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# Physical Therapists' Beliefs about Preparation to Work in Special Care Nurseries and Neonatal Intensive Care Units

Joyce Lammers  
*Nova Southeastern University*

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*Physical Therapists' Beliefs about Preparation  
to Work in Special Care Nurseries and Neonatal Intensive Care Units*

by

Joyce Lammers

A dissertation submitted in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy

Nova Southeastern University

Dr. Pallavi Patel College of Health Care Sciences  
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## ABSTRACT

**BACKGROUND:** Physical therapists (PTs) may care for full-term or premature newborns in all levels of hospital nurseries. There is some endorsement in the published physical therapy literature for restricting practice in the nursery setting to only those PTs with specialized training.<sup>1-4</sup> **PURPOSE:** The purpose of this study was to understand the experiences of becoming and being a physical therapist in a special care nursery (SCN) or neonatal intensive care unit (NICU) from the therapists' perspective. **METHODS:** The participants were physical therapists who have practiced in a SCN or NICU in the United States. A phenomenological approach was used and data was collected through interviews. The constant comparative method was used to analyze the data and identify common themes to describe therapists' beliefs about becoming and being a physical therapist in a hospital nursery. **RESULTS:** These four themes include: 1) *Never Alone*, which reflects the unique collaborative culture of the NICU; 2) *Families First*, which speaks to the need to focus on the family, avoid judgment, and facilitate their involvement in the care of their child; 3) *Take a Deep Breath*, which reflects the need to be mindful and cautious because of the potential to do harm due to the extreme fragility of the infant; and 4) *Know What You Don't Know*, which reflects the depth and breadth of knowledge necessary to work in the NICU/SCN. **CONCLUSIONS:** This project was the first to systematically research practicing therapist's beliefs and perspectives regarding PT practice in the SCN and NICU. It is evident that current practice does not align with the adopted statements from APTA and APPT, as well as other professional associations. Much evidence draws attention to the fragility of premature neonates, yet our PT practice and education does not appropriately address these concerns.

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## Table of Contents

|  |      |
|--|------|
| ABSTRACT.....  | ii   |
| Acknowledgements.....  | iii  |
| List of Tables.....  | viii |
| List of Figures.....   | ix   |
| Chapter 1: Introduction.....   | 1    |
| PROBLEM STATEMENT AND GOAL.....  | 2    |
| RELEVANCE AND SIGNIFICANCE OF THE STUDY.....   | 3    |
| RESEARCH QUESTIONS.....  | 4    |
| DEFINITION OF TERMS:.....  | 4    |
| SUMMARY.....   | 5    |
| Chapter 2: Review of the Literature.....   | 6    |
| INTRODUCTION.....  | 6    |
| BACKGROUND INFORMATION.....  | 6    |
| Hospital Nurseries and Classifications.....  | 6    |
| Premature Babies.....  | 7    |
| Developmental Care of the Premature Baby.....  | 10   |
| PHYSICAL THERAPIST EDUCATIONAL PREPARATION AND PRACTICE:.....  | 12   |
| Entry-level Curriculum.....  | 12   |
| Entry-level and Novice Practice.....   | 14   |
| Expert Practice, Expertise, and Specialization: the SCN/NICU as a Subspecialty Practice Setting..... | 15   |
| CONCLUSION.....  | 18   |
| Chapter 3: Methodology.....  | 19   |
| INTRODUCTION.....  | 19   |
| QUALITATIVE RESEARCH.....  | 19   |
| Research Assumptions.....  | 19   |
| PHENOMENOLOGICAL APPROACH.....   | 20   |
| RESEARCHER REFLECTION/POSITIONALITY.....   | 21   |
| RESEARCH DESIGN.....   | 23   |
| Sampling.....  | 23   |
| Sample Size.....   | 24   |
| Protection of Human Subjects.....  | 25   |

|   |    |
|---|----|
| Risks and Benefits.....                                     | 25 |
| Data Collection.....  | 26 |
| Demographics.....   | 29 |
| Field Notes and Pre-coding.....                             | 30 |
| Reflexive Journal.....                                      | 31 |
| Transcription .....   | 31 |
| Data Storage.....   | 31 |
| DATA ANALYSIS.....  | 32 |
| ESTABLISHING TRUSTWORTHINESS AND METHODOLOGICAL RIGOR ..... | 33 |
| SUMMARY.....  | 36 |
| Chapter 4: Results.....                                     | 37 |
| INTRODUCTION.....   | 37 |
| FINDINGS.....   | 37 |
| Theme 1: Never Alone.....                                   | 39 |
| Theme 2: Families First.....                                | 42 |
| Theme 3: Take a Deep Breath .....                           | 44 |
| Theme 4: Knowing What You Don't Know .....                  | 46 |
| SUMMARY OF FINDINGS.....                                    | 52 |
| Chapter 5: Discussion and summary.....                      | 54 |
| INTRODUCTION:.....  | 54 |
| INTEGRATION OF THE FINDINGS WITH PREVIOUS LITERATURE.....   | 56 |
| Theme One Integration: Never Alone .....                    | 56 |
| Theme Two Integration: Families First.....                  | 57 |
| Theme Four Integration: Knowing What You Don't Know.....    | 60 |
| IMPLICATIONS OF THE FINDINGS.....                           | 62 |
| Implications for PT Education .....                         | 62 |
| Implications for PT Practice.....                           | 65 |
| Implications for PT Research.....                           | 71 |
| Implications for Public Policy.....                         | 72 |
| LIMITATIONS AND DELIMITATIONS .....                         | 73 |
| SUMMARY.....  | 75 |
| Appendix A Interview Guide .....                            | 77 |
| Appendix B Analytic Memos.....                              | 80 |
| Appendix C Reflexive Journal excerpts .....                 | 82 |

References..... 84

## LIST OF TABLES

|   |    |
|---|----|
| Table 2.1 Nursery Classifications, Alternative Names, Population, Hospital Characteristics..... | 7  |
| Table 2.2 Preterm and Term Sub Classifications by Gestational Age.....                          | 8  |
| Table 4.1 Participant Demographics.....   | 38 |
| Table 4.2 Summary Table of Themes.....  | 49 |
| Table 5.1 Core Values and Sample Indicators Relevant to Themes.....                             | 68 |



## LIST OF FIGURES

|   |    |
|---|----|
| Figure 4.1 Themes Represented in a Diagram..... | 53 |
|---|----|

## CHAPTER 1: INTRODUCTION

### INTRODUCTION

After birth in a hospital, newborn infants are cared for in hospital nurseries. Four levels of nurseries exist and are utilized dependent on the neonate's gestational age, risk factors, and illnesses. Full term and well babies are cared for in Level I nurseries. Premature or ill neonates are cared for in a special care nursery (SCN) or neonatal intensive care unit (NICU), which are also referred to as Level II, III or IV nurseries.

Physical therapists (PTs) may care for full-term or premature newborns in all levels of hospital nurseries. There is some endorsement in the published physical therapy literature for restricting practice in the nursery setting to only those PTs with specialized training.<sup>1-4</sup> There is also support within the medical profession for physical and occupational therapists to have neonatal expertise if practicing in a hospital nursery.<sup>5</sup>

An unpublished study by Lammers et al., however, found a wide range in the level and type of preparation for PT's to provide care in the nurseries.<sup>6</sup> The National Association of Neonatal Therapists (NANT) conducted a nationwide survey of physical therapists, occupational therapists (OTs) and speech language pathologists (SLPs).<sup>7,8</sup> The results of this survey confirmed that there is a wide range of preparation and mentoring prior to first providing therapy services in the nurseries.<sup>7,8</sup>

The Academy of Pediatric Physical Therapy (APPT) of the American Physical Therapy Association (APTA) and the American Board of Physical Therapy Residency and Fellowship Education have recognized neonatal physical therapy as a subspecialty area of practice requiring advanced expertise. The APTA has published a fact sheet titled *Neonatal Physical Therapy*

*Practice: Roles and Training*, which was developed by the Practice Committee of the Section on Pediatrics, based on the most recent published guidelines.<sup>9</sup> At this time, however, there is no mandated training or certification necessary for a licensed PT to work in any level of hospital nursery. The National Association of Neonatal Therapists has developed the first certification process for neonatal physical (PTs) and occupational therapists (OTs) therapists and Speech Language Pathologists (SLPs).<sup>10</sup> As of September 2017, 100 therapists have met certification requirements. The certification process requires that the candidate engage in mentored practice and education, and requires 3500 hours of experience prior to being eligible to sit for a certification exam which is the last step in the certification process.<sup>11</sup> There are three established Fellowship Programs Neonatal Physical Therapy programs.<sup>12</sup> The APTA has also investigated certification for NICU physical therapists. There are Pediatric PT residencies; however, those residencies do not necessarily include the recommended mentoring and experience in the SCN/NICU. Even with these resources and published guidelines, it is evident that there is incongruity between the published recommendations and current practice conditions in some SCN/NICU settings.

## **PROBLEM STATEMENT AND GOAL**

Articles in peer-reviewed journals include resources and guidelines for the care provided by physical therapists in SCNs and NICUs. These articles include clinical practice guidelines,<sup>1-3</sup> decision-making algorithms,<sup>1,10</sup> reviews of evidence-based interventions,<sup>3,13-16</sup> and evidence-based care pathways.<sup>17-20</sup> A review of the current literature, however, reveals no systematic research on the necessary expertise and training needed to work in the SCN/NICU from the perspectives of PTs who work in those nurseries. Physical therapists who currently work in the SCN/NICU have unique experiences central to the phenomena of becoming and being therapists

in the SCN/NICU, and can shed light on the type and level of preparation needed to provide safe and effective care in such specialized settings. Therefore, the goal of this qualitative phenomenological study is to understand the experiences of becoming and being a physical therapist in a SCN/NICU from the therapists' perspective.

## **RELEVANCE AND SIGNIFICANCE OF THE STUDY**

In the profession of physical therapy, there has been a shift away from general practice toward specialist certification and expert practice.<sup>21</sup> According to the American Physical Therapy Association, "Because of the expanse of knowledge and skills involved for such diverse populations and settings, most PTs have a focus or area of practice that allows them to concentrate their expertise."<sup>21</sup> Expert practice and expertise in physical therapy has been acknowledged and studied by Jensen and others.<sup>22,23,24</sup>

Physical therapists (PTs) practice in all levels of hospital nurseries.<sup>1,2,25</sup> There is literature that recommend that physical therapists who practice in specialized hospital nurseries require a level of expertise and preparation beyond entry-level preparation.<sup>1,2,19,26,27</sup> Published recommendations and guidelines acknowledge the complex nature of the premature neonate and recommend restricting PT practice in the SCN/NICU to those therapists with expertise, experience and mentoring.<sup>1,2,4</sup> Currently, however, PTs have a wide range of experience, training, and mentoring prior to assuming an independent caseload in a nursery.<sup>6,7</sup>

Published guidelines and recommendations are based on expert opinions. The literature, however, is lacking a systematic study of the perspectives of therapists practicing in the SCN/NICU. The therapists who currently work in the SCN/NICU have valuable insight into the day-to-day life of a PT practicing in the nursery. Through qualitative exploration of the

perspectives of PTs working in the nurseries, we may better understand the complexity of issues facing physical therapists who practice in this setting, primarily their *beliefs about preparation to work in the SCN/NICU*.

Understanding gained from this study may inform the development of residencies or fellowships, entry-level education, continuing education, standards of practice, and policy regarding specialized practice requirements for nursery settings.<sup>4,10,19,28,29</sup> Findings may be used to design future studies that investigate the PT practice standards in the NICU/ SCN nationwide.

Furthermore, this topic is relevant to current issues in physical therapy as it aligns with the American Physical Therapy Association research agenda in the areas of Education, Workforce and Health Services Research/Policy, as well as the APPT research agenda.<sup>30,31</sup>

## **RESEARCH QUESTIONS**

Three research questions guided this study, which sought to understand and interpret the perspective of the physical therapists who work in the SCN/NICU: (1) What is the experience of deciding and preparing to work in the SCN or NICU? (2) What is the meaning of providing physical therapy in the SCN or NICU? (3) What do practicing therapists believe to be the knowledge and skills necessary to provide safe and effective services in the SCN or NICU?

## **DEFINITION OF TERMS:**

The following key concepts were used in this study:

**Special Care Unit (SCN):** This is a *specialty* neonatal care unit.<sup>32</sup> Preterm infants with birth weight greater than 1500g and preterm infants older than 32 weeks gestation are usually cared for in this level of nursery.<sup>32</sup>

**Neonatal Intensive Care Unit (NICU):** This is a comprehensive *subspecialty* neonatal intensive

care unit.<sup>32</sup> Premature infants born at less than 32 weeks gestation and weighing less than 1500 g and infants born at all gestational ages and birth weights with critical illnesses are usually cared for in this level of nursery.<sup>32</sup>

## **SUMMARY**

PTs practice in specialized settings, including SCNs and NICUs. The literature supports the need to limit practice in the SCN/ NICU to those therapists with neonatal expertise,<sup>1,2,4,26</sup> yet type and level of preparation is not currently mandated. There has not been systematic research exploring the perspectives of current SCN/NICU therapists on becoming and being a therapist in a SCN/NICU, or their views on the type and level of preparation needed. The purpose of this study was to understand the experiences of becoming and being a physical therapist in the SCN/NICU from the therapists' perspective. Understanding gained from this study may inform education, practice, research, and policy regarding specialized practice requirements for nursery settings.

## CHAPTER 2: REVIEW OF THE LITERATURE

### INTRODUCTION

This chapter will present a review of the literature pertinent to premature neonates, hospital nurseries, entry-level doctor of physical therapy (DPT) education, and contemporary physical therapy practice. When investigating physical therapy practice issues, it is important to examine the various factors that influence physical therapy practice. Continuing education, employer expectations, third-party payers, facility accrediting bodies' requirements, and the specific needs of the patient all influence contemporary physical therapy practice. Physical therapy practice in the SCN/NICU is influenced by factors specific to the PT, the practice setting and patient population. These factors are presented in the following sections.

### BACKGROUND INFORMATION

#### *Hospital Nurseries and Classifications*

In the United States, nurseries for premature and ill neonates were first established in the 1960s and have evolved since then to include different levels of care.<sup>33,34</sup> In an effort to standardize terminology for hospital nurseries, the American Academy of Pediatrics Committee on Fetus and Newborn first described the characteristics of three levels of nurseries in 2004, with some sub classifications.<sup>35</sup> In 2012, the Committee added a fourth nursery level, and eliminated the sub classifications.<sup>32</sup> See Table 2.1 for a range of nursery classifications. Medical professionals also refer to the different level nurseries as special care nurseries, and neonatal intensive care units. The neonates cared for in the nurseries range from healthy newborn infants in Level I nurseries to the extremely premature or ill neonates with complex surgical needs in Level IV nurseries.<sup>32</sup> Given the variations between nursery levels, PTs in these nursery setting

may be caring for a wide range of neonates with complex medical comorbidities.

Table 2.1 Nursery Classifications, Alternative Names, Population, and Hospital Characteristics

| Level of nursery         | Alternative names   | Population   | Hospital characteristics  |
|--------------------------|---|--|---|
| <b>Level I Nursery</b>   | Newborn nursery   | Well-newborn nursery that provides basic neonatal care<br><br>Newborns waiting to be transferred to higher-level nursery   | Located in all hospitals with obstetrical services  |
| <b>Level II Nursery</b>  | Special care nursery (SCN)<br><br>or<br><br>Level II NICU | <i>Specialty</i> neonatal care<br><br>Preterm infants with birth weight $\geq 1500$ g<br><br>Generally preterm infants older than 32 weeks gestation<br><br>Reverse transfer: Preterm infants transferred to local Level II from a Level III nursery | Typically located in community hospitals, or in larger hospitals that may also have Level III nurseries |
| <b>Level III Nursery</b> | Level III NICU  | Comprehensive <i>subspecialty</i> neonatal intensive care<br><br>Premature infants born <32 wks. gestation and weighing <1500 g<br><br>Infants born at all gestational ages and birth weights with critical illness                                  | Often located in large metropolitan hospitals or specialized children's hospitals                       |
| <b>Level IV Nursery</b>  | N/A   | Criteria of Level III and the ability to provide surgical repair of complex congenital or acquired conditions  | Onsite pediatric anesthesiologists, pediatric medical and surgical subspecialists                       |

Compiled from: American Academy of Pediatrics Committee on Fetus And Newborn. Levels of neonatal care. *Pediatr.* 2012;130:587–597.

### *Premature Babies*

Gestational age is the number of weeks that have passed since the first day of a woman's last normal menstrual period.<sup>36</sup> The *International Classification of Diseases* defines term



pregnancy as delivery between 37 weeks 0 day and 41 weeks 6 days.<sup>37</sup> A premature baby is defined as a baby born before 37 weeks gestation, and a post-term baby is born at 42 weeks or later.<sup>37</sup> See Table 2.2 for further sub classifications and gestational ages of preterm and term births.

Table 2.2 Preterm and Term Sub Classifications by Gestational Age

|                          |   |
|--------------------------|---|
| Preterm Neonates         |   |
| Extremely preterm        | 28 weeks  |
| Very preterm             | 28 to <32 weeks   |
| Moderate to late preterm | 32 to <37 weeks (late preterm 34 to <37weeks)                         |
| Term Neonates            |   |
| Early term               | 37 weeks through 38 weeks and 6 days, previously known as “near term” |
| Full-term                | 39 weeks through 40 weeks and 6 days                                  |
| Late term                | 41 weeks through 41 weeks and 6 days                                  |

Compiled from: International Statistical Classification of Diseases and Health Related Problems. ICD-10. 10th Ed, Second Revision. Vol 2. Geneva, Switzerland: World Health Organization. 2004.

Premature babies are smaller than full-term babies, and have not had the time in utero for body systems to develop to maturity, resulting in unique medical issues and vulnerabilities.<sup>38</sup> Preterm babies may have multiple health concerns depending on gestational age, availability of medical care, and other comorbidities.<sup>38-40</sup> These concerns potentially include respiratory issues such as apnea, respiratory distress syndrome (RDS), and bronchopulmonary dysplasia (BPD). Other potential serious complication are numerous and may include:<sup>38,40,41,42</sup>

- Intraventricular hemorrhage (IVH), defined as bleeding into the ventricular system of the brain. These are graded as I, II, III and IV. Neonates with the more severe III and IV grades are at a higher risk of developmental delay;<sup>41</sup>
- Periventricular leukomalacia (PVL), defined as ischemic necrosis of white matter around the ventricles due to hypoxia from perinatal asphyxia. This can occur as a severe form of IVH or may occur separately;<sup>41</sup>
- Patent ductus arteriosus (PDA), defined as an abnormal opening between the pulmonary artery and the aorta caused by failure of the fetal ductus arteriosus to close after birth, occurring primarily in premature infants;<sup>42</sup>
- Necrotizing enterocolitis (NEC), defined as an acute inflammatory bowel disorder characterized by ischemic necrosis of the gastrointestinal mucosa which occurs primarily in preterm neonates. This can become a life-threatening event;<sup>41,42</sup>
- Retinopathy of prematurity (ROP), which is due to an alteration in the normal development of retinal blood capillaries and can lead to vision impairments;<sup>41</sup>
- Jaundice, defined as a yellow discoloration of the [skin](#), [mucus](#) membranes, or sclera of the eyes, caused by increased [bilirubin](#) in the blood;<sup>42</sup>
- Anemia, defined as a decrease in quality hemoglobin in blood levels or a decrease in circulating red blood cells, thus decreasing the ability to carry oxygen to the rest of the body;<sup>42</sup>
- Increased susceptibility to infections such as pneumonia, sepsis and meningitis;<sup>38</sup> and

- Osteopenia, a condition of reduction in bone volume or density to below normal levels especially due to inadequate replacement of bone lost to normal lysis.<sup>43</sup>

As evidenced by the above listed potential impairments and complications, the premature infant is a complex and high-risk patient.<sup>38,40</sup> The developing nervous system of a premature infant is a fragile system.<sup>29</sup> Intervention by unskilled or untrained therapists could create increased neonatal stress, causing autonomic disruption of bodily functions, and potential subsequent injury to the developing brain.<sup>29</sup> As the knowledge of these risks has evolved, the comprehensive care of the neonate in the SCN/NICU has been transformed over the years.<sup>44,45</sup>

#### *Developmental Care of the Premature Baby*

The current standard of care in many SCNs/NICUs is developmental care, which is also described as individually developmentally supportive care.<sup>15,46,47</sup> Providing developmental care is a process of continuous assessment and evaluation of the infant's developmental needs.<sup>15</sup> Developmentally supportive care includes positioning, clustering of nursery care activities, modification of external stimuli and individualized developmental care interventions such as minimal handling and giving longer rest periods, and kangaroo care.<sup>16</sup> Some facilities choose to utilize a systematic developmental care program titled The Newborn Individualized Developmental Care and Assessment Program (NIDCAP).<sup>48</sup> Other facilities report implementing individually developmentally supportive care when the nursery staff "support the physiologic stability, behavioral organization, and competency of each preterm infant in a manner that recognizes the infant's specific attributes and abilities."<sup>48,49</sup> A study by Als et al. documented the beneficial impact of developmental care on brain development and physiologic measures of the premature baby.<sup>50</sup> Als' research is specific to NIDCAP and has demonstrated improved outcomes at early school-age for preterm infants with and without

intrauterine growth restriction. Legendre, in a systematic review of articles published between 1990 and 2009, reported that there was conflicting evidence regarding the effect of individualized developmental care compared to standard care on medical outcomes, but found a positive effect of developmental care on developmental and neurological outcomes such as state regulation, attention, and motor control.<sup>15</sup>

It is important to understand the infant's behavioral cues, and how neglect of these signs by PTs untrained to handle these issues can cause damage to the fragile brain.<sup>29,44</sup> Premature infants also have specific musculoskeletal needs that must be addressed to prevent future anomalies.<sup>1,2, 27</sup> Prolonged positioning can cause permanent or persistent musculoskeletal deformities such as positional plagiocephaly, brachycephaly, scaphocephaly, increased neck/trunk extension, shoulder retraction, increased hip abduction/external rotation and foot eversion.<sup>27</sup> Simply providing passive range of motion can put the neonate at risk for fractures if done incorrectly and without awareness of the musculoskeletal development of the preterm infant.<sup>19</sup>

An expectation for PT practice in the SCN/NICU is knowledge of family-centered care and competence in dealing with the emotional needs of parents.<sup>1,2,17</sup> Parents of premature infants have specific psychosocial and emotional needs, which may include adjusting to the birth of a child, maternal recovery from a high-risk delivery, the mourning of a normal pregnancy, juggling the care of other children, and/or worry about the infant's survival and developmental outcome.<sup>17,47,51</sup> Socioeconomic stressors and the expectations and needs of extended family members can cause additional stress.<sup>17,47,51</sup> Family-centered Care (FCC) includes "treating family members with dignity and respect, sharing information, encouraging family collaboration, and facilitating family participation in care."<sup>51-53</sup> The benefits of FCC include enhanced parent–infant interactions, better mental health for parents and improved outcomes for infants.<sup>19,54-56</sup>

Providing physical therapy services in family-centered manner is a key component of expert practice in the SCN/NICU.<sup>1,2,47</sup>

## **PHYSICAL THERAPIST EDUCATIONAL PREPARATION AND PRACTICE:**

### *Entry-level Curriculum*

The *Commission on Accreditation in Physical Therapy Education (CAPTE) Standards and Required Elements for PT Programs and A Normative Model of Physical Therapist Professional Education: Version 2004* guide Doctor of Physical Therapy (DPT) education.

The American Physical Therapy Association (APTA), the professional organization of physical therapists, has published *A Normative Model of Physical Therapist Professional Education: Version 2004*, which “reflects a broad-based consensus regarding the purpose, scope, and content of professional education” and is revised periodically.<sup>57</sup> The Commission on Accreditation in Physical Therapy Education (CAPTE) grants accreditation status to qualified entry-level education programs for physical therapists and physical therapist assistants.<sup>58</sup> CAPTE in its accrediting process “attempts to ensure that accredited programs prepare graduates who was effective contemporary practitioners of physical therapy.”<sup>58</sup> There is an important connection between physical therapy program accreditation and becoming a licensed physical therapist. Students must graduate from an accredited program in order to take the national exam that is administered by the Federation of State Boards of Physical Therapy (FSBPT).<sup>59</sup> In order to achieve accreditation, physical therapist education programs must successfully meet the current *Commission on Accreditation in Physical Therapy Education (CAPTE) Evaluative Criteria for PT Programs*.<sup>58</sup> The criteria are revised periodically by a process that includes a call for comments on existing criteria, revision of current criteria by the Criteria Review Group, circulation to stakeholders for comments, further revision if necessary, a hearing on the final

draft and the adoption by CAPTE.<sup>60</sup> The curriculum standards 6 addresses the Doctor of Physical Therapy (DPT) Program Curriculum Plan, and the Curriculum Standard 7 specifically address DPT program curricular content pertaining to lifespan Patient/Client Management Expectations.<sup>8</sup>

*The Normative Model of Physical Therapist Professional Education: Version 2004* and the *Commission on Accreditation in Physical Therapy Education (CAPTE) Standards and Required Elements for Accreditation of Physical Therapist Education Programs*. Both documents both address the need for PT educational programs to prepare the DPT student for lifespan patient/client management skills, yet neither document specifically addresses curricular content regarding the developmental care of the preterm infant, nor do the documents delineate specific criteria regarding psychomotor skills and procedural knowledge needed for physical therapist practice in the SCN or NICU.

Other influences on DPT curriculum exist. Specific sections of the APTA, such as the APPT, provide documents that detail competencies recommended for entry-level practice.<sup>61,62</sup> Section-specific competencies influence curriculum development, and are intended to guide course development.<sup>63</sup> CAPTE also considers these competencies when formulating the accreditation criteria.<sup>8,13</sup> The APPT began development of pediatric competencies in 1994. In 2013, the competencies were published after a consensus-based revision at the APTA Section on Pediatrics Education Summit in 2012. This revision of the pediatric competencies is much less prescriptive and entails five essential competencies: (1) human development, (2) age-appropriate patient/client management (3) family-centered care across the lifespan, (4) health promotion and safety, and (5) legislation, policy, and systems.<sup>62</sup> There is no specific competency to indicate that providing care in a SCN/NICU should be considered entry-level practice, however the criteria do state that PT intervention is across the lifespan.

Schreiber<sup>64</sup> in 2011 found a great variability of the amount of pediatric content delivered in entry-level DPT programs across the country, with a range of 35 to 210 hours. Furthermore, he found a lack of consensus among faculty regarding the elements of pediatric content in physical therapy educational programs. Because of this wide range of hours in pediatric content in entry-level programs, and a lack of consensus of the elements of pediatric content, it is difficult to state that there is any consistency in PT education regarding NICU practice. Furthermore, given these findings, there is no evidence that physical therapy practice in the SCN/NICU is entry-level practice.

#### *Entry-level and Novice Practice*

Entry-level and novice practice are not the same concept but are related concepts. Entry-level practice often relates to the skills and knowledge obtained in the entry-level educational program, whereas novice practice relates to decision-making and errors in practice.<sup>65-67</sup> Entry-level practitioners are usually novice practitioners, but PTs who are no longer entry-level could remain novice practitioners. Moving from novice to expert practice is addressed in the paragraphs below.

Entry-level practice is addressed in the APTA document, *Minimum Required Skills of Physical Therapist Graduates at Entry-Level*, which delineates the “foundational skills that are indispensable for a new graduate physical therapist to perform on patients/clients in a competent and coordinated manner.”<sup>68</sup> These skills were agreed upon by consensus of a 28 member group and then distributed to stakeholder groups for voting on each item.<sup>68</sup> The APTA document *PT Clinical Performance Instrument for Students* describes an entry-level student as “A student who requires no guidance or clinical supervision with simple or complex patients, and consults with others and resolves unfamiliar or ambiguous situations. At this level, the student is consistently

proficient and skilled in simple and complex tasks for skilled examinations, interventions, and clinical reasoning. The student is able to maintain 100% of a full-time physical therapist's caseload in a cost effective manner.”<sup>69</sup> Novice practice is commonly described as the first year or two of practice.<sup>65-67</sup> Wainwright et al.<sup>67</sup> report “novice clinicians are prone to make errors in clinical decision-making and have limited knowledge and decreased ability to recall what they have learned compared with expert clinicians.” With the above understanding of novice and entry-level practice, Sweeney and others argue that physical therapy practice in the SCN or NICU is not appropriate for entry-level or novice practitioners.

*Expert Practice, Expertise, and Specialization: the SCN/NICU as a Subspecialty Practice Setting*

Jensen, Gwyer, and Shepard<sup>22</sup> have investigated expert practice in physical therapy. From their qualitative grounded theory study, they arrived at a theoretical model of expert practice in physical therapy which includes four dimensions: “(1) a dynamic, multidimensional knowledge base that is patient-centered and evolves through therapist reflection, (2) a clinical reasoning process that is embedded in a collaborative, problem-solving venture with the patient, (3) a central focus on movement assessment linked to patient function, and (4) consistent virtues seen in caring and commitment to patients.” This theoretical model of expert practice could be interpreted to imply that students and new PTs should not be considered expert clinicians in the SCN or NICU.<sup>22,23</sup>

Since 1989, Sweeney<sup>1,2,4,5</sup> and others<sup>1,2,4,26,29</sup> have stated that PT in the SCN or NICU should only be provided by expert clinicians. Sweeney, Heriza, Blanchard, and Dusing<sup>1-3</sup> published the most recent guidance for physical therapy practice in a hospital nursery. They used a consensus process to develop the clinical competencies, clinical training models, practice frameworks, and



the evidence-based practice guidelines. Their recommendations are consistent with other published recommendations, which argue that physical therapy practice in any nursery is not appropriate for new physical therapist (PT) graduates, PT students, physical therapist assistants (PTAs), or PT generalists.<sup>4,10,19,26,28</sup>

After graduation and licensure as an entry-level practitioner, PTs may remain generalists or decide to specialize. Specialization and expertise may be accomplished through various means such as continuing education, academic coursework, mentoring, self-study, and experience. Physical therapists who specialize in pediatrics may practice in settings such as home health agencies, inpatient rehabilitation programs, early intervention, preschool and secondary schools, outpatient offices, acute care, or hospital nurseries. Currently, the American Board of Physical Therapy Specialties (ABPTS) offers board certification in pediatrics among other specialty areas. ABPTS criteria and exam are established by an appointed specialty council, representing the area of pediatric physical therapy, which delineates the advanced knowledge, skills, and abilities for pediatrics.<sup>26</sup> This specialty council also determines the academic and clinical requirements for certification and develops the certification examinations.<sup>26,70</sup> The Academy of Pediatric Physical Therapy (APPT) of the American Physical Therapy Association (APTA) and the American Board of Physical Therapy Residency and Fellowship Education have recognized neonatal physical therapy as a specialty area of practice requiring advanced expertise. Sweeney et al. state that pediatric physical therapy practice is specialty practice and pediatric physical therapy practice in the SCN/NICU is *subspecialty* practice. Sweeney and other also argue that ABPTS Board certification in pediatrics does not necessarily equate to having the skills and knowledge to work in a SCN or NICU, nor does having the skills and knowledge to work in a SCN or NICU mean one is eligible or qualified to be Board Certified in Pediatrics.<sup>1,2</sup>

Another possible area of practice for physical therapists where there may be some pediatric exposure is the acute care setting, although a large portion of PTs practicing in this setting work with adult clients. Gorman et al.<sup>71</sup> found that when acute care therapists were surveyed regarding their clinical practice, persons under the age of 21 accounted for only 5.3 percent of acute care therapists' patient population.<sup>71</sup> There was no data for the percent of neonates in that patient population. Given these findings, it is reasonable to conclude that most acute care therapists would not be considered pediatric experts and would not be equipped to work in the SCN/NICU. However, we do know that there are adult acute care therapists working in the SCN.

Not all physical therapists however, believe that PTs need extensive training prior to providing limited services in the SCN/NICU. Kennedy and Long acknowledge that physical therapists in community hospitals are receiving increased numbers of referrals for critically ill infants hospitalized in SCN/NICUs.<sup>72</sup> Kennedy and Long propose that all physical therapists should be aware of some basic skills to initiate intervention in order to meet those needs of neonates in community hospitals.<sup>72</sup> Kennedy and Long advocate for hands-off evaluation of the preterm neonate for the generalist PT, and concur that advanced skills beyond entry-level training are required to ensure quality and safe hands on intervention for the preterm vulnerable infant.<sup>72</sup>

Authors of the current practice guidelines call for further research to advance the evidence base for PT practice in the NICU. Varying levels of competence (e.g. entry-level, specialty, and expert practice), as well as the current recommendations for physical therapy practice in the SCN/NICU, support the need for further investigation of physical therapy practice in the SCN/NICU. Findings from a small Midwestern study and an unpublished nationwide survey indicate an incongruity between practice recommendations and current practice conditions.<sup>6</sup>

Given the findings of those studies and conversations at the APPT annual conference poster

presentation, the need to systematically investigate practicing therapists' opinions on the experience of becoming and being a physical therapist in the SCN/NICU emerges as an important step in furthering the evidence base for PT practice in the SCN/NICU.

A qualitative approach will provide the means to understand and identify the critical dimensions of the lived experience of becoming and being a therapist in the SCN/NICU.<sup>73,74</sup> A qualitative phenomenological approach will provide the framework for exploring therapists' perspectives.

## **CONCLUSION**

Relevant literature pertaining to the premature baby and physical therapy practice in the SCN/NICU was reviewed. Current curriculum and licensure standards prepare students for entry-level practice, however, skills and knowledge for SCN or NICU practice is not mandated in entry-level education. The documents that influence entry-level education reference education across the lifespan, which does not necessarily imply that SCN/NICU practice is entry-level.

Entry-level physical therapists, generalists, or students, may not be aware of the specific needs of premature infants. Expert practice is recognized in PT practice and is relevant to physical therapy practice in the SCN/NICU. In considering all these concepts from the literature, further investigation of physical therapy practice in the SCN/NICU is warranted. Exploring therapists' perspectives with a qualitative phenomenological approach will provide the avenue for this investigation.

## CHAPTER 3: METHODOLOGY

### INTRODUCTION

This chapter describes the methodology of this study. Given that the goal of the research project was to understand the experiences of becoming and being a physical therapist in the NICU from the therapists' perspective, a qualitative methodology was appropriate. The following paragraphs present in further detail the reasoning for choosing a qualitative phenomenological methodology, the research design, methods, limitations, and steps toward establishing trustworthiness of findings.

### QUALITATIVE RESEARCH

Qualitative research is a means to understand phenomena or human experience, particularly when an emic, or insider, perspective of the human experience is desired.<sup>73,75,76</sup> Qualitative research aims to investigate the social reality of a given experience.<sup>77</sup> There are five common approaches within qualitative research including phenomenology, grounded theory, ethnography, narrative research, and case study.<sup>73</sup> All qualitative approaches to research share common principles such as focusing on the wholeness of the experience, searching for meanings and essences rather than measurements and explanation, obtaining first person accounts of the experience, and formulating research questions that reflect the interest, involvement and personal commitment of the researcher.<sup>75</sup>

#### *Research Assumptions*

The qualitative researcher enters research with a paradigm or interpretive framework which is a compilation of beliefs or assumptions about ontology, epistemology, axiology, and methodology.<sup>73</sup> The *ontological* assumption relates to the nature of reality.<sup>73</sup> Qualitative

researchers embrace multiple realities and report those different perspectives.<sup>73,75</sup> In this project, the multiple realities are represented by how different participants view their experiences. The *epistemological* assumption refers to the qualitative researcher trying to “get as close as possible to the participants being studied” and report on the subjective experiences of persons.<sup>32,35(L691)</sup> The researcher conducted in-depth interviews with the participants to accomplish the epistemological assumption. The *axiological* assumption is that qualitative researchers “position themselves” in the study in order to make their background, values and biases known.<sup>32,35</sup> Within this paper, the researcher provides a detailed reflection of her background, biases and beliefs through a process known as *bracketing*. Finally, the procedures or *methodology* of qualitative research is characterized as “inductive, emerging, and shaped by the researcher’s experience in collecting and analyzing the data.”<sup>32,35(L706)</sup>

## **PHENOMENOLOGICAL APPROACH**

Phenomenology is a long standing research methodology with roots in philosophy and psychology.<sup>73</sup> Among the researchers who have conceived and transformed phenomenological approaches are Husserl, Heidegger, Merleau-Ponty, Sartre, Gadamer, Ricoeur, Van Manen and Moustakas.<sup>73,75,77</sup> Although philosophical and methodological differences exist, phenomenological inquiry is commonly described as a qualitative research approach utilized to understand, describe, and interpret human experience through the analysis of in-depth, open ended interviews.<sup>73,75,76</sup> Physical therapists who work in NICU are the persons with the knowledge of PT practice in that setting, consequently in-depth interviews with them should lead to deeper understanding of the experience of being a PT in a SCN or NICU. In phenomenology, the goal is to understand the essence and essential invariant structure of the shared phenomenon, not the individual being interviewed.<sup>73,75</sup> Given the goal of this qualitative phenomenological

study was to understand the meaning of becoming and being a physical therapist in the NICU from the therapists' perspective, phenomenological inquiry was the qualitative method of choice. Moustakas' transcendental phenomenology which is focused more on describing experiences of the participants rather than interpretation, was used to frame the design of this study.<sup>73,75</sup>

## **RESEARCHER REFLECTION/POSITIONALITY**

As noted above, the axiological assumption that research is never value-free is fundamental to qualitative research. As such, qualitative researchers must make clear all biases and preconceptions in order to position themselves in the study and to make transparent their values.<sup>73,77</sup> In transcendental phenomenological research, "bracketing" is a strategy used to suspend prior assumptions and avoid biasing data collection and analysis with past knowledge.<sup>73,75</sup> In order to make transparent her interest, knowledge, perceptions, beliefs and bias about the topic of providing care in the SCN and NICU, the researcher provides the following reflection written during the design phase of this project:

*I have a very firm conviction that therapists who intervene with infants and children and their families should have a strong family-centered perspective and should either be or strive to be pediatric experts. After I learned that the acute care occupational and physical therapists at the local community hospital were providing services to the premature infants in the SCN, and their lack of pediatric expertise, I was concerned. I provided the rehabilitation department supervisors with the practice guidelines in the hopes that they would realize the risk in having the current therapists provide care. I subsequently attempted to locate evidence of what other facilities or therapists use to assure therapists' competence in the SCN or NICU. I could not find evidence of current practices in other facilities. I received email replies from several therapists who*

*indicated that a protocol based on the Sweeney et al. guidelines is the most appropriate for practice in the SCN or NICU. As I was already an “on call” therapist in the hospital system, had significant expertise with infants with disabilities and their families, and would require the least amount of mentoring, I believed that I would be an appropriate addition to the local nursery staff. I did offer to work PRN in the nursery. The facility chose instead to continue to utilize the full-time general acute care therapists to serve the preterm neonates. In my practice I frequently had to “pick up the pieces” after other professionals did not practice in a family-centered manner. As I remember the amount of stress reported by those parents, I cringe when I think of therapists who are interacting with these families and do not realize the impact of their method of interaction and service delivery.*

*With my heightened awareness of the guidelines and realization that at least one hospital did not follow the published guidelines, as well as a curiosity of whether this was also occurring in other hospitals. I became interested in studying PT practice in the SCN or NICU, particularly the process of becoming a physical therapist in the SCN or NICU. As my thoughts about this study evolved, I first thought a nationwide survey would be best means to inquire about the preparation that current SCN and NICU therapists have experienced. However, given the paucity of systematic research done on this topic, an exploratory qualitative study emerged as being most appropriate, as a logical step to investigate therapists’ perspectives of physical therapy practice in the SCN or NICU. I continue to be concerned about the care that is being provided locally and wish to pursue a path of research that would eventually determine what is occurring in nurseries across the country in terms of therapist training, mentoring and competence. I believe that*

*currently practicing therapists in NICU (level III and IV) nurseries will share experiences of working with very ill babies and will state that they feel that mentored training is necessary. Based on previous conversations with PTs, I believe therapists will have a variety of training and mentoring prior to assuming an individual caseload in the SCN and NICU.*

## **RESEARCH DESIGN**

Qualitative research embodies an interpretive, naturalist approach.<sup>77</sup> Experts in naturalistic research state that qualitative project design must emerge as the study proceeds.<sup>78</sup> Nonetheless, a qualitative methodology chapter in a dissertation can delineate the research process, while acknowledging the emergent nature of the project.

### *Sampling*

Qualitative research utilizes purposively selected small samples. By selecting participants in this manner, information rich cases can be studied in depth.<sup>79</sup> Purposive sampling is the selection of participants who meet specific criteria, which will provide for an information rich sample.<sup>80,81</sup> Purposive sampling was utilized, as the aim of this study was to understand the meaning of becoming and being a physical therapist in the NICU from the therapists' perspectives. The population for this project included PTs from across the United States who have practiced in a SCN or NICU and meet the inclusion and exclusion criteria. Participants were interviewed in the order they volunteered if they met the eligibility criteria. Initially the inclusion and exclusion criteria were as follows:

Inclusion criteria:

Licensed PT who:

1. Currently practices in a SCN or NICU setting (Level II, III, or IV Nursery)



2. Has two or more years of experience working in a SCN or NICU

Exclusion criteria:

1. Not a licensed PT
2. Not currently practicing in a SCN or NICU setting (Level II, III, or IV Nursery)
3. Less than two years' experience working in a NICU setting. (Level II, III, or IV Nursery)
4. Current or previous involvement in writing published NICU practice guidelines

In February of 2015, participants were recruited by posting a recruitment letter on the APPT and National Association of Neonatal Therapists (NANT) listserv. After an inadequate number of participants volunteered, the decision was made to broaden the recruitment methods and broaden the inclusion criteria. The two requests were approved by the IRB. The inclusion criteria were expanded to include any therapist who has worked in the SCN or NICU for any length of time, thus eliminating exclusion criteria #2 and #3. The recruitment methods were expanded to include dissemination of information through social media, email, listserv, and newsletter posts. An initial email or phone call from participants indicated their interest in the project.

### *Sample Size*

The exact number of participants was not identified in advance, as qualitative research design is emergent and must allow for flexibility in determining the number of participants.<sup>73,75</sup> Although the exact number of participants could not be identified a priori, the researcher adhered to the qualitative strategy of interviewing new participants and analyzing the data until there was data saturation and confidence that adequate data was obtained.<sup>82</sup> Data saturation is the replication of

data or the verification of incidents, features or facts by several participants in that no new data are being uncovered with subsequent interviews.<sup>82</sup> Although the number of participants was not known until there was data saturation, the literature suggests an average number of participants to be between 5 and 25 in order to achieve data saturation.<sup>83</sup> Twelve participants were required for data saturation for this project. The process for determining the point at which data saturation was achieved, and data collection was ceased, is described further in the section on data collection.

### *Protection of Human Subjects*

Nova Southeastern University Institutional Review Board for Research with Human Subjects, and the University of Findlay Human Subjects Institutional Review Board approved this study. Procedures were implemented to protect confidentiality in accordance with both research review board requirements. Informed written consent to participate in the study was obtained from participants prior to any data collection. The participants were informed of the interview process, including the use of audio tape recording and that they may withdraw at any time without penalty. The participants were also notified, both on the consent form and verbally, that all data would be handled and stored in a secure manner on password protected computers or locked cabinets in the researcher's office. Participant responses in the transcription and final report were de-identified by using pseudonyms in place of actual names.

### *Risks and Benefits*

The benefits to the participants for participating in the proposed study included reflection on their practice and contribution to the knowledge base for physical therapy practice in the SCN or NICU. The researcher anticipated minimal risk to participants with this project. Potential risks included loss of time involved to participate in the interviews, and potential loss of

confidentiality. Although this is not a sensitive topic, some anxiety or stress could have arisen if the participant discussed or remembered a stressful incident during the interview. There were no adverse responses, either observed or reported, with participation in the interviews.

### Data Collection

The data source was the therapists themselves. Data were collected through one-to-one, in-depth interviews to elicit the experiences, opinions, feelings, and knowledge of therapists working in the SCN or NICU. The aim of collecting data through in-depth interviews was to describe the meaning of the phenomenon for a small number of individuals who have experienced it.<sup>73</sup>

In qualitative research, the researcher is the instrument for data collection.<sup>78</sup> Concerns regarding the role of the researcher as instrumentation have been raised in the literature.<sup>78,84,85</sup> This role can introduce bias and threaten the truth value of the data, and trustworthiness of the findings. The researcher's comfort level, preparedness, quality of the interview guide, and skill for conducting interview all pose a threat to trustworthiness of findings. Experts in qualitative research have proposed strategies to "calibrate" the research instrument (i.e., the researcher). Two such strategies were applied in this study: the "interviewing the investigator" pre-pilot interview, and a pilot study to test the interview guide.<sup>84</sup>

The interviewing the investigator approach was described by Chenail.<sup>84</sup> This technique can be a useful tool for testing the interview guide and to document the investigator biases.<sup>84</sup> Prior to conducting the pilot study interviews, the investigator utilized the "interviewing the investigator" technique, during which an external person interviewed the investigator using the interview guide planned for the study.<sup>84</sup> The investigator was interviewed and assumed the role of a study participant. The interview took place in a setting similar to the anticipated study interviews and

was recorded from the consent process through the entire interview. The investigator then reviewed the recording, assessed the consent process, as well as the interview questions and sequence, thus testing the interview guide. No changes to the consent or interview guide were necessary, thus no additional sessions of interviewing the investigator were necessary. The process of “interviewing the investigator” with the interview guide provided an additional means to document the investigator’s bias regarding the study topic and gain an appreciation of being the interviewee.<sup>84</sup> This process enabled the researcher to understand the position of the participant, and provided for reflection on the researcher’s potential biases.

After reflection on the interviewing the investigator outcomes, the researcher conducted pilot interviews. Pilot testing of the interview questions is important to assess the questions and the researcher as research instruments.<sup>86,87</sup> The pilot test can determine if modifications to the interview guide are needed and provide an opportunity for the researcher to administer the questions and determine if modifications are needed.<sup>84,87,88</sup> Two pilot interviews were conducted with PTs who have neonatal intensive care unit work experience. The first pilot interview did yield some necessary changes to the interview guide, including elimination of a question due to duplication, and re-wording of a question for clarity. This was noted in the audit trail. Data collected from this first pilot interview were not included in final analysis. No changes were necessary after the second pilot interview, thus that interview and transcript was utilized for data collection and analysis.<sup>84</sup>

The semi-structured interviews were conducted over a period of eleven months from February 2015 through December 2015. Each participant prior to the interview commencing signed consent forms. Each interview began with introductions, and confirming consent to record the interview. Twelve individual interviews were conducted in person, by Skype or by phone. Two

participants were interviewed in person at an American Physical Therapy Association (APTA) conference in 2015. The remaining participants were offered Skype or phone interviews, as their geographical location made a face-to-face interview infeasible. All but one participant requested phone interviews.

All participants expressed interest in PT practice in the NICU and were intrigued by the project. All participants were asked the same questions from the interview guide (Appendix A). The interview questions were developed to answer the research questions. Follow up, probing questions were asked to gain deeper understanding of the participants answers and included questions such as “Could you tell me more about that?” and “How did you feel about that?”<sup>86</sup> Purposeful silent pauses served the same purpose to allow the participant to reflect and then add to their response.<sup>86</sup> The probing questions varied depending upon the participant responses. The interviews ranged from 25 to 50 minutes in length. All interviews but one were conducted in 40 to 50 minutes. The interviews varied in length due to the breadth and depth of responses by each participant. Some participants were very forthcoming and shared their beliefs, feelings and opinions about their experiences without probing; whereas some participants were more reserved, providing short and concise responses despite further probing questions. Twelve interviews were utilized for the final data analysis. The recording from one additional interview was not available due to accidental deletion of the recording.

Follow-up interviews may be conducted with participants if later interviews with subsequent participants uncover concepts not discussed in earlier interviews or for clarification of statements made during the initial interview. There was no indication that follow-up interviews were necessary. Interviews continued until data saturation was achieved. As established a priori, once the investigator determined that no new information or categories emerged after an interview,

data saturation was claimed after three more interviews revealed no new information or categories.<sup>89</sup> In this study, interview data from participant number 9 did not reveal any new information or categories. The investigator continued until three additional consecutive interviews revealed no new information or categories. Data saturation was established at interview number 12.

### *Demographics*

The following demographic information was collected during the interview: size and type of hospital and nursery where the participant has worked, years practicing in the nursery, entry-level degree, highest degree level of participants, special certifications, professional association membership, as well as level of training and mentorship prior to each participant independently practicing in the SCN or NICU. These questions are included in the interview guide, which is located in Appendix A.

Participants were all PTs who worked in the neonatal intensive care unit (NICU). Therapists' years of experience in the NICU ranged from 1.5 months to more than thirty years. The participants reported varying levels of training and mentoring prior to entering the NICU. These ranged from no mentoring to 6 months of mentoring. Therapists' entry-level degree included Bachelor, Master and Doctorate of Physical Therapy degrees. Participants had also earned a variety of post professional degrees including master's degrees, transitional Doctorates of Physical Therapy, Doctor of Philosophy, Doctor of Health Sciences, and Education Doctorates. Participants' professional membership varied among APTA and non APTA members. Some members were American Board of Physical Therapy Specialties Board Certified Pediatrics Clinical Specialists, and/or Academy of Pediatric Physical Therapy (APPT) members. All participants were female. The participants represented a wide geographic region across the

United States, including eight of the nine United States Census regions.

The participants practiced in a variety of settings including rural, suburban, and urban settings. Types of hospitals included a regional medical center in a rural setting, inner city hospitals, children's hospitals, community hospital, Level 1 trauma centers, academic research hospitals, and for profit and not for profit health care systems. The demographic data are summarized in Table 4.1 in Chapter 4.

### *Field Notes and Pre-coding*

The researcher maintained field notes in which she recorded observations during the interviews. Field notes consisted of the researcher's reflexive notes during the interview and descriptive notes about the participant's apparent mood, body language or attitudes, and the environment.<sup>90</sup>

Jottings were used at several points in the data collection process and can be considered an "analytic sticky note."<sup>91,87 (p93)</sup> Jottings can include inferences to what participants were "really" saying, personal reactions to participants actions, or remarks, reflections or commentary on the data.<sup>91,87,88</sup> The researcher recorded analytic memos when reviewing the interview recordings and transcripts.<sup>78,86</sup> Analytic memos are statements by the researcher regarding the coding processes.<sup>92</sup> Vogt<sup>93(pg396)</sup> refers to analytic memos as "roughly the equivalent of a lab notebook in experimental research" Sample analytic memos are included in Appendix B. Analytic memos and jottings served as pre-coding, and allowed the researcher to begin the process of identifying possible categories before formal data analysis procedures began.<sup>91</sup>

Within 24 hours after each interview, all field notes, jottings, and memos were transcribed into a file, and were included as data during the analysis. Reviewing the notes and memos within 24 hours of the interview allowed for reflection on the recent interview and served to increase

accuracy of recollection of short notes taken during the interview. These serve as another source of data that contributed to the description and interpretation of the phenomenon under study.<sup>73</sup>

### *Reflexive Journal*

In a reflexive journal, the researcher discusses her experiences with the central phenomenon and how these experiences could impact the data analysis.<sup>73</sup> The researcher made entries into the reflexive journal on days there was reflection, consideration, or growing insight on the project.<sup>74</sup> The timing of these entries varied, dependent upon engagement with the project. A reflexive journal is important as it helps the researcher continually identify and clarify her biases, and acknowledge how those biases may influence the research process.<sup>73</sup> An excerpt from the reflexive journal is provided as a sample in Appendix C.

### *Transcription*

Each interview was audio recorded and transcribed to assure accuracy and completeness of the data collected. A paid transcriptionist transcribed the interviews verbatim. The researcher provided written directions indicating a specific notation system for inaudible sections or emotional content such as laughter or tone of voice.<sup>94</sup> The researcher also provided the proposal and related literature to the transcriptionist so she could become more familiar with terminology related to the study prior to transcribing. The researcher listened to each recording while reading the transcript to check for accuracy. Corrections were made to the transcripts, as necessary to accurately reflect the recording and correct spelling.

### *Data Storage*

Interview data were stored on the researcher's laptop, which was locked in her office with password access restrictions, and turned off when not in use. When not in use, this device was



kept in a locked cabinet in the investigator's office.

## **DATA ANALYSIS**

The constant comparison method for data analysis as describe by Lincoln and Guba<sup>78</sup> was utilized for data analysis. Glaser and Strauss first described constant comparative method as a means of deriving a theory such as in grounded theory.<sup>78</sup> However, Lincoln and Guba<sup>78</sup> and others<sup>95,96</sup> report the utilization of this method for data analysis in in other types of qualitative research. O'Connor et al<sup>96(p41)</sup> further supports using constant comparison in her statement, "Constant comparison assures that all data are systematically compared to all other data in the data set."

Data collection and analysis occurred from February 2015 through December 2015. In some instances due to researcher and participant scheduling, the transcription of the prior interviews were not transcribed and available to analyze prior to the next scheduled interview. In these situations, to remain as true as possible to the constant comparison method, the researcher listened to prior recordings while reviewing field notes and making analytic memos. Following analysis of each interview, the researcher determined if further clarification or additional questions through follow-up interviews were warranted.

Data analysis began with the interview data. The transcripts were carefully analyzed line by line. Meaningful units were identified coded and categorized. This process continued until each line of transcript was reviewed, identified and coded. All statements had equal value.<sup>54</sup> Moustakas calls this step horizontalization.<sup>54</sup> Using the constant comparison method for data analysis required the researcher to begin identification and assignment of categories beginning with the reading of the first transcript.<sup>78,95</sup> Next, the researcher compared each statement, or incident, to established categories, sometimes necessitating the establishment of a new category. The first six

transcripts were analyzed in succession using constant comparison. Interviews and constant comparison of the transcripts continued until no new themes emerged and data saturation was assured. Field notes and the reflexive journal helped to illuminate patterns and themes during analysis.

Data analysis then continued through early 2017. Whenever analysis resumed, the researcher re-read the interviews, coding and field notes in order to reacquaint herself with the data and maintain credibility of the constant comparison process. The researcher used Microsoft Excel to assist in managing and organizing the data first into categories, and then into themes.

Initially, nineteen separate preliminary categories were identified from the 179 significant statements. Through further analysis and identification of patterns, categories were merged. For example, initial categories of overwhelming, stressful, nervous, and concerned were merged together into a category “Potential to Do Harm” which then contributed to the theme “Take a Deep Breath”. Analytic decisions were recorded in the audit trail. Data analysis continued periodically through early 2017. After considerable review and discussion of themes with the dissertation chair, four themes emerged as a composite description of the essence of becoming and being a physical therapist in the SCN or NICU. These themes are described in Chapter 4.

## **ESTABLISHING TRUSTWORTHINESS AND METHODOLOGICAL RIGOR**

When applying a quantitative research paradigm, a number of methods can be used to establish methodological rigor. Lincoln and Guba<sup>78</sup> offer a description of methods that may be used to enhance trustworthiness and methodical rigor of qualitative findings. The design of the study included activities to improve trustworthiness of findings by establishing transferability, credibility, dependability and confirmability, as delineated by Lincoln and Guba:<sup>78</sup>

- **Transferability:** Transferability refers to “the degree that qualitative research can be generalized or transferred to other settings.”<sup>97</sup> Thick description of the participants’ responses and a thorough description of the participants’ demographics and work experience enhances transferability.<sup>77,78</sup> Thick description, found in Chapter 4, is an integral part of the written report. Thick description provides a rich detailed account of the phenomenon, setting, and participants.<sup>79,98</sup> The reader can then have adequate information to determine if the findings can be applied in their own or other, similar situations.<sup>78,98</sup>
- **Credibility:** The concept of credibility refers to the accuracy or truthfulness of the findings as representative of the perspectives of the participants.<sup>78</sup> Member checks, prolonged engagement and triangulation enhanced credibility.<sup>77</sup> Pre-pilot interviews and pilot testing of the interview guide also contributed to the credibility of the findings.<sup>84</sup> The researcher conducted member checks by sending the analytic categories, interpretations and conclusions to the individuals who had been interviewed and asking them to review and confirm or negate the description and interpretation. Prolonged engagement in the field enhanced methodological rigor. Prolonged engagement is accomplished by the investment of sufficient time to learn the culture and establish trust with participants.<sup>73,78</sup> In this study, prolonged engagement was achieved in several ways. These include the researcher’s experiences with a local special care nursery, the length of time spent learning about the practice settings, and in-depth interviews with multiple subjects. Prolonged engagement is also demonstrated by the researcher’s long standing investigation into the concept of therapist preparation for practicing in the NICU, previous research,<sup>6</sup> and frequent informal conversations with PTs who practice in the

NICU. Triangulation of sources was achieved by obtaining data through more than one source.<sup>99</sup> In this study, triangulation was accomplished by interviewing several participants.

- **Dependability:** The concept of dependability refers to the consistency of findings and parallels the concept of reliability in quantitative research.<sup>77,78</sup> This includes determining whether the methods were appropriate and if the findings are representative of the data. Pre-pilot interviews and pilot testing of the interview guide enhanced the dependability of this project.<sup>84</sup> Dependability was further assured by an inquiry audit.<sup>78</sup> An inquiry audit consists of an external auditor, who has methodological expertise, reviewing the process and results of the study, in this case the dissertation committee chair.<sup>78</sup> This included reviewing the audit trail which consists of the reflexive journal, methodological log, field notes and post interview memos.<sup>78</sup> It also includes reviewing the results of the study to confirm that the results are grounded in the data.<sup>78</sup> Both dependability and confirmability are established with an inquiry audit.<sup>73</sup> Demonstration of credibility further supports dependability of findings.<sup>78</sup>
- **Confirmability:** Confirmability is an indication that the findings of a study are built from the participants' responses and not researcher bias, motivation, or interest.<sup>78</sup> Confirmability was accomplished by triangulation, the reflexive journal, maintaining an audit trail, and the inquiry audit.<sup>78</sup> The researcher kept a detailed audit trail of interview field notes, reflexive journals, all records, and various drafts of interpretation. A methodological log is a listing of methodological decisions and accompanying rationales which become part of the audit trail and enhance trustworthiness of the study.<sup>78</sup> The researcher made an entry into the methodological log when methodological decisions

were made throughout the study. Additionally, pre-pilot interviews and pilot testing of the interview guide also enhances the confirmability of the findings.<sup>84</sup>

## **SUMMARY**

This chapter presented the methodology, the study design, and described the execution of the methodological plan for this qualitative research study. This phenomenological study was based on solid qualitative principles. The researcher utilized methods described by Lincoln and Guba to enhance the trustworthiness of findings.<sup>78,95</sup> The researcher utilized the constant comparison method of data analysis. Researcher reflection was provided to make transparent the researcher's interest, knowledge, perceptions, beliefs and biases, in keeping with the axiological assumption that research is never value-free. The final two chapters will describe and interpret the experiences of becoming and being a physical therapist in the NICU from the therapists' perspectives.

## CHAPTER 4: RESULTS

### INTRODUCTION

The purpose of this qualitative study was to understand the experiences of becoming and being a physical therapist in a SCN or NICU from the therapists' perspective. Three research questions guided this study: (1) What is the experience of deciding and preparing to work in the SCN or NICU? (2) What is the meaning of providing physical therapy in the SCN or NICU? (3) What do practicing therapists believe to be the knowledge and skills necessary to provide safe and effective services in the SCN or NICU? Findings are presented in this chapter.

### FINDINGS

Demographic data were collected from the participants and are presented in Table 4.1

Table 4.1 Participant Demographics

| Pseudonym | Level NICU | Type of hospital                               | Gender | Entry level degree | Specialty certification, other degrees, APTA Membership                                | Years' experience in NICU or SCN |
|-----------|------------|--|--------|--------------------|--|----------------------------------|
| Lisa      | III        | Community hospital                             | F      | DPT                | PCS  | 8                                |
| Kimberly  | IV         | Level 1 trauma center/ academic medical center | F      | MPT                | DPT, APTA member, World Federation of PT member, APPT member                           | 8                                |
| Michelle  | III        | Metropolitan children's hospital               | F      | BS                 | Certified Infant Massage, Neurodevelopmental Treatment (NDT) certified, NIDCAP trained | 18                               |
| Mary      | IV         | Metropolitan children's                        | F      | MPT                | None Reported  | 11                               |

|           |                   |   |   |     |  |     |
|-----------|-------------------|---|---|-----|--|-----|
|           |                   | hospital  |   |     |  |     |
| Jennifer  | III               | Children's hospital Level 1 trauma center         | F | MPT | DPT, PCS   | 7   |
| Amy       | III               | Children's hospital in an academic medical center | F | BS  | Masters, PhD, PCS  | 3-4 |
| Melissa   | IV, III, II and I | Suburban and inner city hospitals (2 locations)   | F | BS  | PCS, Science Doctorate   | 25+ |
| Stephanie | III               | Regional medical center                           | F | DPT | PCS, APTA member, APPT member  | 1.5 |
| Jessica   | IV                | Metropolitan location, Level 1 trauma center      | F | MPT | DPT, PCS and Infant massage instructor   | 7   |
| Amanda    | III, I            | Academic medical center                           | F | DPT | None reported  | 6   |
| Sarah     | III               | Large medical center                              | F | BS  | DPT, Assistive Technology Professional, PCS, APTA member, Infant massage and Kinesiology certified, Neurodevelopmental Therapy (NDT) trained | 9   |
| Elizabeth | III               | Academic medical center                           | F | MPT | APTA member  | 2   |

DPT: Doctorate of Physical Therapy; MPT: Master of Physical Therapy; BS: Bachelor of Science

Four themes that collectively represent the essence of working in the SCN or NICU emerged.

These four themes include: 1) *Never Alone*, which reflects the unique collaborative culture of the NICU; 2) *Families First*, which speaks to the need to focus on the family, avoid judgment, and facilitate their involvement in the care of their child; 3) *Take a Deep Breath*, which reflects the need to be mindful and cautious because of the potential to do harm due to the extreme fragility of the infant; and 4) *Know What You Don't Know*, which reflects the depth and breadth of knowledge necessary to work in the NICU/SCN.

A detailed description of each theme and supporting exemplars from the data are provided in the following sections. A summary of themes is presented in Table 4.2. Pseudonyms are used to protect participant confidentiality.

### **Theme 1: Never Alone**

Participants stated that “you are never alone in the NICU” and that ecology provides the PT with much support. The ecology of the NICU requires a collaborative approach and, in the best-case scenario, results in a shared community of professionals all working for the good of the babies. For the most part, this culture supports the development of mutual respect, understanding, sharing and having each other's back. Mary expressed this best with her comment:

... in our group, you are never alone, you always have a coworker to bounce ideas off of, can you come with me and look at this, or I have come across this, has anyone else come across this type situation. I never feel independent really, because I always have friends.  
(Mary)

Other participants agreed:

Again, I think you know my situation was pretty safe. I'm not saying that it couldn't have been better. We have a 15 bed NICU.....neonatologist there all the time, we don't have pods just one big room and one particular spot where the critical babies go, and I was never alone with the baby per say and we worked together as a team. (Jennifer)

I was nervous, which I think is important and I also felt really well supported. I feel like you feel nervous with these fragile babies, but you should feel less nervous there are so many people watching and helping the entire time. If anything happens, the nurse is right



there the entire time. But there was a certain level of anxiety just for working with that population. (Stephanie).

Participants reported that the culture in the NICU impacted their sense of value and contribution to the team. Many suggested that interactions with nursing staff and physicians were key to this sense of belonging to the team. This collaborative culture is best reflected in these comments.

I definitely think the culture is one in its own. The nurses find us and ask us to see patients, we are asked to go around family meetings, I think we are really valued in what we do and what we provide, even if it is just holding the baby to help with self-regulation. (Amanda)

In every setting, it depends on the people you work with. I have been very fortunate at XXX and at ZZZ that I worked with amazing neonatologists, developmental pediatricians, pediatric neurologists, pediatric podiatrists, where my insight and my opinion matters. I think that in certain settings and certain institutions that isn't always the case, but looking that we can each provide a piece of the puzzle. (Sarah)

I liked how well integrated they were with the medical team, that you were making a cooperative effort for the baby's well-being on long term outcomes. In our NICU, the therapists are really valued for the perspective that they bring to the medical team (Mary)

In other instances, participants reported the existence of a more negative culture or ecology in the SCN or NICU. They described working in or being aware of situations where they or other therapists felt like outsiders and did not feel like they were part of the team. This negative culture was best described by Amy and Melissa.

My feeling at the time of working in the NICU. .... I guess really wanting to be part of the team, I desperately want to feel like a team member and I didn't, and I recall feeling like an intruder. (Amy)

Also, you need to figure out, where am I in that team in the NICU. That is a very hard challenge and it can take a long time to feel a part of that team. I think once you feel like you have that home and the nurses and you have that mutual respect and the understanding that we all bring something to the table. (Melissa)

We have a lot to offer as physical therapists in the NICU, and sometimes our expertise is underappreciated as PTs in that setting but that it is very important. It's challenging because people don't know why we are there or what we can do to help. (Stephanie)

I think a lot of the reason that a lot of people don't fit in the NICU is because it is a different ecology. You don't practice pure PT, pure OT or pure speech therapy. The lines

are really blurry in the NICU because everything kind of overlaps significantly.  
(Michelle)

Participants emphasized that developing trusted relationships with nurses and neonatologists was a key consideration to maximizing that collaborative culture. According to Amy:

You need to get to know the nurses, work with the nurses, .....they are very protective of their babies ..... Just establishing that trust was huge and the most difficult barrier for me, having to have communication skills, the grace and the ability to work with rather than just be this physical therapist that comes in and disturbs their baby. It was really quite a learning experience for me and I was likely ill equipped. (Amy)

From the perspective of the participants, the roles of the health professionals in the NICU overlap, yet they each bring their unique scope of practice to the team. Participants overwhelmingly agreed that the degree of collaboration, or lack thereof, can have significant impacts on the culture, and the capacity for teamwork and effective care within the NICU. The ecology of the NICU can facilitate a more collaborative or a more competitive, alienating environment. Health professionals need to understand how they can work collaboratively within the unique atmosphere of the NICU environment, while respecting the role of others. This is best captured in Michelle's statement: "The cool thing about the ecology of the NICU is that each discipline has its own thing to offer, but we all kind of work together and pitch in where needed. An example would be a respiratory therapist might change a baby's diaper if it needs to be changed and a nurse might help a family with a feeding and I might help position a baby while they are changing a bed." The following quotes further support this theme:

We also have great interdisciplinary team so our OT manager was at XYZ Hospital and received training there so she was never NIDCAP certified but practiced under NIDCAP at XYZ and has brought a lot to the team. We have an OT that I brought over from ABC hospital and two speech therapists who have specialized in NICU who each have brought their experiences and skills and we really function more as a therapy team, we all have our scope of practice but it is really collaborative and we optimize our patient outcomes at XYZ because of the team approach we take (Sarah)

.....so there is not a lot of territorial dispute going on in the NICU between disciplines which is very refreshing. There is plenty of room for everybody to work together  
(Michelle)

.... they didn't really differentiate a whole lot, there was an OT part time, a PT part time and a full time PT but it was really more of a developmental therapist role unless the child had very particular needs that might be better suited for the OT who did most of the splinting, not always, and we also covered feeding which was again something I needed additional training in, continuing ed but a lot of that came from the mentorship program. We covered many aspects that might in a different setting be considered OT or speech.  
(Elizabeth)

## **Theme 2: Families First**

The participants comments overwhelmingly focused on a primary theme of centering on the families' needs. They emphasized the importance of understanding and not judging the families.

The participants expressed the necessity of building mutual respect and trust between the family and the nursery professionals. The value of developing mutual respect and trust are best exemplified in the following participant quotes:

Therefore, the whole medical team develops that, or attempts to develop the trusted relationship, because there is background of the parents and what they bring, and then there is episodic stress of "oh gosh the NICU is not at all what we expected."  
(Kimberly)

..... And it means developing a trusted relationship.....you still want that relationship to be the solid one, the trusting one because then you have that trusted relationship, the kid benefits and then the relationship between the kid and the parents benefit  
(Kimberly)

...we can meet somewhere so the relationship ..... so that relationship is a trusting one. (Kimberly)

Parent education is an essential component of a pediatric plan of care. Therapists reported that a rewarding part of their job was teaching parents how to care for their child and facilitate their child's development. Examples of this include:

..... my favorite part was meeting with parents and teaching them about their baby and how to comfort their baby, how to hold their baby in ways that was going to help

them develop in the way they needed to or to facilitate things the baby could not do. (Elizabeth)

It is so important in the NICU to have that bond or be a facilitator of promoting that bond with the baby and the family or caregiver. (Melissa)

...is very rewarding personally and professionally to see a parent be successful with their child and to facilitate that bonding and it is incredibly rewarding to have them come back and follow up so they can say, wow, this really helps, we are doing great.” (Michelle)

Being an influence, I guess, to help parents and children bond, especially when their resources are limited, is overwhelmingly wonderful, if that makes any sense. [Laughs] And then figuring out, because parents have different learning styles and they want to see the best in their kids. (Kimberly)

Participants recognized their limited knowledge about what the families are dealing with outside of the NICU. Participants acknowledged the existence of other significant family issues that need to be addressed, and discussed being non-judgmental, particularly when they were aware of challenging situations, or when “bad” decisions were made by family members. Trying to be non-judgmental was exemplified by these remarks by the participants:

Trying to be as non-judgmental because of some of the family circumstances and dynamics that happen that will lead to these children needing to be in the nursery, whether it starts with conception or the dynamic that the child is now entering into, custody, teen parents, single parents..... (Elizabeth)

Then there might also be other stressors that are continual on the family. If a kid goes home or the parents go home to their other kids but they can't put food on the table, then that family were all sent to the NICU already stressed. You may or may not see them for a long time, well why is that? You can't pass judgment on them, you are not in their shoes. You can understand and if you understand and get the information, then there's a lot of things you can do that can help bridge the gaps. (Kimberly)

We also have an incarceration program that is very difficult and trying to get the security and the rules and regulations to recognize the moms need more than two 15 minute periods a day to see their baby. Especially since they are going to be going back to incarceration in two-three days. That is a whole different story. That is something I have been experiencing the last three years that it is a whole new feeling I had to deal with. (Melissa)

I have a really strong conviction, especially now since I am in an inner city NICU, it is very, very, very different than what I grew up in. Myself and the team that I work

with have a very strong conviction about letting the moms have contact with their baby and holding them and having time allotted, other than some of the families, it is not a 24/7 unit yet, but it is a pretty generous visitation time. (Melissa)

“If you can understand where the person is coming from, it makes meeting them a little bit easier.” Kimberly

### **Theme 3: Take a Deep Breath**

Take a deep breath reflects the need to be mindful and cautious because of the potential to do harm due to the extreme fragility of the infant. Sarah described the need to pause and reflect on the responsibility that comes with working in this setting each time she begins a treatment session: “you need to be thoughtful and mindful every time you are in one of the patient’s room..... take a deep breath before you walk into the room because what you do in that room can change the course of how they may recover.”

Participant statements reflected their awareness that working with these babies is a big responsibility. They shared that they consistently reminded themselves of this responsibility. The participants described the job as challenging, stressful, scary, and rewarding. They also reported feeling an incredible need to provide the very best care possible. The following statements further support this realization of the responsibility that comes with working in this setting:

It is fun, it is exciting, it’s a big responsibility. *[big pause]* Being fun and exciting are the two big descriptors and it is a big responsibility because you are taking a small life and you are handling, like maybe two, three, five or 10 other people’s lives as well. (Kimberly)

...because the potential to do harm is significantly higher in the NICU than it is anywhere else. (Michelle)

One of the things I tell my students is it is not a setting to go into lightly, that there is an extreme fragility to these patients....(Sarah)

My feeling at the time of working in the NICU. I think it is an overwhelming sense of needing to provide perfect care, not harm the babies (Amy)

The potential to impact the futures of babies and families was a common thread. Participants described the desire to impact future physical function, as well as help the family to face the future.

I think to me it means helping to shape the future, the future generations I guess.  
(Mary)

..... and if we don't prepare parents and kids and think about the future, then I don't know if we are doing justice. (Jennifer)

I think we can do a lot to help these kids so they don't develop later problems, but we have to be careful that we are not the ones to help cause some of those. I think it is a fine balance, it is very rewarding when you can see that happen. (Jessica)

.....how we can ameliorate some of those things to minimize the effect of long term neurobehavioral sequela. (Sarah)

You know, they going to be able to think for themselves, need for themselves, interact, express happiness, you know, be part of a family? (Mary)

It is challenging but extremely rewarding because the babies are such a clean slate, even if they have devastating injuries, they still have the opportunity to make really nice changes, so that is kind of cool. (Michelle)

The participants overwhelmingly reported that specific prior experiences and knowledge gained from those experiences make a therapist in the NICU better able to affect future function and help families face the future. They argued that nursery PTs needed experience in pediatrics beyond the NICU with children across the lifespan of disabilities. They felt that those with understanding of normal and abnormal development are better prepared to interact with families who may be facing raising a child with a lifelong disability. Participants stated that with the knowledge of normal and abnormal development and the consequences of a Grade IV bleed or other devastating complications, one can better understand what the future can bring. The following statements exemplify the participants' beliefs regarding the importance of prior experience in pediatrics and understanding of lifelong consequences:

I do think it is important that our NICU therapists are not just in the NICU and that

they do have some sort of exposure with outpatient case load where they are seeing a life span, not just NICU follow-ups, because I think you can lose sight of all of those complications that occur during the lifespan when we have neurological injuries.

I think also the really, really, really sick babies, I think across the medical profession as a whole, not just the NICU, communication with the family lacks from the medical team side on what the outcome will be of the child that is severely ill and on ECMO for days and days and days, had an APGAR of 0 and 1, what that really will mean in the long run and it hurts to watch parents go through that and does not fully understand and the baby somehow makes it through a rehab facility and keeps coming back, the parents don't really understand. That really gets to me sometimes. Yeah. (Amanda)

.....really understand what this means when we have an MRI that doesn't look good or orthopedic issues or a kid with meningitis, do they really understand what this means for the next 5, 10, 15, 50 years? How to approach families from that perspective and I am not saying you tell the families, your life is going to be a little tough for the next 10 years, but to even have that perspective of what it can look like. The other thing it is they [say].... they are doing great but they don't always have in the back of their mind, like I do, that is a grade III bleed and I am just not sure, or they just seized for how many minutes, or they have this hypoxic event and I enter this a lot more cautiously than you do (meaning nurses). (Jennifer)

#### **Theme 4: Knowing What You Don't Know**

As the participants reflected on their experiences, they realized that as new SCN or NICU therapists that they did not know what they did not know. When asked to reflect on their preparation for entry into NICU care, most participants believed they did not initially understand the high level of responsibility that comes with working with premature and high-risk infants. They did not fully understand that they could negatively impact the infant's long-term prognosis, nor were they conscious of the depth and breadth of knowledge necessary to safely intervene with premature infants. Many participants noted that when they first entered the NICU as inexperienced therapists, they were unaware of their lack of knowledge. With increased experience, however, they began to recognize their early lack of knowledge. Once working in the environment, they were humbled by the fragility of the infants, and need for specialized knowledge and experience. The following participant statements convey these thoughts:

Know what you know and know what you don't know, and find appropriate resources when you don't know it, because that is not a place to just fake it until you make it, of course. (Jennifer)

At the time they did not explain it well they made it like a "special club", the "NICU club" and you could not go. I get it you know, you should be really afraid, these babies are fragile. So I appreciate it now, not so much at the time. (Stephanie)

When I first started as a pediatric therapist, I did not understand why I could not go in to the NICU. After three, four years' experience working with kids I'm very happy they did not send me into NICU when I was a new grad. (Stephanie)

I don't think coming out of school I had the sensitivity to the brain development that occurs before birth and during the first 3 months after birth and how all the systems mature at different rates. And so you need to be careful, if a baby is acting up, are you going before care when their stomach is empty and they are having acid reflux or are you going during a feed and they are having reflux, you know you cannot interrupt them between cares because you are interrupting their brain development which we all know is a bad thing. (Mary)

While some believed they were prepared, others were forthcoming about their lack of preparation:

...and I think every person who is inexperienced goes in saying, what in the world am I doing, this is kind of scary down here. And it is. (Kimberly)

In all honesty, was I probably prepared well enough when I went in? No, I was naïve. (Jennifer)

My feeling at the time of working in the NICU.... I think it is an overwhelming sense of needing to provide perfect care, not harm the babies. (Amy)

The participants specifically commented on the value of prior pediatric experience to provide a foundation of knowledge in order to be able to identify and analyze typical and atypical development of the infants in the SCN and NICU. The following statements reflect this belief:

...if you don't know what typical and atypical baby development looks like, how are you going to know what typical and atypical fetal development looks like? and it not something you can videotape or learn from a book, so the experience helps shape your understanding. (Michelle)

I think having a good foundational knowledge of typical development, atypical development, and just where they would fall in being premature infants. What we would expect of a 24 week baby. I think that is a big thing. Knowing how to facilitate



more organized behavior and being able to recognize when it is appropriate when to touch, when not to touch, those types of things. (Jessica)

The participants also recognized the value of pediatric practice prior to working in the SCN/ NICU in order to obtain the necessary consulting, education, and advocacy skills for parental education and collaboration. Participants reported on the need to know the challenges these parents will encounter when they go home, and to be knowledgeable about what the future might bring.

I also think having some PT experience before working in a NICU is important too because you are going to be asked a lot of questions that fall in the gray area and you need to know how to advocate for your baby even though it is gray, it is not black or white. I think that communication skill.... needs to be learned. (Mary)

I feel very strongly that they have to come in with a minimum of one- three years, but that is a large range, but at the minimum one year working in an outpatient clinic area, some type of environment where they are seeing infants one to two years of age so that they can recognize the challenges these parents have when they go home, not just the baby’s challenges, but the family’s and all the things that are often involved with these little ones and the dynamics that change once they go home. I don’t feel you should compromise on this, I feel they have to have that experience. (Melissa)

Having a strong background with working with kids with grade 4 hemorrhage at age three, five, seven and 10 to really give you the base for looking at these infant and what are they going to look like when they grow up. And what do parents need to know now and when parents have questions we know what to tell them. (Stephanie)

I think you definitely need to have a background in pediatrics definitely at least two years’ experience working with small children, you know, under the age of three um. You need to have hospital experience, that's very important too. ....and really really, really good background on um, development in the, well, birth to three but also um, from 32 weeks to 38 weeks, 40 weeks so a good background in normal development. (Lisa)

Table 4.2 Summary Table of Themes

| Themes      |   | Descriptors  |
|-------------|---|--|
| Never Alone | • | <ul style="list-style-type: none"> <li>• never are alone in the SCN or NICU, and this provides support</li> <li>• teamwork, trust and collaboration with other professionals who practice alongside PTs in the SCN or NICU is</li> </ul> |

|                     |   |   |
|---------------------|---|---|
|                     |   | <p>key for successful practice</p> <ul style="list-style-type: none"> <li>• the ecology of the SCN or NICU is different from other PT practice settings</li> <li>• each individual SCN or NICU has its own physical and sociological culture</li> </ul>   |
| Families First      | • | <ul style="list-style-type: none"> <li>• need to put families' needs first</li> <li>• a strong need to understand families: understanding what they are going through with the premature birth and other outside stressors.</li> <li>• the need to build mutual respect and trust with families to build that collaborative relationship</li> <li>• the importance of not judging, accepting and meeting families <i>where they are</i></li> <li>• provide family education relevant to the family's needs and goals</li> </ul>   |
| Take a Deep Breath  | • | <ul style="list-style-type: none"> <li>• reflects the need to be mindful and cautious because of the potential to do harm due to the extreme fragility of the infant</li> <li>• an intense sense of the seriousness of what they do</li> <li>• a PT providing services in the SCN or NICU can impact the child's future with an error in service delivery</li> <li>• it's a big responsibility to work in the NICU</li> <li>• the ever present knowledge that there is the possibility to do harm if you do not understand the premature neonate needs</li> <li>• the job is challenging, stressful, scary, and rewarding.</li> <li>• consider potential future outcomes to help the parents look to the future</li> <li>• need to pause and reflect upon the responsibility</li> </ul> |
| Know What You Don't | • | <ul style="list-style-type: none"> <li>• there is a need for a depth and breadth of knowledge and previous experience for safe and effective PT practice in</li> </ul>  |

|      |  |   |
|------|--|---|
| Know |  | <p>the NICU.</p> <ul style="list-style-type: none"> <li>• know what you don't know regarding physiological needs and brain development of the neonate,</li> <li>• need to know preterm and term normal and abnormal development, an understanding of lifelong consequences of neonatal complications</li> <li>• understanding what the future may bring by treating children and adolescents.</li> <li>• understanding what the future may bring by treating children and adolescents.</li> <li>• it should be a "special club"</li> <li>• other pediatric skills needed: consulting, education, and advocacy skills for parental education and collaboration.</li> </ul> |
|------|--|---|

In phenomenology, a metaphor, image or graphic is often utilized to facilitate data analysis and interpretation, and visually represent the findings.<sup>78</sup> Several metaphors, images and graphics were explored during the data analysis process. All themes were interrelated, thus that needed to be reflected in the image chosen. The four themes together represent the essence of practicing in the SCN or NICU as described by the participants. The researcher determined that a Venn diagram best represents the relationship between the themes that emerged from the data and PT practice in the NICU. Refer to Figure 4-1. The four outer overlapping ovals represent the 4 themes derived from the participants' responses. These include 1) *Never Alone* 2) *Families First* 3) *Take a Deep Breath* and 4) *Know What You Don't Know*. In the NICU, a PT is never alone. Teamwork, trust, and collaboration with other professionals who practice alongside PTs in the SCN or NICU is key for successful practice. There is a unique physical ecology in the NICU. More importantly though, a unique ecology exists that necessitates that one be keenly aware of

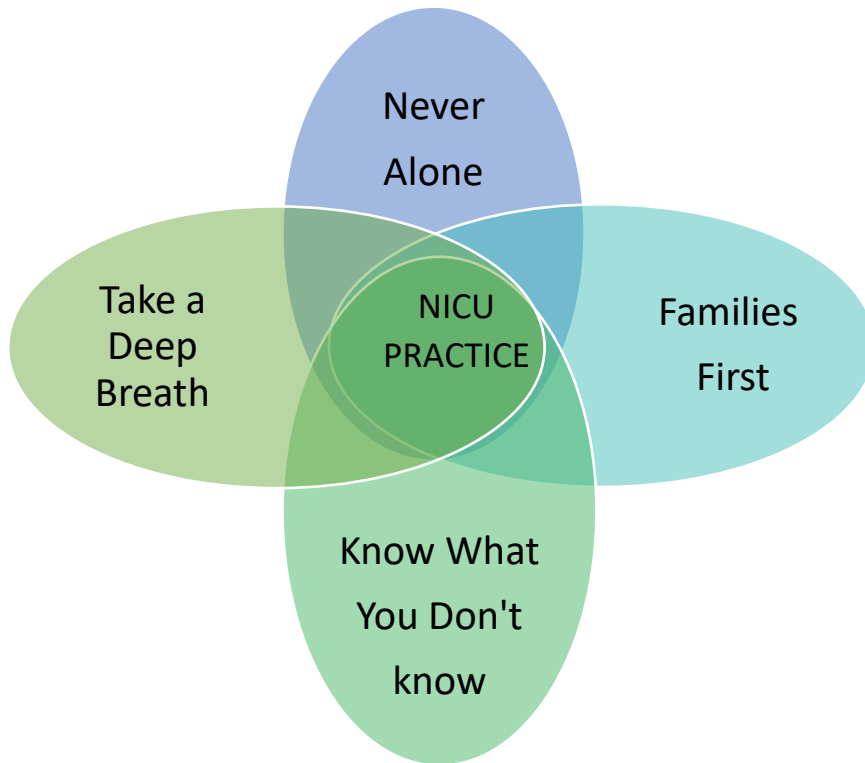
the potential to do harm; thus the need to take a deep breath figuratively, and perhaps literally prior to interacting with the premature neonate and the family. Therapists must be aware of their strengths and weaknesses pertaining to the care of the premature neonate, thus the need to reflect upon what they know and what they do not know pertaining to the care of the premature neonate. Furthermore, aligned with these principles is the notion that families must come first. Families have unique needs. They may have personal, psychosocial, emotional, or physical needs of which the NICU staff may or may not be aware. Each of these four themes are represented in an oval overlapping with each of the other themes. At the point where all four ovals intersect, NICU practice is conceptualized. All four themes together represent the essence of PT practice in the NICU.

At this point it bears discussion of how these themes, and the essence of PT practice in the NICU, is different from other areas of PT practice. One could argue that these themes individually are important in PT practice; however, the premise of these results is that all four themes married together represent the essence of PT practice in the NICU. For example, *Know What You Don't Know* is important in all PT practice settings. However, in other settings where a PT may encounter fragile patients, they have their entry level PT education to draw upon, thus they already have a sense of what they do not know. As an example, PT education addresses the risks, precautions, and contraindications for adults with increased intracranial pressure. However, a PT entering the NICU may be unaware of the risks to fragile infants. Likewise, patient centered practice is important in other practice settings across the lifespan.<sup>100,101</sup> However in the NICU with the infant, family-centered care has significant implications for infant brain development.<sup>102,103</sup> In other practice settings, therapists may work independently, one on one with a patient without frequent collaboration with other practitioners. For example a PT clinician

my work in a private practice setting as a lone physical therapist, without the necessity of close collaboration with colleagues on a frequent basis.

However, it is noted that collaboration and interprofessional practice are important throughout health care.<sup>104-106</sup> The degree and necessity of role overlap, and collaboration in the NICU was emphasized in this project. While each of these themes may also be representative of other PT practice settings, they are not likely not all present and likely not present to the degree they are in the essence of PT practice in the SCN or NICU.

**Figure 4-1**



## SUMMARY OF FINDINGS

Participants represented a broad spectrum of years of experience, practice scenarios, and geographic regions. Data analysis using the constant comparison method yielded four themes

that collectively describe the lived experience of PTs who work in the SCN or NICU, 1) *Never Alone* 2) *Families First* 3) *Take a Deep Breath* and 4) *Know What You Don't Know*. The use of a Venn diagram illustrates the interaction of the overlapping themes resulting in the essence of PTs practicing in the NICU. These themes represent the essence of being and becoming a PT in the NICU, from the perspectives of the therapists who participated in this study.

## CHAPTER 5: DISCUSSION AND SUMMARY

### INTRODUCTION:

The purpose of this chapter is to discuss and interpret the findings of this study in order to enhance understanding of physical therapists' lived experiences in the SCN and NICU. The researcher's description and interpretations of the therapists' experiences, and reflection on field notes, will be discussed in the context of existing literature. Additionally, implications of the research findings, recommendations for future research, and limitations of the study will be addressed.

In this study, four themes emerged that describe the lived experience of PTs who work in the SCN and NICU. These themes are: 1) *Never Alone* 2) *Families First* 3) *Take a Deep Breath* and 4) *Know What You Don't Know*. The literature supports these themes. The importance of NICU teamwork and collaboration has been reported on as a means to enhance outcomes for both the parents and the neonate.<sup>17,47,107</sup> The literature also supports the necessity of focusing on the family with family-centered care.<sup>43,51</sup> The fragility of the premature neonates has also been widely reported in the literature.<sup>44,50,102,108</sup> Additional analysis reveals an incongruity between curricular documents that guide DPT education, and The Academy of Pediatric Physical Therapy (APPT) and the American Board of Physical Therapy Residency and Fellowship Education recognition that neonatal physical therapy is a subspecialty area of practice requiring advanced expertise.

### DISCUSSION

After extensive reflection, writing and rewriting of the themes, it became evident that the themes identified in this project intimately align with previous research pertaining to expertise in PT

practice. Expertise in physical therapy practice has been researched extensively.<sup>23,24,67,109-114</sup>

Jensen et al<sup>22</sup> identified a theoretical model of expert practice in physical therapy which included four dimensions. These four dimensions align intimately with the themes identified in this project and include: “1) a dynamic, multidimensional knowledgebase that is patient-centered and evolves through therapist reflection; 2) a clinical reasoning process that is embedded in a collaborative, problem-solving venture with the patient; 3) a central focus on movement assessment linked to patient function; and 4) consistent virtues seen in caring and commitment to patients.”<sup>22</sup>

First, “a dynamic, multidimensional knowledgebase that is patient-centered and evolves through therapist reflection”<sup>22</sup> clearly relates to comments describing the need to continue to learn past entry level practice, the utilization of mentors as a source of knowledge, as well as the need to be family-centered and listen to patients. These thoughts have built the themes of *Never Alone*, *Families First* and *Knowing What You Don’t Know*. “A clinical reasoning process that is embedded in a collaborative, problem-solving venture with the patient”<sup>22</sup> is reflected in the participants’ comments related to focusing on the family and not judging them, meeting them where they are. Furthermore, the clinical reasoning process is implied in the participants’ comments about understanding what harm can be done and how the future development of the premature baby can be impacted by care provided in the postnatal period in the NICU. These comments formed the themes of *Families First*, *Know What You Don’t Know*, and *Take a Deep Breath*. The themes *Know What You Don’t Know*, and *Take a Deep Breath* are further supported by “a central focus on movement assessment linked to patient function”<sup>22</sup> reflected within the participants’ comments regarding the need to understand normal and abnormal development, the impact of NICU care on future development, and the importance of family members’



understanding of future developmental outcomes. “Consistent virtues seen in caring and commitment to patients”<sup>22</sup> is abundantly reflected in the comments regarding the need to understand what families are going through, building mutual respect and trust, not judging families and meeting them where they are, which supported the theme *Families First*.

This close alignment between Jensen’s dimensions of expertise with the themes of this project, suggests that practice in the NICU and SCN is at an expert level. Furthermore, the results of this project align with the literature by Sweeney<sup>1,2</sup> and others<sup>79-81</sup> who report that PT practice in the NICU a subspecialty of practice requiring specific expertise.

## **INTEGRATION OF THE FINDINGS WITH PREVIOUS LITERATURE**

### **Theme One Integration: Never Alone**

A uniform thread throughout all of the interviews was that the NICU ecology is unique compared to other PT practice settings, but also between different SCNs and NICUs. The specialized care of neonates, very specialized equipment, the overlapping roles of health professionals, and the fragility of the premature infant makes the NICU setting very different from many other PT practice situations.<sup>47</sup> Barbosa<sup>47(p8)</sup> indicated that “the NICU is a unique environment that functions as an independent community with its own personnel, equipment, terminology and policies.” Furthermore, the ecology of different SCNs or NICUs can vary from hospital to hospital dependent upon the type of hospital, philosophy, resources, and the personnel engaged in practice in the SCN or NICU.<sup>47</sup> Staff roles may overlap considerably, which may cause some conflict among OTs, PTs and SLPs, particularly if there is not good communication amongst the team.<sup>47</sup> Barbosa<sup>47</sup> discussed the importance of achieving a clinical partnership because it improves the outcomes of babies, supports families and promotes team satisfaction.

In the current study, therapists also stated that in the NICU all professionals bring their own

scope of practice, yet the roles overlap in many instances. Barbosa<sup>47</sup>, and others<sup>1,2,50</sup> have reported on this same issue, in particular for PT, OT and SLP. When discussing the ecology of the NICU, the participants emphasized the necessity of establishing trust with their colleagues. Ohlinger et al<sup>107</sup> similarly described that effective communication, trust and respect are essential for a collaborative team environment. Participants also related experiences of an unfavorable ecology in the NICU where they practiced. Barbosa also described situations that can lead to a difficult ecology in the NICU, including the shared responsibility for managing conflict.<sup>47,107</sup> The existing literature supports the participants' beliefs of the necessity of establishing trust, communicating effectively, and building a collaborative team in the NICU. Participants in this study clearly communicated differences in ecology when comparing one NICU setting to another and when comparing the NICU to other PT practice settings; and stressed the importance of understanding that difference.

### **Theme Two Integration: Families First**

The participants voiced a pervasive personal emphasis on practicing with a family-centered approach. This approach was an important part of their lived experience. They expressed a strong need to promote bonding and nurture the family unit. The evidence on expert practice in physical therapy indicates the necessity of being patient or family-centered. Jenson et al<sup>24(p34)</sup> report that “practice begins and ends with the patient.” The therapists in her study across specialty areas, including pediatric PTs, stated that expert physical therapists “listen intently to patients and their families, collaborate with and teach patients and families about regaining function and enhancing their quality of life.”<sup>24(p34)</sup>

Much of health care is focusing on patient-centered care and family-centered care.

Understanding and connecting with families is a hallmark of pediatric PT practice.<sup>51,115</sup>

Therapists in this project shared their beliefs about the necessity of family-centered developmental care. Furthermore, research indicates that family-centered care in the NICU provides further neuroprotective benefits to the developing newborn.<sup>102,116</sup> The term neuroprotective is used to describe interventions that support the developing brain to help promote normal development and prevent or minimize disabilities.<sup>117, 118</sup>

The NIDCAP program developed by Als is based upon the Synactive Theory of Infant Development, and is a developmentally supportive approach to care that is individualized to the infant's needs and levels of physiologic stability. The program is based upon observation of the infant and interpretation of their behaviors and reactions to interventions.<sup>104</sup> Als<sup>44</sup> presents the Synactive Theory of Infant Development as a framework for understanding the behavior of the premature infant, which includes 5 subsystems of motor, autonomic, state, attention/interaction and self-regulatory. The preterm infant faces challenges balancing the needs of these subsystems.<sup>44</sup> Understanding and responding to the premature infant's cues for self-regulation is important for optimal development.<sup>44</sup> NIDCAP also includes addressing the physical environment to support physiologic stability and increasing nurturing of the family.<sup>44</sup> Favorable medical and developmental outcomes have been shown with the NIDCAP approach.<sup>45,50,119</sup> Altimier<sup>116(pg 230)</sup> specifically presents neuroprotective care as “strategies to support optimal synaptic neural connections, promote normal development, and prevent disabilities.” The seven neuroprotective core measures for family-centered developmental care of the premature neonate are a “healing environment, partnering with families, positioning and handling, minimizing stress and pain, safeguarding sleep, protecting skin, and optimizing nutrition.”<sup>116(Pg 230)</sup>

The Family Nurture Intervention is a family-centered approach that focuses on establishing emotional and physiological co-regulation between mother and infant starting in the NICU.<sup>120,121</sup>

Formal family-centered developmental care programs such as NIDCAP, The Wee Care Neuroprotective NICU program, and the Family Nurture Intervention focus on the importance of family-centered care for optimal neuroprotection of the premature baby. <sup>102,116,120-122</sup>

Not only do expert therapists focus on the family as reported by Jensen<sup>24</sup>, but family-centered care also provides a neuroprotective benefit.<sup>50,122</sup> This concept aligns closely with the APPT statement that family-centered care is essential in the SCN or NICU.<sup>123</sup> Evidence from this project supports the need for family-centered care in the NICU from the perspectives of the therapists who work in the NICU.

### **Theme Three Integration: Take a Deep Breath**

This theme emerged from participants' responses indicating a universal sense of the seriousness of what they do, and the impact it can have on the life of a fragile baby and their families. They also reflected upon the realization that there is the possibility to do harm if you do not understand the needs of the premature neonate. Therapists perceived working with these babies as a big responsibility, stating it was challenging, stressful, scary and rewarding. The needs of a premature infant are very different from a term newborn, and there is a very real potential to do physical harm to the child if the therapist is not properly trained.<sup>1,2,44,46,72,108</sup> The fragility of the premature neonate has been reported previously, citing the potential to do harm due to the infant's physiologic instability.<sup>1,2,44,46,72,108</sup>

Preparing families for what the future may hold with their premature infant is a process that evolves over time. Therapists can utilize standardized assessment tools that have been shown to have prognostic value to assist them in preparing the parent for the future. Campbell<sup>18</sup> identifies four important areas in which NICU therapists support families “a) recognizing and responding

to infant behavioral cues, b) handling for social interactions, Sensory stimulation and exercise c) feeding and d) guidance for the transition to home.”<sup>18</sup>

#### **Theme Four Integration: Knowing What You Don’t Know**

Participants who did not have mentoring or prior pediatric PT experience commented that they later realized that when they began in the NICU, “they did not know what they did not know”. Others who had some knowledge stated that the NICU is not a place to “fake it until you make it”. There is a need for a depth and breadth of knowledge for safe and effective PT practice in the SCN or NICU. Kennedy and Long<sup>72</sup> realized this and, in an article targeted to acute care PTs, provide some introductory guidance for that inexperienced therapist.

The Academy of Pediatric Physical Therapy and the American Board of Physical Therapy Residency and Fellowship Education have recognized neonatal physical therapy as a subspecialty area of practice requiring advanced expertise. The American Physical Therapy association as a whole promotes the concept that practice in the NICU is an area of advanced practice.<sup>123</sup> The professional organizations of other rehabilitation therapists have provided similar guidance for their professions’ practice in the NICU.<sup>124,125</sup> The professional organizations of occupational therapists and speech language pathologists state that the NICU is a practice area where specialized training and skills are necessary to protect vulnerable and fragile premature neonates.<sup>124,125</sup> The Chartered Society of Physiotherapy, the professional organization for the United Kingdom physiotherapists, have published similar guidelines.<sup>14,126</sup> Numerous authors have advocated for PTs who work in the NICU to have a range of pediatric expertise, mentoring and skills in order to provide hands on care to the premature babies.<sup>1,2,4,72</sup> Cardin<sup>122</sup> and Altimier<sup>102,116</sup> promote this for the neuroprotective benefits. Byrne<sup>10,19</sup> and others<sup>1,2,47,127</sup> promote physical therapy provision of care by therapists who understand prenatal development.

Specialized training necessary to work in the NICU includes knowledge of family systems and family-centered care, the NICU physical environment, collaborative teamwork in a critical care unit.<sup>1,10,20</sup> Detailed knowledge about normal and abnormal infant development, including brain development and premature infant development is essential to practice in the NICU.<sup>1,10,20</sup> Furthermore, PTs treating in the NICU need to understand and be competent in physiological evaluation in order to monitor the neonates with physiologic and metabolic instability.<sup>1,10,20</sup> Even the most routine caregiving may pose a risk to the fragile neonate.<sup>1,10,20</sup> Detailed knowledge of the gestational development and the skills of the premature neonate is necessary to evaluate neurobehavioral functioning and development of body systems, and the impact of that immaturity on development.<sup>1,10,20</sup> These concepts, while having been reported as necessary, have not been provided as a result of research. This is the first systematic research to provide physical therapists perceptions of the necessary knowledge and skills necessary for safe and effective practice in the SCN or NICU.

Furthermore, additional training is needed to effectively communicate with stressed grieving parents.<sup>1</sup> The literature supports the participants' recommendation that training for the NICU should include knowledge of the potential trajectories of child development with the NICU diagnoses they will encounter.<sup>1</sup> In order to meet the need for training to enter the NICU, several different clinical training models are recommended for pediatric PTs who are preparing for practice in the NICU. These include a "precepted practicum, neonatology fellowship, or neonatal training as a part of a pediatric residency."<sup>1(p206)</sup> Either of these options can be encouraged; however, there are limited number of neonatology fellowships and pediatric residencies. The precepted practicum or mentoring is the most available option.<sup>12</sup> The profession though should support additional NICU fellowships and residencies with a NICU component.

A mentoring program is available through NANT.<sup>128</sup> It is a yearlong mentoring program designed for those persons who are unable to access a mentor within their own location.<sup>128</sup> Members of NANT can also access monthly mentoring conference calls that discuss current issues in NICU practice.

While existing literature provides recommendations on the need for additional skills, behaviors and knowledge, this project is the first to systematically research practicing NICU therapist's beliefs on training, skills knowledge and behaviors necessary for PT practice in the NICU.

## **IMPLICATIONS OF THE FINDINGS**

These findings are significant for several reasons. These results are supported by the literature as detailed above. The information comes from therapists who are working in a variety of SCNs and NICUs, not from published experts in the field. These participants shared perspectives after being asked open-ended questions such as the grand tour question "Tell me about your experiences working in the SCN or NICU". Implications for public policy DPT education, PT practice and research are revealed in the following section.

### **Implications for PT Education**

Several participants shared that they did not know what they did not know when entering the nursery. Those that were aware of the risks to the neonates expressed that they had a level of concern about harming the neonate. This most certainly has implications for entry-level PT education as well as continuing education. Entry-level DPT education needs have a consistent message across programs that relates that NICU practice is not entry-level and is not for the generalist therapist. Furthermore continuing education needs to make this clear as well.

Clarification of these comments and further recommendations follow.

Other impacts on DPT education include the documents that guide DPT education. There is an incongruity between these curricular documents and The Academy of Pediatric Physical Therapy (APPT) and the American Board of Physical Therapy Residency and Fellowship Education recognition that neonatal physical therapy as a subspecialty area of practice requiring advanced expertise. Documents that influence professional education are often mute on the issue of the infant and premature infant. The Normative Model for Physical Therapy education addresses patients/client management without referencing lifespan implications.<sup>57</sup> This document however is in dire need of revisions, as it has not been updated since 2004.

The *Guide to Physical Therapist Practice* addresses lifespan needs after an episode of care. It also addresses testing neuromotor development throughout the life span, but it does not specifically address the premature neonate. The CAPTE document *Standards and Required Elements for Accreditation of Physical Therapist Education Programs* specifically in criteria 6C, 7C, 7D address lifespan patient needs without specifically addressing the pre-term infant. The APTA document, *Minimum Required Skills of Physical Therapist Graduates at Entry-Level*, considers essential for any physical therapist graduate to be able to address all systems (i.e., musculoskeletal, neurological, cardiovascular pulmonary, integumentary, GI, and GU) and the continuum of patient/client care throughout the lifespan. The document also states that the therapist graduate must recognize their scope of limitations.<sup>129</sup> The APTA Board of Directors document titled *Guidelines: Physical Therapist Scope of Practice* is mute on the premature infant or lifespan in addressing scope of practice of examination, intervention, engaging in consultation, education, and research.<sup>130</sup> It does however address prevention, health promotion, wellness, fitness, and quality of life promotion in all age populations.<sup>130</sup> However, APTA has clearly stated that preparation for PT practice in the NICU should involve additional experience



and mentoring. This restriction, however, is not reflected in many of their documents.

Another key consideration is that within Doctor of Physical Therapy education, pediatric clinical affiliations are not a requirement. In the *Standards and Required Elements for Accreditation of Physical Therapist Education Programs*, Standard 6 pertaining to the curriculum plan, addresses the education of students for “patients/clients with diseases and conditions representative of those commonly seen in practice across the lifespan and the continuum of care”.<sup>58(p23)</sup> It also requires sequential and integrated learning experiences for geriatric and pediatric populations.<sup>58</sup> The age and frequency of pediatric exposure is not delineated. Students may graduate with never being exposed to an infant, let alone a premature neonate. Yet in some instances as new graduates, they may begin treating neonates in the SCN or NICU without additional training. This practice is not in alignment with our professional organization recommendations, nor in alignment with the results of this study. Given that there are no clear educational guidelines addressing the PT care of the premature infant, PT educational requirements should align with the fact that neonatal physical therapy is a subspecialty area of practice requiring advanced expertise, as recognized by the APPT of the APTA and the American Board of Physical Therapy Residency and Fellowship Education.<sup>123</sup>

The emphasis for an entry-level program should be in recognizing that this area of practice is very specialized. Students need to understand the basic principles of neonatal care as a way to reinforce the knowledge that this is indeed advanced training, and to understand the negative consequences of the impact of untrained care on the neonate. Furthermore, entry-level DPT education should promote responsibility in obtaining further training before entering the NICU.

Sweeney et al<sup>1,2</sup> and others<sup>1,2,26,28,131</sup> have written guidelines for PT practice in the NICU, as far

back as 1989. However, in practice, those professional guidelines have been inconsistently followed as found in an unpublished study and in the data of this study.<sup>6</sup> Current CAPTE criteria for DPT education have no requirements for NICU competence for entry-level curriculum, yet there is nothing of substance preventing novice, inexperienced or new graduate therapists from providing care in the NICU. PTs continue to enter the nursery to provide care to neonates without the recommended adequate training and mentoring. There is no assurance of any competence if there is not mandatory training, mentoring, or assessment of practice skills and knowledge. NICU practice is not an entry-level skill as identified by the different professional organizations and this research.<sup>1,2,124,125</sup> The physical therapy profession must address this issue and teach PTs to acknowledge their own shortcomings and to not practice in the NICU or SCN unless they are properly trained. Furthermore the establishment of mandatory training, mentoring, or certification of competence would serve to protect both the fragile neonate and the practicing therapist. As a profession, we do not want to limit our scope of practice unnecessarily. However, given that professional organizations recognize that safe practice in the NICU requires specialized training, it becomes important to safeguard the needs and well-being of the premature infants and their families.

Another implication for PT education includes team collaboration, educating others about our role in the nursery. This relates very closely to the emphasis of inter-professional education in health professions education. The World Health Organization and others recognize the benefit that “once students understand how to work inter-professionally, they are ready to enter the workplace as a member of the collaborative practice team.”<sup>106(p10)</sup>

### **Implications for PT Practice**

The results of this project present significant implications for PT practice in the areas of expertise in relation to staffing SCNs and NICUS, examination and intervention, family-centered care, and inter-professional interactions. Black<sup>65</sup> indicates that most therapists remain novice PTs in their first year of practice, yet some first year therapists become employed in NICUs. This is a significant incongruence, which should be addressed. It is a discrepancy for our educational programs to produce generalist therapists, yet for them to be allowed to provide care in a NICU as a novice, when the official evidence-based positions of professional associations support the need for experts in the NICU. Furthermore the American Academy of Pediatrics *Guidelines for Perinatal Care*<sup>5</sup> indicates that level III and level IV nurseries should have at least one occupational or physical therapist with neonatal expertise available to the NICU. The above stated guidelines do not contain criteria to specify and define neonatal expertise. PTs with SCN or NICU expertise are indisputably the most qualified to speak to the expertise necessary to work in the SCN or NICU.

Sweeney et al<sup>1,2</sup> and others<sup>79-81</sup> declare that the NICU is not an appropriate practice setting for novice therapists, new graduates, physical therapist assistants (PTAs), or students. This bears discussing in the framework of expertise, and the evidence that in some instances physical therapist assistants and students were providing care in the NICU and SCN.<sup>6</sup> Nancy Watts,<sup>132</sup> in her 1971 classic article addresses task analysis of physical therapy skills and the division of care necessary for PTAs and PTs. Watts<sup>132</sup> provided a framework based on complexity of care, necessary decision-making, and implementation. She focuses on the “doers” and “deciders” and makes a case for PTAs being the “doers” and not being the “deciders”.<sup>132(p27)</sup> Even though the resource is dated, Watt’s division of care indicates that the PTA is not appropriately

knowledgeable and skilled to be a practitioner in the NICU considering the amount of decision-making necessary in a SCN or NICU.

Given the recommendations from expert clinicians in the literature, the APTA adopted position statement and this literature along with the APTA document, *Professionalism: Physical Therapy Core Values*,<sup>133</sup> it is important for PTs to understand their knowledge base and their practice limitations. Within the *Core Values*, the components of Accountability, Compassion and Caring, Excellence Integrity, and Professional Duty are relevant to the discussion of the need for appropriately trained physical therapists to provide PT in the SCN or NICU. These sample indicators are reflected in the themes.

Table 5.1 Core Values and Sample Indicators<sup>133</sup> Relevant to Themes

| Core Values           | Sample Indicators  | Themes  |
|-----------------------|--|---|
| Accountability        | <ul style="list-style-type: none"> <li>• Responding to patient's/client's goals and needs.</li> <li>• Seeking and responding to feedback from multiple sources.</li> <li>• Assuming responsibility for learning and change.</li> <li>• Seeking continuous improvement in quality of care</li> </ul>  | Families First,<br><br>Know What You Don't Know |
| Compassion/<br>Caring | <ul style="list-style-type: none"> <li>• Understanding the socio-cultural, economic, and psychological influences on the individual's life in their environment.</li> <li>• Understanding an individual's perspective.</li> <li>• Being an advocate for patient's/client's needs.</li> <li>• Designing patient/client programs/ interventions that are congruent with patient/client needs.</li> <li>• Empowering patients/clients to achieve the highest level of function possible and to exercise self-determination in their care.</li> <li>• Focusing on achieving the greatest well-being and the highest potential for a patient/client.</li> <li>• Recognizing and refraining from acting on one's social, cultural, gender, and sexual biases.</li> </ul> | Families First,<br><br>Know What You Don't Know |

|                      |  |  |
|----------------------|--|--|
|                      | <ul style="list-style-type: none"> <li>• Embracing the patient’s/client’s emotional and psychological aspects of care.</li> <li>• Demonstrating respect for others and considers others as unique and of value.</li> </ul>   |  |
| Excellence           | <ul style="list-style-type: none"> <li>• Participating in integrative and collaborative practice to promote high quality health and educational outcomes.</li> <li>• Demonstrating high levels of knowledge and skill in all aspects of the profession</li> <li>• Using evidence consistently to support professional decisions.</li> <li>• Pursuing new evidence to expand knowledge.</li> <li>• Engaging in acquisition of new knowledge throughout one’s professional career.</li> <li>• Contributing to the development and shaping of excellence in all professional roles</li> </ul> | Never Alone,<br>Families First,<br>Take a Deep<br>Breath,<br>Know What You<br>Don’t Know |
| Integrity            | <ul style="list-style-type: none"> <li>• Adhering to the highest standards of the profession (practice, ethics, reimbursement, Institutional Review Board [IRB], honor code, etc).</li> <li>• Resolving dilemmas with respect to a consistent set of core values.</li> <li>• Being trustworthy.</li> <li>• Knowing one’s limitations and acting accordingly</li> </ul>   | Know What You<br>Don’t Know  |
| Professional<br>Duty | <ul style="list-style-type: none"> <li>• Demonstrating beneficence by providing “optimal care”.</li> </ul>   | Take a Deep<br>Breath,<br>Know What You<br>Don’t Know                                    |

A newly established optional certification process for neonatal PTs, OTs, and SLPs is administered by The Neonatal Therapy National Certification Board (NTNCB), a subsidiary of the National Association of Neonatal Therapists (NANT).<sup>11</sup> As of September 2017, 100 therapists have met certification requirements. The certification process requires that the candidate engage in mentored practice and education, and requires 3500 hours of experience prior to being eligible to sit for a certification exam which is the last step in the

certification process.<sup>11</sup> This certification is to recognize those who already have mentored experience and knowledge, and is not a training certification, although the existence of certified neonatal therapists may assist in increasing awareness about the advanced practice requirements of this setting. The Neonatal Special Interest Group of the APPT is also investigating the establishment of a certification process, and they recently, in February of 2017, sent a survey requesting current member's input and perspectives on this potential process. Acknowledging skilled practitioners via a certification process is valuable. This research, however, brings to light the necessity of requiring a mentoring and a set of competency-based skills prior to being able to provide PT in a SCN or NICU. The entry point for a PT entering the NICU should be a fellowship, or a minimum number of mentored hours under a certified practitioner along with some assessment of competence. Using existing literature from the experts in the field in addition to evidence-based research will be imperative to guide the establishment of mentoring and competency guidelines and requirements for those PTs who wish to practice in the NICU.

Perhaps as part of the mentoring framework, there could be a staged entry process, based upon stability of the infant and level of the nursery. This could be valuable with the de-regionalization of NICU care and the increased numbers of Level II nurseries in community hospitals.

Therapists providing care in those nurseries still need to exhibit competence. Late preterm babies, born between 34-36 weeks gestation are usually cared for in either the newborn nursery or a level II or Special Care nursery.<sup>32</sup> Although the PTs in the SCN will not be caring for an extremely fragile 24-week infant in a level II nursery, they still need to understand normal and abnormal development, practice safe family-centered developmental care, and be able to provide support and education to the families. Additionally, age is not the only indicator of fragility, and advanced decision-making is still required when caring for premature babies in a level two unit.

These late preterm babies are at risk of more complications at birth when compared to term infants as they are physiologically and metabolically immature.<sup>32,134,135</sup> These complications can include increased morbidity and mortality as well as higher rates of re-admission.<sup>134</sup> Late preterm infants also exhibit more developmental concerns than term infants at 2 years, 4 years, at kindergarten age and into adulthood.<sup>134,136-140</sup> With the critical time period for maturation of the brain occurring in the weeks approaching term, there is risk for negative sequela for these late preterm babies. There are noted widespread alterations in brain white matter microstructure at term equivalent age when compared with term-born controls.<sup>138</sup> With around 70% of the preterm births being late preterm births, this is a large percentage of the preterm births<sup>134,141</sup> Clearly these data provide evidence that even with late preterm infants, advanced PT knowledge of the preterm infant is necessary.

A process that requires mentoring and accomplishment of specified competencies for PT provision of care in the SCN and NICU would be beneficial for both DPT education and clinical practice. An evidence-based competency exam, potentially including a practical component, would be a valuable process to ensure basic aptitude in conjunction with a standardized mentoring program. There are recently published care paths that can assist practitioners, however, a mentoring and competency-based assessment would ensure that PTs providing care in the NICU clearly understand what they need to know to protect these babies and provide appropriate family-centered care.<sup>10,18,19</sup> In fact, requiring the mentoring and competency exam will serve to eliminate the situation in which a PT “does not know what they do not know”. Given this information, a formal document that delineates a continuum of designated competency for active hands on assessment and treatment is needed. This required mentoring and competence assessment could guide DPT education for consistency of information

translation for students across DPT programs, and provide clear guidance for entry-level therapists.

Other implications for education include education of other team members, demonstrating our competence, and promoting inter-professional collaboration. Furthermore, our professional core values promote excellence and integrity in practice and encourage us to understand our limitations.<sup>133</sup>

The literature exists upon which a mentoring program and competency-based assessment could be established. Uniformity and consistency is paramount, and a clear message should be communicated in all documents addressing PT education to explicitly indicate that PT in the NICU requires advanced competency beyond entry-level. Entry-level education should provide information that describes the fragility of the infants and the necessity for advanced training, mentoring and experience prior to working in a NICU and SCN. Armed with evidence and the knowledge of the NICU as an advanced practice setting, the new graduates will have a concept of what they don't know.

### **Implications for PT Research**

The findings of the project provide additional opportunities for PT and inter-professional research. A great beginning would be to investigate what exactly is taught in entry-level DPT programs. Additionally, a nationwide project looking at experience backgrounds of PTs currently practicing in the NICU, before they achieved independence in Level II, III and IV is needed to inform continuing education needs as well as training and mentoring modules. As a profession, we need to investigate what is happening in the real world: How much training and mentoring occurs? What work experience do therapists have prior to entering the SCN or NICU? Are



inexperienced, untrained therapists working in NICUs, or just SCNs? Has this changed over time? How are the smaller community hospitals with SCNs staffing their SCNs? What are the outcomes of the infants from SCNs, from small community hospitals SCNs vs large institutions that also have NICUs? Are there any differences in care provided by PTs with different qualifications, or those who are part of rehab services or part of the neonatal departments? There still is much to learn about PT practice in the NICU.

Furthermore, it may bear investigating how monitoring the premature infant's cues for self-regulation impacts PT exam and eval in the NICU in terms attempted sessions, cancellation of attempted sessions and of content and progress of session. Additionally, the perception of self-regulation cues and fragility, and resultant actions could be compared across disciplines. Another prospective research line may be to investigate physician or hospital administrator perceptions of the expertise necessary for PTs to practice in the SCN or NICU. At the same time, investigation of administrator priorities of staffing the SCN or NICU could be insightful.

Subsequent research will assist the profession to further investigate and clarify our role in the NICU, and provide guidance for those who wish to provide care in the NICU. Finally, a rigorous systematic review and synthesis of the published literature, including this project, may lead to the establishment of a clinical practice guideline for PT practice in the SCN or NICU.

### **Implications for Public Policy**

This study does not have a direct impact on public policy; however, tangential impacts may result. Conclusions from this project can begin to inform studies to investigate the impact of accreditation practices and 3<sup>rd</sup> party payer policies on PT in the SCN and NICU, perhaps by requiring care to be provided by a certified, mentored PT. Furthermore, this study can inform future discussion on scope of practice for PT and other health professionals in the NICU and

SCN. Furthermore, an opportunity exists to educate other neonatal professionals with the goal of influencing policy such as the *American Academy of Pediatrics Guidelines for Perinatal Care*. Educating hospital-accrediting agencies may affect changes in requirements for staffing of SCNs and NICUs. It is important for hospital and SCN or NICU administration to be aware of the significance of this issue and be held accountable to following best evidence. The resolution of the issue of unqualified physical therapy professionals providing service in the SCN or NICU will not be solved by solely the physical therapy profession. There will need to be a multifaceted approach including impacting public policy.

### **LIMITATIONS AND DELIMITATIONS**

This study was carefully designed to maximize trustworthiness and authenticity of findings; however, there were barriers and limitations inherent with qualitative research. A common concern with qualitative research is that the researcher's personal biases could influence the results. Consistent with Moustakas' phenomenological approach, bracketing and researcher reflection was performed prior to initiating this research, and throughout the study, in an effort to minimize the impact of researcher bias.<sup>75</sup> Utilizing an interview guide and refraining from sharing opinions with interviewees also helped to minimize the influence of personal biases.<sup>73,75</sup>

Qualitative researchers have debated the benefits and drawback of researchers being an "insider" or an "outsider."<sup>142-144</sup> Qualitative research emphasizes the importance of being an insider and gaining trust.<sup>145</sup> However, the literature also argues the benefit of being an outsider.<sup>142,143</sup> As an outsider, the researcher may be more objective and not influenced by their own opinions and experiences.<sup>142,143</sup> The participants may even provide more information to an "outsider" to assure they understand the situation.<sup>146</sup> Furthermore, some researchers argue that the insider/outsider positioning is not a dichotomy but is more of a spectrum, or there can be situations where an

investigator is an outsider with some insider knowledge.<sup>144,147</sup>

In this project the investigator was essentially an “outsider” As a pediatric physical therapist she has treated patients once they left the NICU, however she did not have firsthand experience in the NICU, and thus is an “outsider.” This is can be a significant limitation as the researcher did not have the experience of working in the NICU for insight into interpreting their experiences. This limitation bears further discussion. Consistent with the theoretical approach of qualitative research, the researcher sought prolonged engagement through topic exploration and interactions with the participants and other NICU practitioners, however, the researcher has not 'lived' in the NICU. This may have affected the researcher’s ability to fully understand and interpret the data. It may also have influenced the participant’s truthfulness as they may have seen the researcher as an outsider, and may have held back information, feelings and beliefs for fear of judgment. The researcher is also an academician, which may have influenced truthfulness in the same way.

However, the literature does also cite the benefits of being an “outsider.”<sup>142,143</sup> The “insider” researcher can pose problems for establishing trustworthiness.<sup>142,143</sup> An “insider’s” personal experiences may cloud the interpretation of the data and may make objectivity impossible. Thus, it may be preferential to be an “outsider” researcher. The researcher’s lack of work experiences in the SCN or NICU eliminated the possibility of personal work experiences biasing interviews and data analysis.

The inexperience of the researcher was also a limitation. The pre-pilot and pilot interview assisted the researcher to identify her biases and provided a valuable experience with interviewing. One additional method utilized to mediate the inexperience of the investigator was utilizing an interview guide.<sup>86,87</sup> Furthermore, the researcher was though guided through the

process by a qualitative research expert.

## **SUMMARY**

This study has met the goal of investigating the experiences of becoming and being a physical therapist in the NICU from the therapists' perspectives. Furthermore, the three research questions were answered. These research questions were: 1) What is the experience of deciding and preparing to work in the SCN or NICU? 2) What is the meaning of providing physical therapy in the SCN or NICU? 3) What do practicing therapists believe to be the knowledge and skills necessary to provide safe and effective services in the SCN or NICU?

The literature supports the themes from this research. The results of this project align closely with previously published recommendations. This support of and by the existing literature is important. This project was the first to systematically research practicing therapist's beliefs and perspectives regarding PT practice in the SCN and NICU, those therapists in the trenches of the practical work being done. This project provides a basis for other projects to further investigate PT practice in the SCN and NICU.

Implications for DPT education and PT practice are most important. It is evident that current practice does not align with the adopted statements from APTA and APPT, as well as other professional associations. Much evidence draws attention to the fragility of premature neonates, yet our PT practice and education does not appropriately address these concerns. A mandatory mentoring and training program that assures competency prior to a PT intervening in the NICU will be valuable to guide DPT education and PT practice.



## APPENDIX A INTERVIEW GUIDE

## Interview Guide

Time of interview

Date:

Place:

Interviewer: Joyce

Interviewee:

Position of the interviewee:

**Description of Project:** I will begin interviews began by asking participants to “help me to understand your perspectives on your experiences of working in the SCN and or NICU.”

| Questions   | FIELD NOTES       |                  |
|---|-------------------|------------------|
|   | Descriptive notes | REFLECTIVE NOTES |
| <i>Demographic questions</i>  |                   |                  |
| 1. Could you tell me what level nursery you work in?  |                   |                  |
| 2. How long have you worked in this type of nursery?  |                   |                  |
| 3. What is the size and type of hospital and nursery in which you work?                                   |                   |                  |
| 4. What is your entry level degree?<br>- Any other degree or certification?<br>- Professional association |                   |                  |
| <i>GRAND TOUR QUESTION</i>  |                   |                  |
| 5. “Tell me about your experiences working in the SCN or NICU”  |                   |                  |
| <i>Mini tour questions</i>  |                   |                  |
| 6. What influenced your decision to work in the nursery?  |                   |                  |

|  |  |  |
|--|--|--|
| 7. What sort of experience, preparation or training did you have prior to working independently in the SCN or NICU? Follow up: How do you feel about that?   |  |  |
| 8. What do you believe to be the knowledge and skills necessary to provide services in the SCN or NICU?  |  |  |
| 9. Would you explain your feelings about providing services in the SCN or NICU?  |  |  |
| 10. Is there anything else you wish to share about working in the SCN or NICU?   |  |  |
| 11. If you were to ask a question of someone else working in a different SCN or NICU, what would that question be?   |  |  |
| <p>Potential probes as needed.</p> <ul style="list-style-type: none"> <li>• Would you give me an example?</li> <li>• Can you elaborate on that idea?</li> <li>• Would you explain that further?</li> <li>• I'm not sure I understand what you're saying.</li> <li>• Is there anything else?</li> </ul> |  |  |
| <b>Immediate post interview reflection-</b>  |  |  |
|  |  |  |
| <b>Reflection upon comparing transcription to audio</b>  |  |  |
|  |  |  |



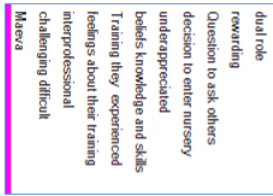
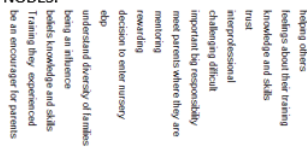
## Appendix B ANALYTIC MEMOS

## Sample analytic memos

|  |   |
|--|---|
| 5. Did anything else influence your decision to work in the nursery?   | Had experience <u>before..confident</u>   |
| 6. Are there any experiences or training that you feel prepared you for working in the SCN/NICU? Please explain. | On the job mentoring first year- <u>def prep</u><br><u>nc</u><br>Different ecology – not pure discipline<br>Rewarding personally and professionally |
| 7. Tell me what it's like to work in the SCN/ NICU   |   |
| 8. What does being a SCN/NICU PT mean to you?  |   |

|  |                  |
|--|------------------|
| 7. What sort of experience, preparation or training did you have prior to working independently in the SCN or NICU? Follow up: How do you feel about that? | Overwhelming<br> |
|--|------------------|

## Appendix C REFLEXIVE JOURNAL EXCERPTS

| 2016   | 2016   | 2016   |
|--|--|--|
| Day to day activities  | Reflexive Journal  | Methodological log   |
| <p>3.3 Since it had been some time since my interviews, I listened again to Maeva, reflected on it, made another correction to the transcription and made reflective comment. Uploaded revised version to NVIVO. CODED SIGNIFICANT STATEMENTS INTO NODES.</p> <ul style="list-style-type: none"> <li><b>Coded NODED</b></li> </ul>  | <p>3.3 Again struck so strongly by her meekness, apologetic tone.</p> <p>Can't help but wonder if her experiences not being respected and no follow through from administration are related</p>  | <p>3.3</p> <ul style="list-style-type: none"> <li>Maeva was my second pilot and since no changes necessary to interview protocol. This will be interview 1 for data collection.</li> </ul> |
| <p>3.3 and 3.4</p> <ol style="list-style-type: none"> <li>I listened again to Shaaron interview recording, reflected on it, and made reflective comment.</li> <li>Uploaded revised version to NVIVO.</li> <li>CODED SIGNIFICANT STATEMENTS INTO NODES.</li> </ol>   | <p>3.3 Important to re-listen to the transcripts and check again as I was able to catch some corrections to the transcription. Again, Shaaron was presenter at NEXT on PT in the NICU being a sub specialty area of PT practice. She had just presented.</p> | <p>No changes necessary to interview protocol</p>  |

| 2016  | 2016  | 2016               |
|---|---|--------------------|
| Day to day activities   | Reflexive Journal   | Methodological log |
| <p>8/4/16 Struggled how to deal with data, how to get the big and little pictures. <u>Struggling</u> with NVIVO..decided to put significant statement and codes into a word document table. Did via query on all coded statements</p> | <p><b>Believe I am at Data Saturation but not sure</b></p> <p>Reviewing data and coded data, and feel paralyzed so I am reading article with good questions: What is this saying? What does it represent? a. What is this an example of? b. What do I see is going on here? c. What is happening? d. What kind of events is at issue here?</p> <p><a href="#">AMA</a><br/>(American Medical Assoc.)</p> <p>Reference List<br/><a href="#">Ganapathy M.</a> Qualitative Data Analysis: Making it Easy for Nurse Researcher. <i>International Journal Of Nursing Education</i> [serial online]. April</p> |                    |

| 2016   | 2016   | 2016  |
|--|--|---|
| Day to day activities  | Reflexive Journal  | Methodological log  |
| <p>8/8/16 Review of coding. Coded 3 more interview. After coding 3 more interviews..<u>Struggled</u> how to organize significant statements and codes (nodes- on NVIVO)..I made a new document with just the NVIVO Nodes..see methodological section this date</p> | <p>Overwhelming, very conscious of bias, reviewed content memos and coding referencing bias. Very conscious of how my beliefs are impacting my analysis. As I sort the NODEs and sig statements into the categories, I ask myself, how does my beliefs <u>impact</u> this.</p> | <p><u>review</u> of coding. Coded 3 more interviews to confirm data <u>saturation</u>.. I made a new document with just the NVIVO Nodes...and then made 3 columns initially then changed it to 3 different documents and sorted all NODES into one of the three documents 1) training 2) skills 3) experiences</p> <p>Later added knowledge to the skills column. Added a bias page and a miscellaneous page. Then I went through all sig statements to make sure they aligned with my name of each document/ category.</p> <p>Document 1) training—made 7 sub categories and re- coded several sig. statements differently</p> |

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