information and consent form.

I have had the chance to ask questions which have been answered to my satisfaction before signing my name.

I understand that I have the right to withdraw my participation at any time without affecting my employment.

I am willing to participate in a focus group.

I am willing to have this interview and the focus group audio-taped for transcription.

I have received a copy of the information and the consent form for future reference.

I understand the nature of the study and I understand the potential risks of reactions.

I freely agree to participate in this research study.

_____ _____/_____
Name of Participant (print) Date/Time

_____
Signature of Participant

Statement by Person Providing Information about the Study and Obtaining Consent
I have explained the nature and procedure of the research study and judge that the participant named above understands the nature and procedure of the study.

I have explained the nature of the consent process to the participant and judge that they understand that participation is voluntary and that they may withdraw at any time from participating.

_____ _____/_____
Name of Person Providing Information Date/Time
About the Study and Obtaining Consent (print)

_____
Signature of Person Providing Information
About the Study and Obtaining Consent

Permission to Quote

I hereby give permission for Helen McCord to quote responses given by me during the individual interview conducted on _____, 2010, as part of Ms. McCord's thesis research as signed below. I understand there will be no information used that would in any way identify me as the person who provided the information.

Name of interviewee: _____

Signature of interviewee: _____

Place: _____ Date: _____

Appendix D

Interview Guide

Study Title: Exploring Nurses' Perceptions on the use of Kangaroo Mother Care to Reduce Pain during Heel Lance Procedures

The specific questions/sub questions and probes that the participants will be asked include:

1. **Can you share with me your experiences of assisting mothers who want to provide Kangaroo Mother Care (KMC) to their infants within the Neonatal Intensive Care Unit (NICU)?**

   a) What is this experience like for you?

2. **Could you describe your experience of collecting bloodwork while babies are held in KMC with their mothers?**
   Probes:

   a) what equipment did you use?
   b) Did you use other nonpharmacologic/pharmacologic interventions?
   c) Would you use more commonly with one type of painful procedure?

   More detailed probes:

3. Have you had an opportunity to use KMC in your practice? How often? Can you describe for me the situations where you might use it? (i.e. sooth baby, procedure, willing mother etc.)
4. If you were explaining to a new nurse colleague how to help a mom or dad do KMC what would you tell them? Would you recommend they try it? Why? Why not?
5. What are the circumstances that have helped you to utilize KMC while collecting bloodwork from an infant? What are the circumstances that inhibit you to utilize KMC while collecting bloodwork from an infant?
6. Is there anything more you would like to share with me about your experience of using KMC in the NICU?

Appendix E

Demographic Profile of Nurses

Study Title: "EXPLORING NURSES' PERCEPTIONS ON THE USE OF KANGAROO MOTHER CARE TO REDUCE PAIN DURING HEEL LANCE PROCEDURES"

Can you provide some additional background information about yourself as a nurse? If there are any questions that you prefer not to answer just leave them blank. Although this information will be grouped together and utilized in the research you will not be identified in an individual way.

What year were you born? _____

Years of Nursing Experience: ___ Years of NICU Experience: ____

Years of Intermediate level Experience: ____ Years of Intensive level Experience: ____

Have you worked in other NICUs? _____

Do you have experience using KMC?_____

How did you learn about KMC (ie nurse on the unit, research study, journal articles, education etc.)?

_____

Have you worked in other areas? _____ If so where? _____

Educational Background (please check all that apply)

_____Diploma

_____Undergraduate in Nursing

_____Undergraduate other than Nursing

_____Master's in Nursing

_____Master's in other than Nursing

_____Doctoral

Appendix F

Focus Group Guide

Introduction

Share the patterns and details that emerged from the interviews

- What do you think about these patterns?
- Would you change anything?

Share some quotes anonymously with group

- Have different participants volunteer to read
- Discuss commonalities/patterns between quotes

Where do we go from here?

What does the process of getting there look like? Specific Details.

Appendix G

Transcription Services

I, _____, transcriptionist, agree to maintain full confidentiality in regards to any and all audiotapes and documentation received from Helen McCord (Principal Investigator) related to her research study, ***EXPLORING NURSES' PERCEPTIONS ON THE USE OF KANGAROO MOTHER CARE TO REDUCE PAIN DURING HEEL LANCE PROCEDURES***. Furthermore, I agree:

1. To hold in strictest confidence the identification of any individual that may be inadvertently revealed during the transcription of audiotaped interviews, focus group or in any associated documents;
2. To not make copies of any audiotapes or computerized files of the transcribed interview texts, unless specifically requested to do so by Helen McCord (Principal Investigator);
3. To store all study-related audiotapes and materials in a safe, secure location as long as they are in my possession;
4. To return all audiotapes and study-related documents to Helen McCord (Principal Investigator) in a complete and timely manner;
5. To delete all electronic files containing study-related documents from my computer hard drive and any backup devices.

I am aware that I can be held legally liable for any breach of this confidentiality agreement, and for any harm incurred by individuals if I disclose identifiable information contained in the audiotapes and/or files to which I will have access.

Transcriber's name (printed) _____

Transcriber's signature _____

Date _____

Appendix H

Table 1: *Pattern Findings*

Patterns	Nurses' Quotes
1) "Seeing is Believing"	*"I'll believe when I see it with my own eyes...that is the culture of nurses or even healthcare professionals today. We have hundreds of research articles saying one thing, then arguing another thing...but I think we need to see it in everyday practice to really know or identify what works. We need to see it work in order to believe it."* *"It's hard to picture other things that you haven't done or seen for yourself. Like, until you are pushed to do it I find it's important to question the evidence and see what works in practice."* *"At first I was like...yeah right...KMC decreases pain...no way, fentanyl decreases pain...but when I saw a baby who another nurse took out for KMC with a mother and drew a CBC from a heel poke...the baby barely flinched...I was awe. I couldn't believe it...I wouldn't have believed it until I saw it with my own eyes."* *"It is a more natural place for the baby to be...they do better and I have actually seen them do better. I have seen the babies relax, I have seen the Mother's milk supply go up because they are with their babies skin to skin, I have seen babies feel less pain…so there is such a benefit for both mom and babe that I would have to say that my attitude has completely swung since seeing it…even though I had been educated on it recently."* *"Seeing is believing."* *"Some nurses don't think it works, especially for pain...but I bet they haven't seen it used firsthand."* *"...because for the most part, I know that the babies do better when they are in Kangaroo Mother Care...I have seen it."* *"After everything I read and been taught...I was amazed on how it worked. I don't use it often in my practice for pain…but I know it works…. the evidence is there."*

2) Human Heartedness: "It's the Least I can do"	*"I feel tingly when a mother holds their baby for the first time or in KMC. I feel like I have made it happen. There is so much crap with being a nurse...but this makes me so proud."* *"I would think it was a good thing to do...really the right thing to do."* *"I would have to say that my attitude is probably what has changed the most towards it... and it just feels like that's just where they belong, it's the most natural place for them to be."* *"It is the right thing to do."* *"It is the least I can do for a mom and baby…"* *"Regardless of who we are or where we come from or what job we are in, we all know how important bringing a mother and baby together is."* *"Do you need a book to tell you that a baby belongs with its mother…that they will do better if they are together? KMC is that 4th trimester…. it's that extension of pregnancy."* *"Um I have read a lot of articles about the experiences of mothers with babies in the NICU and one of the more common comments was struggling to mother and often that comes back to inhibiting nursing actions. So if we can work together with mom to secure 'mothering moments' and to make them feel like an actual parent and a parent in the NICU then I think that is really important. And that's the really important part of parenting and it's an important part of our jobs as nurses."* *"Our babies endure so many painful procedures in a run if a shift….it's awful what we do to them. Their pain needs to be better managed."*
3) Playing it Safe	

a) Calculating Risk: Assessing the Baby's Physiological Stability and the Risk for Further Imbalance	*"The infant's safety is my number one priority over all else. I am the advocate for that baby."* *"I pretty much do all the painful procedures to a baby, I decide whether a baby can handle something or not and I am certainly not going to make things worse for them."* *"I would never take a baby that is under 800 grams or under 27 weeks out in KMC, let alone use it while collecting bloodwork."* *"I don't think I would use KMC for collecting bloodwork in a really critically ill baby or a microprem….hmm…but maybe they are the ones that we need to best manage their pain…"* *"I am so scared when a baby comes out that they will lose their lines or they will extubate…that would be worse for the baby and worse for the mother."* *"...and babies that are unstable, I may take out in KMC but there is no way I would want to do bloodwork while a mother is holding the baby."* *"My decision on whether a baby can come out of an incubator or not has everything to do with whether they are stable enough.…and at least 72 hours old."* *"Babies that come out for KMC must be at least 30 week gestation and about 2-3 days old before I would even consider it as an option."*
b) Assessing the Mom's Physical Presence and Ability and Emotional and Physical Involvement	*"We do the majority of our bloodwork at routine times. This is usually first thing in the morning, like 0700 hours. Mothers are usually not visiting at the bedside at that time. It's hard to use KMC for pain when mothers are not available."* *"I am excellent at drawing bloodwork from a baby or inserting IVs, however as soon as a parent is watching me over my shoulder or if I had to do it while they watched me like a hawk when the baby was on the mother, I would for sure tense up and I may need to poke several times when if the baby was in an incubator, I would have only had to poke once."*

b) Assessing the Mom's Physical Presence and Ability and Emotional and Physical Involvement (con't)	*"…parents make me so nervous. I wouldn't do it (collect bloodwork using KMC) solely for that reason."* *"Even if we believe that the baby may do better and feel less pain with KMC, or we know that…trying to balance what is best for both baby and the mother is difficult because some people really have a lot of problems watching bloodwork or painful procedures be done on their babies."* *"Some of our mothers have had stressful pregnancies and traumatic births-they have sick babies-they need to be emotionally available…we can't drain all that they have left…"* *"Many of our mothers have high anxiety levels already because their babies are in ICU. This could put them over the edge."* *"I have questions and reservations about doing it for a mother who is anxious because that will create more anxiety for her, watching her baby be poked and take blood from them. What if the mothers do not want to use KMC or participate? We can't force it or guilt them into it. They already have so much guilt."* *"I don't think parents really want to witness their babies in pain. Why should we guilt them into that and put them in such a terrible position."*
c) Assessing the Necessary Work Supports: Context Feasibility	
i) Human Support	*"Drawing blood while a baby is in KMC…that is a two-nurse job. I would need help. No one has time to help you. Some nurses would think I was crazy and I wouldn't even attempt it if I was in the same pod as them."* *"We would need better assignments to allow us to do these things more. We need support from management…we all know there is a lack of that here in the unit."*

Human support (con't)	*"Maybe I would do it if it was written safely in a policy and I would have something to guide me or work from. Or even protect me. If something bad happened while I was using KMC for a painful heel stick…there are some nurses that don't believe that would eat me for dinner…I'm fairly new."* *"Many nurses even disagree on which babies should even come out for KMC. I think that for myself, it's just a matter of having a good stable baby, having the parent around, having someone to mentor me and having the time, having a good assignment and space to do it, having a unit policy to work from and having support from management. That's all! That sounds impossible doesn't it?"* *"There is no support from clinical leaders or management on supporting us to use KMC in practice, this is often reflected in our ridiculous workloads and poor staffing."* *"The educators don't even teach this. They don't support it."*
ii) Space	*"You need room or space to maneuver and collect bloodwork when a baby is in KMC, you can't do that with the lay out we have now…you would bump into the other incubator. There isn't enough space."* *"The NICU lighting is terrible…you need light to do these things."* *"…Well it would be hard on your back"; "KMC works for pain…that being said, if someone has issues with their backs, being bent over, things like that, that would be an issue and things would have to be put in place...you can't expect a person to be bent over somebody and trying to draw bloodwork, especially if they aren't comfortable, it also may take you longer. I could not get on the floor and draw bloodwork from a tiny foot."* *"Often times a mom may have a baby out in KMC…she is out in one of those KMC chairs which takes up the entire site anyway, and the pharmacist will be over at the chart, the RT will be in, the nurses will go in, the equipment will buzz off hourly…a ridiculous amount of people will be over there. The mother is never alone and never ensured privacy..."*

iii) Policy	*"Maybe I would do it if it was written safely in a policy and I would have something to guide me or work from. Or even protect me. If something bad happened while I was using KMC for a painful heel stick…there are some nurses that don't believe that would eat me for dinner…I'm fairly new."* *"We need a policy…that would get everyone on board. Not all nurses support the practice of KMC…we need to get on the same page with everyone...management, administrators, researchers, nurses and physicians."* *"Policies that are specific to pain and KMC are needed to promote it…policies provide us with standards of care."* *"NICU nurses actively seek out written evidence through policies on the unit to confirm and support the existing knowledge we have.* *"We need clear unit guidelines outlining KMC and its use for pain….what procedures it can be used for, when, how and even which babies are candidates. We need support from management."*

Appendix I

Table 2: ***Participant Recommendations for Facilitating the use of KMC for Procedural Pain***

Concerns	Recommendations	Examples
Time and increasing workload	Mentors and educators need to be available in order for this to be used in everyday practice.	"We need help and extra support in order for us to implement this."
Little to no perceived support	Support is required from a management level to have adequate patient-nurse ratios and staffing to have the time to provide adequately.	"There is very little support in our unit for using KMC for painful procedures. We would need support from the docs, from our leaders in order to do this. It wouldn't be easy."
Lack of education	More education and on the job training is needed.	"I need education on how to even collect bloodwork while a mother is holding a baby, when to do it, what procedures to do it with….I need to learn more about it…really need to provide us with some information."
Lack of clear practice guidelines around KMC and pain	NICU-specific policies and protocols in clinical practice to support the use of KMC for procedural pain.	"A NICU policy is needed in order to tell us when KMC would be appropriate…is it with capillary bloodwork and IV starts or just heel pokes. We need to know how to actually collect bloodwork…what's the process?" "Policies need to exist to guide our practice. Would you just use KMC or would you use it in a 26 weeker, what painful procedures does it work with…if I had a policy on pain and using KMC I would use it indefinitely."

Appendix J

Table 3: ***Integrated Recommendations: Implications for Practice***

Patterns	Study Suggestions
1) "Seeing is Believing"	- Real time inservices i.e. have nurses watch demonstrations on how to use KMC while collecting bloodwork. - Create a video demonstration of using KMC while collecting bloodwork and make it available for all staff to view (i.e. on electronic communication board/on computers at work/offer it in all orientation levels). - Create a "Helpful Hints" page. - Create a wall poster with actual photographs with a flow chart of actual step by step directions. - Provide supervised and mentored "hands-on" KMC experience in collecting bloodwork.
2) Human Heartedness: "It's the Least I can do"	- Empathy training for clinicians so they may better perceive, understand, describe, and appraise the situations of their patients. - "If not me, then nobody" (will help reduce the pain) start-up campaign and posters, buttons etc. to get everyone thinking and moving.
3) Playing it Safe a) Calculating Risk: Assessing the Baby's Physiological Stability and the Risk for Further Imbalance	-Work with the nurses and other team members to develop a measure(s) that evaluates and takes into consideration, what is safe from the Nurses' perspective. Could develop a checklist of criteria that must be met in order for KMC to be an option for procedural pain. -Advocate guidelines that specify the precautions needed to ensure the infant remains stable and to avoid inconsistent practices. -Design nursing education opportunities that focus on the relationship of infant's physiologic stability assessments and infant's ability to be held in KMC, which may improve consistent and standard use of KMC for painful procedures.

b) Assessing the Mom's Physical Presence and Ability for Emotional and Physical Involvement	-Work with the nurses to develop a measure that evaluates what is safe from a Mother's perspective (i.e. checklist). -No visiting restrictions for parents (currently there are none in the NICU). -Introduce more institutional flexibility around timings for routine or non-urgent bloodwork to coincide with mother's availability. - Procedural communication with mother and basic assessment of willingness, capability and health (physical and emotional).
c) Assessing the Necessary Work Supports: Context Feasibility	
i) Human Support	-Management at all levels: -Confirm active support and commitment; -Good two-way communication and consultative participation in moving forward; -Assign experienced persons to drive the process of implementation. -Take steps to support more manageable workloads for nurses. -Provide and demonstrate ongoing support and mentorship. -Assign a responsible person (mentor) for KMC implementation. -Continuing education. -Must dedicate some time to raising the level of awareness of the whole centre's health personnel, in a progressive way. -Parent literature on KMC for pain management will reduce time spent by nurses on explanations. -Initial investigation/study re potential for reducing additional workload components. -Additional workload recognition for this value added pain management initiative.

i) Human support (con't)	- Review of productivity improvement; the additional time that it takes for KMC may be absorbed somewhere else and free up some time for KMC.
ii) Space	-Provisions should be made to respect modesty and intimacy; for instance appropriate hospital gowns should be made available, private rooms if possible, or privacy screens can help. -Enough space for parent bed and or reclining chair. -Single room care - Have one room dedicated for KMC and bloodwork for stable babies
iii) Policy	-Hospital policies and procedures on KMC in writing and clearly articulated, demonstrates high level management support. -Make KMC a standard of care for procedural pain. -Include the use of KMC for pain in the Capillary bloodwork Self-directed Learning Package and related policy. -Monitoring and evaluation system for tracking practices and quality. -Establish KMC guidelines (when/how long/with whom). - NICU Guidelines, protocols, flowcharts. -Develop and implement hospital-wide guidelines.

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