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Neonatal Therapists' Perceptions of Using Integrated Collaborative Care in the Neonatal Intensive Care Unit

Sarah J. Elkington
University of Texas at El Paso

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NEONATAL THERAPISTS' PERCEPTIONS OF USING INTEGRATED COLLABORATIVE
CARE IN THE NEONATAL INTENSIVE CARE UNIT

SARAH ELKINGTON, MSOT

Doctoral Program in Interdisciplinary Health Science

APPROVED:

Celia Pechak, Ph.D., Chair

Jenene Craig, Ph.D.

William Roberts, Ph.D.

Jacob Martinez, Ph.D.

Stephen L. Crites, Jr., Ph.D.
Dean of the Graduate School

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Sarah Elkington

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NEONATAL THERAPISTS' PERCEPTIONS OF USING INTEGRATED COLLABORATIVE
CARE IN THE NEONATAL INTENSIVE CARE UNIT

by

SARAH ELKINGTON, MSOT

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Abstract

Occupational therapists (OTs), physical therapists (PTs), and speech-language pathologists (SLPs) who have advanced clinical knowledge in gestational and infant development can work in neonatal intensive care units (NICUs) as neonatal therapists (NTs). NTs apply their developmental expertise, therapeutic use of self, and client-centered training to create individualized goals for infants and families amid a complex, critical care medical setting. Each discipline (OT, PT, and SLP) brings a unique professional perspective and their own empirical knowledge to the NICU. Researchers have made efforts to capture work trends of NTs as they relate to direct patient care; however, researchers have also recognized the potential role NTs have within NICUs to influence and impact policy and unit culture. Integrated collaborative care (ICC) is a term that describes how healthcare professionals manage, organize, and integrate patient care coordination with an aim to ensure patient wellness. There are several proposed frameworks of ICC; however, ICC can be defined differently according to the stakeholders in any given healthcare setting.

Previous publications about neonatal therapy in the NICU focus primarily on NTs' service availability (i.e., full-time equivalents), interventions provided, and professional competency and qualifications to work in the NICU. NTs work as part of a team of healthcare professionals in the NICU; team collaborative care and workplace relationships have been the topics of recent research because workplace relationships have been associated with patient safety, improved shared-decision making, and cost savings. Collaborative care models often include roles that NTs may hold on a NICU team, but do not specifically require an NT. No identified studies have investigated the characteristics of neonatal professional teams with a focus on the role of NTs. Additionally, how OTs, PTs, and SLPs in the NICU perceive their work both as individual disciplines and with a shared identity as NTs has not been described. Additionally, how NTs define ICC in the NICU

setting has not been explored. This doctoral work used a two-phase research study to explore how NTs perceived they used ICC in the NICU among themselves, and among other neonatal healthcare professionals.

Phase 1 was a scoping review that explored the published ICC models or descriptions of practice specific to the neonatal intensive care setting that include a role for NTs and are available to guide neonatal therapy practice patterns. Phase 2 involved a qualitative multi-case research study where six individual teams of NTs were interviewed using a semi-structured interview template. From the thematic analysis of the transcribed interviews, research results yielded operational (daily work tasks) and relational (how co-workers relate) themes. Additionally, a definition of ICC from the NTs' perspective was determined from interview responses.

The first manuscript presented in this dissertation (Chapter 2) represents a scoping review that included 28 articles that had either a stated or inferred role for NTs. Of those 28 articles, only 13 articles specifically stated a role for NTs. Other roles could be held by any number of healthcare disciplines. The included articles were organized by which of seven aspect(s) of ICC were represented. Few articles representing integration among or between settings were identified. Additionally, there were limited articles representing NTs in leadership roles. The conceptual distinction between ICC and family-centered developmental care was difficult to discern within the literature.

The second manuscript presented in this dissertation (Chapter 3) describes operational aspects of ICC in the NICU. Four themes were presented following hybrid thematic analysis. Themes included: 1) Feeding decisions are a source of collaboration and conflict; 2) Co-assessment and co-treatment are logistical strategies to meet infant needs; 3) Service planning and the ripple effect of leadership; and 4) Collaborative culture impacts NTs' empowerment. The

operational themes transected all identified aspects of ICC. Operational themes described daily care coordination and integrative characteristics among NTs, and between NTs and other NICU professionals. However, the themes also alluded that the decisions that leaders make impact staffing patterns, hiring patterns, and unit culture, all of which also influence the quality of relationships.

The third manuscript (Chapter 4) added further insight into the results of Phase 2 of the study and described relational care themes. These themes included: 1) Learning together leads to growth and respect among peers; 2) Interpersonal relationships: the connective tissue of the unit's daily operations; 3) Intentional actions facilitate trust and respect among peers; and 4) Poor relationships threaten ICC. Themes supported relational coordination theory, which supposes that communication ties and relationship ties mutually reinforce each other.

The latter two articles demonstrate that operational and relational themes are inter-related. Operational work tasks are heavily influenced by how leaders assign service availability, and their understanding of the nature of a neuroprotective, habilitative approach which differs from a rehabilitative approach in other acute care settings. Visibility in the NICU supports respectful and trusting work relationships between NTs and other NICU staff, but especially between NTs and nursing and medical staff. Perceptions of belonging and inclusion on unit quality improvement committees empowers NTs.

ICC in the NICU supports the theory of relational coordination. The frequency of communication, attitudes of co-workers, and the support leaders provide to establish a collaborative culture potentially influence the quality of patient care. Relationships with infants and families as well as with co-workers influence how well NTs perceive the integration of their unit. Relationships are built over time and through frequent interactions regarding a shared goal or

purpose. Chapter 4 presents strategies NTs can use to improve relational coordination and thus ICC in their workplaces. Chapter 5 provides a model summarizing how ICC functions in the NICU setting based on research results as well as a definition of ICC from the participants' perspective generated by inductive thematic analysis. Future studies are indicated to validate the presented model and to explore the value of ICC and relational coordination to patient and family outcomes as well as staff well-being.

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Chapter 1: Introduction

Since 2009, the rate of premature births has been slowly increasing in the United States, from 9.6 to 10.2% of all births; this rate is one of the highest premature birth rates among developed nations (March of Dimes, 2021). Therefore, an ongoing need exists for healthcare professionals trained to work with this high-risk population. Neonatal therapists (NTs) are occupational therapists (OTs), physical therapists (PTs), or speech-language pathologists (SLPs) who are advanced practitioners with specialized training in the neonatal care setting (Sturdivant, 2013). Neonatal therapists are trained to assess and develop individualized intervention plans to address areas such as an infant's neurobehavioral responses to interactions, neuromuscular development, oral feeding readiness, and caregiver needs. The American Academy of Pediatrics (AAP) guidelines for the most acute levels of neonatal care (Levels III and IV neonatal intensive care units [NICUs]) recommend having either an OT or PT, and a feeding specialist (typically a SLP) available (American Academy of Pediatrics, 2017).

Neonatal therapists share a knowledge and skill base, but maintain their professional licensure and discipline-specific scope of practice and expertise (Craig & Smith, 2020; Sturdivant, 2013). The scope of practice for each discipline is limited by state-license statutes, and NT expertise varies based on post-professional education and clinical experience (American Physical Therapy Association, 2014; American Speech-Language-Hearing Association, 2016; Brayman et al., 2014). Each discipline offers a valuable contribution to an infant and family's plan of care. However, challenges may be encountered when coordinating care to ensure needed services are delivered without redundancy among the professions and within their professional core scope of practice.

Descriptions of current neonatal practice have described OTs, PTs, and SLPs working as NTs in terms of productivity measures (e.g. full-time equivalent usage), training, experience, and each discipline's typical interventions (Pineda et al., 2019; Ross et al., 2017). Yet, staffing of NTs is often based on a rehabilitation model of care that includes productivity measures incongruous with a more appropriate habilitative and neuroprotective delivery model. Given staffing model complexities and consideration of the habilitative model of care in the NICU, Craig and Smith (2020) presented an evidence-based NT staffing allocation algorithm for Level III and IV NICU. This formula serves to ensure staffing that supports the provision of quality care that facilitates development and support of infants and their families in the NICU. Relatedly, Craig and Smith also stated that, "Neonatal therapy is optimally provided through an integrated collaborative-care [ICC] model." (p.3). However, ICC is a complex term with different definitions depending on the stakeholder in a healthcare system (Goodwin, 2016). Neonatal therapists are challenged with providing preventative, integrated services in an acute care setting traditionally managed by those who viewed rehabilitation therapists' contribution to care from a medical model.

1.1 Research Problem

Integrated care describes bringing together key aspects of design and delivery of healthcare systems where healthcare services may be fragmented (Goodwin, 2016). *Collaborative care* implies communication among healthcare professionals and working toward a common goal to deliver care (Boynton, 2016). Team collaborative care and workplace relationships have been the topics healthcare research as effective healthcare teams have the potential to contribute to cost savings, improved safety, and better shared decision-making with families (Baldwin et al., 2007; Barbosa, 2013; Kumar et al., 2014). Some models or descriptions of collaborative care in the NICU describe roles that may fit within the scope of a NT; however, these models do not always identify

a NT as being required for that role (Altimier & Phillips, 2013; Gibbins et al., 2008; Welch et al., 2012). Staff aspects such as roles, functions, attitudes, respect, and values may impact interpersonal relationships that influence delivery of neonatal therapy (Craig et al., 2018). No identified studies have investigated the characteristics of neonatal professional teams with a focus on the role of NTs.

National professional organizations of each NT discipline have written guidelines for practice in the NICU (American Speech-Language-Hearing Association, 2004; Craig et al., 2018; Sweeney et al., 2009; Sweeney et al., 2010). However, how OTs, PTs, and SLPs in the NICU perceive their work both as individual disciplines and with a shared identity as NTs has not been described. Additionally, how NTs define ICC in the NICU setting has not been explored. Therefore, this researcher proposed a two-phase approach including a scoping review study and an instrumental, qualitative, multi-case study to explore NTs' perceptions of using ICC in the NICU. Qualitative methodology is ideal to describe the personal meanings that therapists ascribe to their work, and a qualitative study is often a preliminary step to devising other theoretical hypotheses or research questions (Creswell & Poth, 2018).

1.2 Conceptual Frameworks

The integration of behavioral health assessments and primary medical care interventions is a foundational element of ICC (Blount, 2003). Interestingly, behavioral interventions, especially those that support nurturing in a developmentally supportive environment, have shown improvement in the overall health of infants in the NICU (Altimier, 2011; Craig et al., 2015; Milette, Martel, da Silva et al., 2017). Hall et al. (2015) also described the importance of providing psychosocial supports to employees which supports employee well-being and psychosocial support of parents (Hall et al., 2015). Key conceptual frameworks that contributed to this doctoral

study include brief historical backgrounds on ICC, family-centered developmental care (FCDC), and relational coordination. These concepts contribute to an understanding of how interpersonal and operational aspects of care integrate to create a framework for healthcare provision.

1.2.1 Integrated Collaborative Care

Blount and Bayona (1994) described the emergence of integrated care from two novel approaches in the mid-1970s: an integrated primary care model and the biopsychosocial model. An integrated primary care model is one that includes mental health services as part of primary care services. The biopsychosocial model emphasized understanding a patient in their individual context(s). Cross-training primary physicians in psychosocial conditions and including a mental health professional within a primary practice were two ways to provide more holistic care of a patient, rather than dividing their symptoms into body systems. Blount (2003) concisely defined integrated care as care “in which there is one treatment plan with behavioral and medical elements” (p.124).

Blount (2003) further described that while full integration of primary medical and mental health care into one care plan was the most ideal, the provider-patient relationships needed to develop or sustain integration could be considered as being on a continuum, both from business and interpersonal perspectives. Business-related (or operational) perspectives include sharing physical space, sharing patient visit time, and consulting about patient care decisions with patient permission for the purpose of meeting patient needs. Developing interpersonal relationships to coordinate care, discuss intervention ideas, and build trust takes effort and often “depends on the personal commitment to the process” (p.123). Over time, the idea of “integrating” healthcare took on a broader context and expanded to other aspects of the healthcare system. These aspects included integrating information database systems among departments, integrating billing systems

with insurance payments, and coordinating care among specialized acute settings (like the NICU) and between two levels of healthcare such as acute care and rehabilitation (Gröne & Garcia-Barbero, 2001).

The Substance Abuse and Mental Health Services Administration and the Health Resources and Services Administration (SAMHSA-HRSA) recognized that definitions of integrated healthcare are often inconsistent in academic literature. As a result, SAMHSA-HRSA revised an existing framework of integrated health care levels first proposed by Doherty, McDaniel, and Baird (1996). Table 1.1 lists the six levels of integrated health care adapted from Heath, Wise, Romero, and Reynolds (2013) on behalf of SAMHSA-HRSA. On the right side of Table 1.1 is relevant terminology for healthcare teams from an alternate framework for considering the spectrum of ICC (Boon et al., 2004). Boon et al. (2004) published similar descriptions of each type of practice that closely match the SAMHSA-HRSA framework.

Table 1.1: Two Frameworks of Integrated Care (Adapted from Heath et al., 2013 and Boon et al., 2004)

Standard Framework of Levels of Integrated Care (Heath et al., 2013)		Spectrum of Integrative Healthcare (Boon et al., 2004)
Coordinated Care	Level 1: Minimal Collaboration <ul style="list-style-type: none"> • Providers are in separate facilities and have separate systems • Communication about cases is rare and usually to fulfill a specific piece of information 	Consultative Practice
	Level 2: Basic Collaboration at a Distance <ul style="list-style-type: none"> • Providers are in separate facilities and have separate systems • Periodically communicate about shared patients • Communication is driven by specific issues 	Collaborative Practice

<p>Co-Located Care</p>	<p>Level 3: Basic Collaboration Onsite</p> <ul style="list-style-type: none"> • Co-located at the same facility but may not share the same space • Regular communication about shared patients due to close proximity • Providers may feel like they are part of a team and commonly refer to each other • Decisions about patient care are still independent by individual providers <p>Level 4: Close Collaboration with Some System Integration</p> <ul style="list-style-type: none"> • Co-located and share practice space • Some shared systems (e.g., electronic medical charting, scheduling systems) • More shared patients leads to a better understanding of each other's roles in complex patients' care decisions 	<p>Coordinated Practice</p> <p>Multi-disciplinary Practice</p>
<p>Integrated Care</p>	<p>Level 5: Close Collaboration Approaching an Integrated Practice</p> <ul style="list-style-type: none"> • Providers function as a team with frequent personal communication • Team seeks solutions as they recognize barriers to care together • Team members recognize roles team members need to play <p>Level 6: Full Collaboration in a Transformed/Merged Practice</p> <ul style="list-style-type: none"> • Providers and patients view the operation as a single health system treating the whole person • Often one team-based treatment plan for all patients • Health information from each member available to all team members 	<p>Interdisciplinary Practice</p> <p>Integrative Practice</p>

1.2.2 Family-centered Developmental Care

Infants in the NICU are often born preterm, or less than 37 weeks gestation (American Academy of Pediatrics, 2017). Healthcare professionals in NICUs, including NTs, should be familiar with gestational development and appropriate ways to handle, provide caregiving, and

support the infant at their stage of development. This care is neurodevelopmentally appropriate, and inclusive of what is termed developmental care.

The AAP promotes family-centered care as a practice that should be embedded in healthcare policy, practice, and facility design because it contributes to positive health outcomes for patients (Eichner & Johnson, 2012). Family-centered care recognizes the patient and family as members of the healthcare team, and family-centered care supports the family's decision-making role. In the NICU, the infant must be considered in the context of family or caregiver support. Eichner and Johnson (2012) also highlighted that the family is the child's primary source of support. The term family-centered developmental care (FCDC) is often used to describe how these two concepts are unified in the NICU setting. Larocque et al. (2021) published a concept analysis of family-centered care in the NICU, and they determined family-centered care to be synonymous with FCDC in the NICU.

FCDC is the "gold standard" approach to neonatal intensive care in the United States (Larocque et al., 2021). Healthcare professionals who use an FCDC approach emphasize the holistic, unique, and individualized needs of neonates who may have been born premature or with complex medical needs (Larocque et al., 2021; Milette, Martel, Ribeiro da Silva et al., 2017). Authors of FCDC models (i.e., the Newborn Individualized Developmental Care and Assessment Program [NIDCAP], the Universe of Developmental Care Model, and the Neonatal Integrative Developmental Care Model [NIDCM]) all identified the complexity of the neonate and that an infant's needs evolve over time with the natural progression of neuromaturation (Als, 1986; Altimier & Phillips, 2013; Gibbins et al., 2008). Additionally, family needs change as their infant's hospital stay progresses; often families feel more comfortable with infant caregiving as the infant grows and they receive education from staff (Als, 1986).

Authors have published guidelines of how best to implement a FCDC program in the NICU (Browne et al., 2020; Milette et al., 2019; Robison, 2003). However, these same authors also expressed the challenges of knowing how well healthcare teams internalize the values of and consistently employ FCDC-based strategies. Measuring the quality of FCDC in the NICU has also been challenging due to its complexity and the unique characteristics of each hospital culture and operational structure (Milette et al., 2017). Researchers have attempted to determine the quality of patient care in the NICU with some success, and noted the importance of relationships (Dhurjati et al., 2018; Edwards et al., 2021; Franck et al., 2021; Lake et al., 2016).

Larocque et al. (2021) indicated that publications over the years have described FCDC as a model of patient care; however, the concept may be more appropriately considered an ontological approach to care (p.408). Larocque and colleagues suggested there are antecedents of FCDC such as family and healthcare provider collaboration, education supports for parents, leadership support, and a physical environment that set the stage for FCDC to occur. Chapters 3 and 4 of this dissertation describe aspects of ICC similar to these antecedents. One of those aspects is philosophy (Table 2.1). In this dissertation, ICC is considered a separate and broader concept than FCDC that occurs in the NICU; specifically, ICC facilitates FCDC implementation in the NICU setting, where FCDC is considered a shared philosophy or set of goals for care by NICU staff.

1.2.3 Relational Care Coordination

Als and Gilkerson (1997) described the importance of different types of relationships to the neurodevelopment of the premature infant. These include infant-to-parent relationships, parent-to-staff relationships, and professional peer-to-peer relationships. These relationships are crucially important and have been shown to influence the quality of care during an infant's NICU stay (Als & Gilkerson, 1997; Craig et al., 2015). Gittel and colleagues have also investigated the

role of relationships with work tasks. Gittell (2000) and Gittell et al. (2008) described relational coordination theory when investigating aspects of high performing work teams in complex service industries such as airlines or healthcare.

Relational coordination describes the mutually reinforcing effect of communication ties and relationship ties (Gittell et al., 2008). Communication ties included communication between co-workers that is timely, frequent, accurate, and of a problem-solving nature. Relationship ties included sharing knowledge, sharing goals, and having mutual respect with one's coworkers (Figure 1.1). Relational coordination is important when work tasks are interdependent, such as those in the NICU, where one healthcare professional's interactions with a patient may affect subsequent interactions with other healthcare professionals or caregivers (Gittell et al., 2008). Infants have limited energy resources for interactions with caregivers and can become dysregulated with environmental or situational fluctuations (Als, 1986). Blount (2003) emphasized the impact of intentional healthcare coordination on interpersonal relationships; therefore, relational coordination theory could be a supporting mechanism to understanding how ICC can support both healthcare professionals as co-workers and how healthcare professionals build relationships with patients. Although relational coordination has been shown to impact the quality of care in other healthcare settings (i.e., nursing homes, emergency departments, and surgical suites), its role has not yet been investigated in the NICU setting (Gittell et al., 2000; Gittell et al., 2008; Purdy et al., 2020).

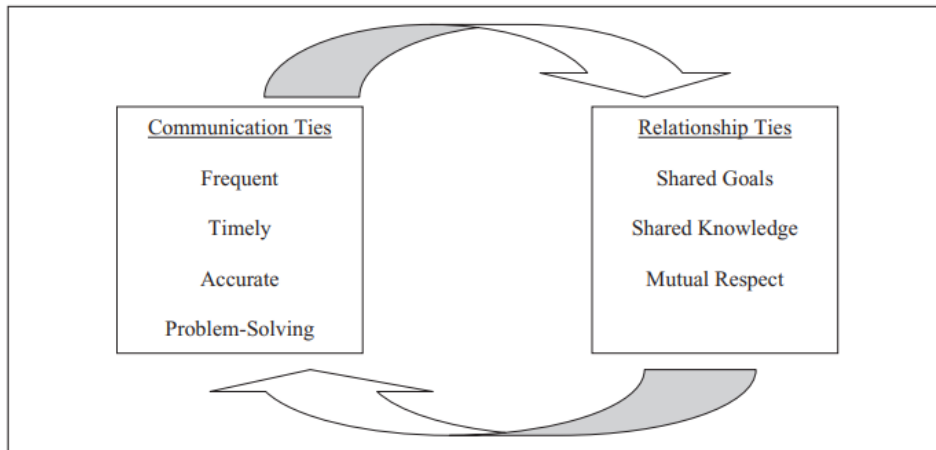


Figure 1.1: Dimensions of Relational Coordination (Used with permission Gittell et al. [2008]. Impact of relational coordination on job satisfaction and quality outcomes: a study of nursing homes. *Human Resource Management Journal*. 18(2). Permission conveyed through Copyright Clearance Center, Inc.)

1.3 Purpose of the Study

The overall purpose of this two-phase study was to explore how NTs perceive that they use ICC practices in the NICU. ICC includes aspects of both integration and collaboration. Integration includes aspects of: 1) coordinating services of a specific healthcare discipline within a set of other healthcare services being delivered to a single patient or client; 2) co-location; and 3) collaboration among healthcare disciplines (Blount, 2003; Heath et al., 2013). ICC is more complex than interprofessional collaboration, which includes communicating and/or cooperatively developing, negotiating, or sharing a plan for provision of a set of health services among professionals of two or more other healthcare disciplines (Heath et al., 2013; Nancarrow et al., 2013; Schot et al., 2020).

1.4 Definition of Terms

Several key terms are used in this study. Operational definitions of these terms follow.

1.4.1 Neonatal Therapist (NT)

Sturdivant (2013) published a definition of a neonatal therapist as the result of efforts of the National Association of Neonatal Therapists (NANT) Professional Collaborative to define characteristics of neonatal therapy practice. “A neonatal therapist is an OT, PT, or SLP who

delivers holistic direct patient care and consultative services to premature and medically complex infants in a NICU” (p.25).

1.4.2 Neonatal Therapy

The NANT Professional Collaborative defined neonatal therapy as “the art and science of integrating typical development of the infant and family into the environment of the NICU” (Sturdivant, 2013, p.25). Neonatal therapy requires NTs to have advanced knowledge of the NICU environment, including commonly seen diagnoses, frequently encountered medical interventions, and typical family concerns and barriers.

1.4.3 Neonatal Intensive Care Unit Certification Levels

The AAP and the American College of Obstetrics and Gynecology (ACOG) have published guidelines for the management of healthcare services prior to, during, and following pregnancy for both women and their infants (American Academy of Pediatrics, 2017). Table 1.2 presents the levels of neonatal nursery care and the corresponding populations and services available. OTs, PTs, and SLPs are considered pediatric subspecialists (American Academy of Pediatrics, 2017).

Table 1.2: Neonatal Nursery Levels of Care

Level of Care	Capabilities	Provider Types
Level I: Well Newborn Nursery	<ul style="list-style-type: none"> • Provide neonatal resuscitation at delivery • Evaluate and provide postnatal care to stable term newborn infants • Stabilize and provide care for infants ≥ 37 weeks gestation who remain physiologically stable • Stabilize newborn infants who are ill and those born at < 35 weeks gestation until transfer to a higher level of care 	Pediatricians, family physicians, nurse practitioners, and other advanced practice registered nurses
Level II: Specialty Care Nurseries	<ul style="list-style-type: none"> • Level I services plus: • Provide care for infants born ≥ 32 weeks gestation and weighing ≥ 1500 grams (g) who have physiologic immaturity or who are moderately ill with problems that are expected to resolve rapidly and are not anticipated to need subspecialty services on an urgent basis 	Level I providers plus pediatric hospitalist, neonatologist, and neonatal

	<ul style="list-style-type: none"> • Provide care for infants convalescing after intensive care • Provide mechanical ventilation for brief duration (<24 hours) or continuous positive airway pressure or both • Stabilize infants born before 32 weeks gestation and weighing less than 1500 g until transfer to a neonatal intensive care facility 	nurse practitioners
Level III: Neonatal Intensive Care Unit (NICU)	<ul style="list-style-type: none"> • Level II services plus: • Provide comprehensive care for infants born < 32 weeks gestation and weighting < 1500 g and infants born at all gestational ages and birthweights with critical illness • Provide prompt and readily available access to a full range of pediatric medical subspecialists, pediatric anesthesiologists, pediatric surgeons, and pediatric ophthalmologists • Provide a full range of respiratory support that may include conventional and/or high-frequency ventilation and inhaled nitric oxide • Perform advanced imaging, with interpretation on an urgent basis, including computed tomography, magnetic resonance imaging (MRI) and echocardiography 	Level II providers plus pediatric subspecialists, pediatric anesthesiologists, pediatric surgeons, and pediatric ophthalmologists
Level IV: Regional NICU	<ul style="list-style-type: none"> • Level III services plus: • Maintain a full range of pediatric medical subspecialists, pediatric surgical subspecialists, and pediatric anesthesiologists at the site • Facilitate transport and outreach education • Provide surgical repair of complex congenital or acquired conditions 	Level III providers plus pediatric surgical subspecialists, and pediatric anesthesiologists

Note: Compiled from Committee on Fetus and Newborn, 2012.

1.5 Research Questions

The overarching research question that guided this study was: How do NTs perceive they use ICC in the NICU? Four sub-questions were proposed to be answered in two phases of study.

Phase 1

1. What published ICC models or descriptions of practice specific to the neonatal intensive care setting that include a role for NTs are available to guide neonatal therapy practice patterns?

Phase 2

2. How do NTs perceive that they demonstrate ICC practices among their NT coworkers to plan and deliver discipline-specific services to their neonatal team and unit?
3. How do NTs perceive that they demonstrate ICC practices among other members of the neonatal team (e.g., nurses, physicians, social workers, families, etc.) to deliver services to their neonatal unit?
4. How do NTs define ICC in the neonatal setting?

1.6 Significance

While OTs, PTs, and SLPs have been working in NICUs for over 50 years, the National Association of Neonatal Therapists (NANT) was created only recently. In 2009, NTs developed NANT to have their own organization outside of nursing or medical professions to “connect, learn, mentor and inspire while advancing this focused field of therapy on a national level” (Sturdivant, 2013). Advances in the field of neonatal therapy included defining a scope of practice; providing a nationally recognized certification process; recommending a NT staffing allocation algorithm; describing the roles NTs may take at each NICU certification level; and publishing results of a survey of current NT practice patterns (Craig & Smith, 2020; Pineda et al., 2019; Sturdivant, 2013).

This dissertation reflects the impact of these field advancements by:

1. revealing some extent of the translation of these advances into clinical practice;
2. informing future research;
3. potentially inspiring quality improvement projects; and
4. potentially contributing to interprofessional education activities which support healthy workplace relationships and healing environments for infants and families in the NICU setting.

1.7 Philosophical Assumptions

Every researcher approaches their research with underlying assumptions about how knowledge and meaning are acquired. Additionally, the researcher may form questions, interpret data, or make conclusions about research through the lens of their own underlying assumptions, acquired through life experiences and training (Creswell & Poth, 2018). Ontology is the study of being, or reality; epistemology is the study of knowledge; and axiology is the study of values and beliefs which guide how humans should act. Extremes in broad epistemological approaches exist; however, some researchers find themselves situated somewhere between the two extremes (Gray, 2014; Onwuegbuzie, 2002). At either end of an ontological spectrum is realism and relativism. Realism asserts that one true reality exists outside of one's subjective perceptions (Denzin & Lincoln, 2011). Relativism asserts that multiple realities exist and are dependent on the individual's reflection on the world in time and space (Denzin & Lincoln, 2011). This researcher's ontological stance is to the right of central on the continuum between realism and relativism. Multi-case research design, where the perceptions of more than one individual are gathered and compiled, fits with this relativistic view (Yin, 2018).

The epistemology of constructionism asserts that living beings can help shape the world and act upon it, thus helping to shape personal realities (Crotty, 1998). The principal investigator (PI) in the research presented here uses a constructionist epistemology. NTs are positioned in the NICU to shape practices and act as members of a team of healthcare professionals involved in an infant and family's care. As an occupational therapist, this researcher also agrees with the views of Hooper and Wood (2019), who take an occupation-based approach that humans are more than the sum of their parts. What makes humans whole is the experiential interactions of the mind-body-spirit union within an environmental and social context. The personal value and meaning

each individual NT attributes to their work and role in the NICU may also shape their perception of reality. NTs do not work in isolation in the NICU; therefore, an underlying assumption is that collective and complex realities exist for groups of people that can be interpreted and lived individually. The perceptions of each therapist regarding integrated collaborative practices that occur in real time may be different for each participant based on their own historical experiences and the interplay of environmental, social, and contextual factors that are present at the time of the study in each unit (Crotty, 1998).

Axiology comprises the underlying values a researcher holds that guide their actions. A researcher with underlying assumptions that individuals perceive and help create their own world views must then be respectful of interpreting and considering multiple realities into overall research conclusions. Healthcare professionals often have common values such as wanting to serve, protect, nurture, or heal individuals, families, or communities. As an occupational therapist with previous experience working in healthcare settings and the NICU, this researcher shares these values. This primary investigator (PI) therefore used methods that reflected multiple individuals' perceptions or realities (e.g., interviews); she analyzed and interpreted results with respect for depictions of many realities and perceptions, not just of individuals but for the teams of NTs and for the larger NICU teams as well. Appendix A provides the PI's reflections on the personal meaning and relevance of the current doctoral research.

This introductory chapter has summarized the background of the research problem; highlighted that few descriptions of how NTs integrate and collaborate in daily practice are available; and identified a two-phase study to address this gap in research. Conceptual frameworks have also been reviewed. The next three chapters present three manuscripts that describe the methodology and results of both a scoping review (Phase 1) and a qualitative multi-case study

(Phase 2). Each manuscript was co-authored by the doctoral committee. Committee Chair Dr. Celia Pechak was closely involved in data analysis, thereby ensuring rigor and trustworthiness of the data analysis. All committee members contributed to refining the research questions and research study methodology prior to initiating the research project; additionally, they reviewed and edited each manuscript prior to being finalized.

Chapter 2: Integrated Collaborative Care and the Roles of Neonatal Therapists: A Scoping Review

Integrated care is a core concept in today's healthcare environment. Integrated care was initially considered the provision of both primary and behavioral health services together so that the overall well-being and health of an individual could be achieved in a more efficacious manner (Blount & Bayona, 1994; Curtis & Christian, 2012). However, since being introduced in the 1970s and broadly adopted in the 1990s and 2000s, the term "integrated care" has grown to encompass many definitions of coordinating services in multiple healthcare sectors including hospital systems, community-based systems, and global health systems (Goes et al., 2013; Goodwin, 2016; World Health Organization, 2016). Goodwin (2016) explained that integrated care can refer to several types of taxonomies. For example, integrated care may describe whether integration is either organizational or technological, and furthermore if integration is organizational at the broad healthcare infrastructure level, the local healthcare facility level, or the specific healthcare unit (e.g., neonatal intensive care unit [NICU]). Evans et al. (2014) similarly described healthcare integration strategies as falling into three categories: the targeted organization or service, the desired outcome of integration (e.g., economic, quality, organizational, or patient care), and how the integration is achieved. In each description of integration, the underlying concept of complexity is present. Complexity is an adeptly applied concept in healthcare, reflecting the non-linear, ever-evolving relationships between people, processes, and inter-connected parts within a healthcare environment (Thompson et al., 2016).

The NICU is a complex acute care setting which encompasses several sectors of integration. Specifically, the NICU is situated in a hospital system, but often carries over to community-based systems (e.g., early intervention) and outpatient specialty clinic visits. Hospital

administrators and NICU leaders must integrate several healthcare professional services within one hospital stay; however, the intensity or frequency of service provision by those healthcare providers may vary by local unit factors (e.g., resource availability, hospital culture, family needs, etc.). The application of traditionally defined integrated care (e.g., providing medical and behavioral interventions in one setting) can also be valuable in the NICU. Parents may find themselves coping with disparities between birth experience expectations and reality, and caring for an infant who requires extensive medical care from a myriad of specialty healthcare providers including neonatologists, surgeons, nurses, dietitians, respiratory therapists, pastoral care workers, and social workers (Hynan & Hall, 2015; Pineda et al., 2018). Neonatal therapists are another group of specialty healthcare providers who work in the NICU.

2.1 Background

Neonatal therapists (NTs) are occupational therapists (OTs), physical therapists (PTs), or speech-language pathologists (SLPs) who are advanced practitioners with specialized training in the neonatal care setting (Sturdivant, 2013). NTs are trained to assess an infant's neurobehavioral responses to interactions, neuromuscular development, feeding readiness, caregiver needs, and develop relevant individualized intervention plans. The American Academy of Pediatrics (AAP) guidelines for the most acute levels of neonatal care (Level III and IV NICUs) recommend having either an OT or PT, and a feeding specialist (typically a SLP) available (American Academy of Pediatrics, 2017). Craig and Smith (2020) stated that, "Neonatal therapy is optimally provided through an integrated collaborative-care model" (p.3).

For the purposes of this paper, integrated collaborative-care (ICC) is a term that may reflect integrative strategies of any type, level, process, or intensity, with emphasis on the philosophical underpinning that healthcare providers using those strategies strive for the well-being and health

of the patient being served in a healthcare setting (Evans et al., 2014; Goodwin, 2016). However, NTs are primarily concerned with hospital unit organizational or patient-level integration strategies rather than those economic or hospital system quality-focused interventions (i.e., day-to-day activities in the NICU). The word “collaborative” in ICC implies communication among two or more healthcare professionals who are working toward a common goal to deliver care (Boynton, 2016). Collaborative care and workplace relationships have been the topics of recent healthcare research as effective healthcare teams have the potential to contribute to cost savings, improved safety, and better shared decision-making with families (Baldwin et al., 2007; Barbosa, 2013; Kumar et al., 2014). Given the discipline-specific scope of practice of OT, PT, and SLP, and the benefits NICUs receive by each, NICUs may strive to staff all three disciplines of NTs in their hospital.

Family-centered developmental care (FCDC) is the predominant approach currently used in the United States for neonatal care and drives many unit policies (Kaye, 2016; Milette et al., 2017). A full explanation of the aspects of FCDC is beyond the scope of this article; however, FCDC promotes individualized neuroprotective strategies for the infant in relation to the infant’s gestational age or developmental needs in cooperation with the family (Milette et al., 2017). FCDC practices include healthcare professional roles that may fit within the scope of a NT; however, these practices do not always identify a NT as being required for that role (Altimier & Phillips, 2013; Gibbins et al., 2008; Welch et al., 2012). No identified studies have investigated the characteristics of neonatal professional teams with a specific focus on the role of NTs. Nonetheless, neonatal literature likely has many resources and evidence that NTs could apply to their daily clinical practice.

The current scoping review endeavored to identify what literature is available regarding ICC in the NICU setting with a role for NTs and identify gaps in the literature related to NT ICC practice patterns. Several authors have described spectra of ICC with examples for least to most integrated characteristics of care including philosophical underpinnings, team structures, communication frequency, co-location, leadership roles, patient experiences, and consideration of services across settings (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014). Included literature may provide NTs with validated, evidence-based resources for decision-making and team building. This review was situated within general ICC literature and healthcare team models; however, it is intended to be viewed through the lenses of neonatal intensive care and neonatal therapy.

2.2 Method

This scoping review was guided by the methodological framework proposed by Arskey and O'Malley (2005) and the PRISMA extended guidelines for scoping reviews (Tricco et al., 2018). Peer-reviewed articles, dissertations, and professional practice magazines were included in the study if they were published in English between January 1990 and June 2021, referenced the NICU setting, included a stated or inferred role for neonatal therapists, and included a description of at least one of seven aspects of ICC for day-to-day operations compiled from the literature. ICC aspects include: (a) philosophy of care; (b) team structure; (c) communication processes; (d) shared workspace or service availability; (e) expectations or measures for patient experiences; (f) leadership or organizational support; and (g) integration among or between healthcare settings (Table 2.1) (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014). Inferred roles for NTs would include those that would fall within the practice guidelines outlined by each neonatal therapy professional discipline of OT, PT, and SLP (American Speech-Language-Hearing

Association, 2004; Craig et al., 2018; Sturdivant, 2013; Sweeney et al., 2009). Studies that described ICC specifically among professions other than NTs (e.g., physicians and nurses), or limit their discussion to specific disciplines or healthcare roles that would fall outside of the scopes of practice of NTs were excluded.

Table 2.1: Study Selection Criteria for Aspects of Integrated Collaborative Care (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014)

Aspect of Integration	Description
Philosophy	The extent to which the hospital system and/or team emphasizes the treatment of the whole infant/family dyad in the social, environmental, and cultural context of the NICU and recognizes the potential impact of social determinants of health.
Team structures	The structure of decision-making processes by specific or all team members, and the inclusion of health disciplines on the team and extent of multi-directional communications among team members.
Communication processes	The systems or opportunities in place to share information either in electronic, verbal, non-verbal, or written form.
Shared workspace/ service availability	The extent to which healthcare team members share workspace within the hospital facility or in which they are available for communications and to provide patient care services.
Patient experiences/ outcomes	The extent to which patient needs are considered separate issues by individual disciplines or in which all members of the neonatal team consider all aspects of the patient. Improved health is determined not just by an absence of a condition but as the overall well-being of the infant/family dyad.
Leadership/ organizational structures	The extent to which administrators, managers and other leaders support the NICU through funding, promotions, and allow time for team building activities separate from patient care.
Integration among or between settings	The extent to which integration exists among the NICU and immediate hospital setting or between the NICU and non-acute care settings.

Searched databases included the Cumulative Index to Nursing and Allied Health Literature (CINAHL), EMBASE, ProQuest, and PUBMED. Additionally, the index of the Journal of Interprofessional Care was searched due to the relevance of its aims to the keyword search terms for this scoping review. Keyword search terms were based on descriptions of inter-disciplinary and collaborative terminology in research literature as described in Gröne and Garcia-Barbero

(2001), Boon et al. (2004), and Perrier et al. (2016). Keywords included, “integrated care,” “integrated healthcare,” “integrated collaborative care,” “integrative care,” “interdisciplinary care,” “interprofessional care,” “collaborative care,” “multi-disciplinary care,” “multi-professional care,” “multi-disciplinary approach,” “collaborative care approach,” “collaborative care model,” “coordinated care,” “collaborative nursing care,” “trans-disciplinary care,” “teamwork,” and “neonatal intensive care unit or NICU or baby unit or newborn intensive care.” The primary author reviewed the titles and abstracts of each article against the inclusion criteria to identify articles for review. When it was unclear if the article qualified for selection from the abstract, the primary investigator (PI) read the article in full to determine if it met eligibility criteria. Reference lists of selected articles were reviewed for additional publications using the same inclusion criteria and process. A second author reviewed approximately 30% of included articles as a measure of rigor to ensure accuracy of inclusion criteria and to confirm analysis.

Initially, articles were organized into a chart according to the aspect(s) of ICC described and the role for NTs, either stated or inferred. As articles were charted, it became clear that some articles primarily described quality improvement projects or specific operationalized strategies for aspects of integrated care while others described general practices, frameworks, or conceptual descriptions of components necessary for successful ICC. Several articles contained both types of information.

2.3 Results

A total of 643 articles were identified through database searching. After duplicates were removed, an additional 324 articles were excluded for not meeting criteria, leaving 71 articles to be reviewed. Eighty-five article titles were identified through reviewing references; of those, the primary author retrieved and reviewed 11 articles for inclusion. Reasons for article exclusion were

lack of stated or inferred role of NTs; no aspect of ICC described; abstract only; or described ICC between specific disciplines other than NTs. Twenty-eight articles were included in the final review (Figure 2.1). Some articles described a framework or concepts of ICC. Others described operationalized examples of ICC. Several included both a framework and operationalized examples. Table 2.2 provides a summary of each article, a description of the general objective of each article, and if the article described a conceptual framework, operationalized examples of ICC, or both.

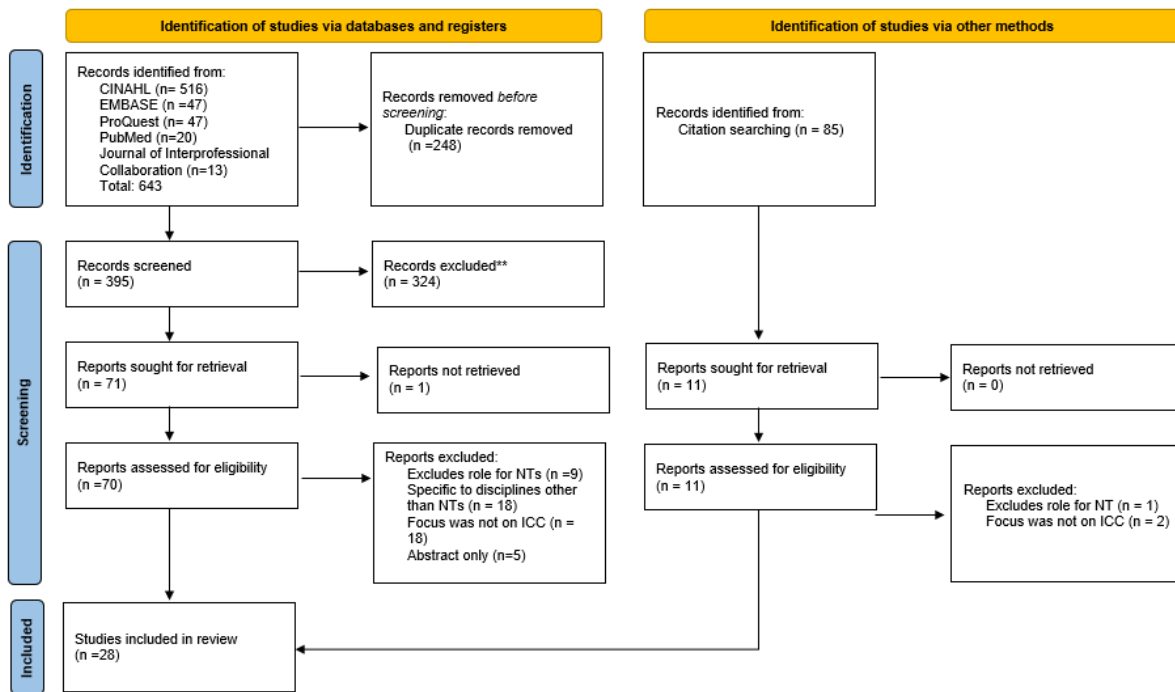


Figure 2.1: PRISMA Flow Diagram for Article Inclusion (Page et al., 2021)

Table 2.2: Summary of Included Articles (organized from oldest to most recent publication date)

Author (Date)	Design	Objective	Conceptual, Operational, or Both	Primary Aspects of Integrative Collaborative Care Discussed
Froehlich (1996)	Quality Improvement Article	Describe a Quality Improvement project focused on documentation	Operational	Communication processes Leadership/organizational structures

		within a NICU, with a focus on the inefficiency of paper charting		
Als & Gilkerson (1997)	Conceptual Framework	Detail conceptual framework, application, and efficacy of relationship-based developmentally supported care	Both	Philosophy Leadership/organizational structures Team Structures Communication processes
Robison (2003)	Organizational Guide	Present a guide to structure developmentally supportive programs with accountability from stakeholders	Conceptual	Leadership/organizational structures Team structures
Brown, Ohlinger, Rusk et al. (2003)	Quality Improvement Article	Evaluate and experience potentially better practices for multi-disciplinary teamwork in the NICU	Both	Philosophy Leadership/organizational structures Communication processes
Lawhon & Hedlund (2008)	Conceptual Framework	Describe the Newborn Individualized Developmental Care and Assessment Program training and education	Both	Philosophy Team structures Communication processes
White (2010)	Statement Paper	Explore challenges and opportunities of using a single-family room design in NICUs	Operational	Shared workspace/ service availability Communication processes
Crawshaw (2012)	Special Interest Article	Present a NICU's efforts to promote family-centered care	Operational	Communication processes Patient experience/outcomes
Lee, Martin-Anderson, & Dudley (2012)	Quality Improvement Article	Investigate key factors in promoting skin-to-skin care in the NICU as part of a collaborative to	Operational	Communication processes Patient experience/outcomes

		promote breastfeeding		
Barbosa (2013)	Statement Paper	Highlight the contribution of each member of a NICU team and importance of team collaboration on infant and family outcomes	Both	Team structures Communication processes
O'Brien, Bracht, Macdonell et al. (2013)	Research Paper	Disseminate results of a pilot cohort analytic study of Family Integrated Care in a Canadian NICU	Operational	Patient experience/outcomes
Altimier (2015)	Conceptual Framework	Outline the Compassionate Care Framework which includes affiliative relationships and bidirectional communication with parents of infants in the NICU	Conceptual	Philosophy Communication processes Patient Experience/outcomes
Altimier, Kenner, & Damus (2015)	Research Paper	Disseminate results of a study on the effect a unit-wide program titled, Wee Care Neuroprotective NICU program, using survey data on seven neurodevelopmental core measures	Conceptual	Philosophy Leadership/organizational structures
Craig, Glick, Philips et al. (2015)	Statement Paper	Recommend strategies for involving the family in developmental care of an infant in the NICU	Operational	Leadership/organizational structures Communication processes Team structures
Holtermann, Forknall, Nyagumbo et al. (2016)	Special Interest Article	Describe implementation of a "daily capacity huddle" to	Operational	Communication processes Leadership/organizational structures

		improve patient flow in the NICU		
Jenkyns (2016)	Dissertation Research	Disseminate results of an action research project to explore shared leadership, collaboration, and empowerment of team members in the NICU	Both	Team structures Communication processes Shared workspace/service availability Leadership/organizational structures
El-Helou, Samiee-Zafarghandy, Fusch et al. (2017)	Study Protocol	Outline the protocol for a clinical trial to introduce microsystems into a NICU using an interprofessional approach	Operational	Team structures Communication processes Shared workspace/service availability
Hall, Hynan, Phillips et al. (2017)	Statement Paper	Describe a paradigm shift in considering how care is approached in the NICU setting, envisioning the unit as a “Neonatal Intensive Parenting Unit”	Both	Philosophy Communication processes Leadership/organizational structures Integration among or between settings
Trujillo, Fernandez, Ghafoori et al. (2017)	Quality Improvement Article	Describe the role of interdisciplinary family conferences to improve patient experience in the NICU	Operational	Communication processes Patient Experience/outcomes
Dunn, Cragg, Graham et al. (2018)	Research Paper	Disseminate results of a study on interprofessional team members’ perspectives about shared decision-making in the NICU	Conceptual	Philosophy Communication processes
Lipner & Huron (2018)	Statement Paper	Describe how one team provides developmental and	Conceptual	Team structures Integration among or between settings

		interprofessional care in the NICU		
Benzie, Shah, Aziz et al. (2019)	Research Paper	Disseminate results of a study on perspectives of healthcare providers and administrators of their experiences providing family-centered care in the NICU	Conceptual	Philosophy Communication processes Leadership/organizational structures
Erdei, Inder, Dodril et al. (2019)	Review Paper	Describe a transdisciplinary neurodevelopmental program called the Growth and Developmental Unit	Both	Philosophy Team structures Communication processes Shared workspace/service availability
Masten, Sommerfeldt, Gordan et al. (2019)	Quality Improvement Article	Disseminate results of a quality improvement project to evaluate teamwork in the NICU	Conceptual	Philosophy Team structures Communication processes
Spellman (2019)	Special Interest Paper	Describe how one group of neonatal therapists coordinate care collaboratively	Operational	Team structures Communication processes Shared workspace/service availability
Ermath, Thomas, Ling et al. (2020)	Research Paper	Disseminate results of a study which evaluated the effectiveness of an alternate discharge model for NICU patients with feeding dysfunction	Operational	Team structures Integration among or between settings
Griffiths, James-Nunez, Spence, et al. (2020)	Quality Improvement Article	Describe a quality improvement effort to use a developmental round team in a surgical NICU	Operational	Team structures Communication processes Patient experience/outcomes Integration between settings
Ravi, Tawfik, Sexton et al. (2020)	Quality Improvement	Describe strategies that can be used to change and	Operational	Communication processes

	Article	reinforce safety culture on a NICU		Leadership/organizational structures
Fathi, Nelin, Shepherd et al. (2021)	Review Paper	Describe the creation of a small baby unit to promote improved outcomes for extremely premature infants	Both	Philosophy Communication processes Shared workspace/service availability Patient experiences/outcomes

2.3.1 Neonatal Therapist Roles

Thirteen distinct NT roles related to ICC (both stated and inferred) were compiled from the included articles (Table 2.3). Some roles (e.g., individualized developmental care provider, multidisciplinary rounding participant, and parental psychosocial support provider) were both stated and inferred within the included articles. The list of NT roles includes those that would involve direct patient care by a NT (e.g., individualized developmental care provider or feeding specialist) as well as those that have an indirect impact on patient or family outcomes (e.g., committee meeting participant or unit culture contributor). While there are several interventions that NTs of different disciplines could provide within the umbrella of providing “individualized developmental care,” how those interventions may be delineated to each NT discipline is described elsewhere and outside the intent of this review (Barbosa, 2013; Pineda et al., 2019).

Table 2.3: Roles for Neonatal Therapists in Integrated Collaborative Care

Stated Roles	Reference(s)
Individualized Developmental Care Provider (e.g., promote breastfeeding, promote skin-to-skin care, provide recreational tasks to parents, etc.)	Altimier (2015) Barbosa (2013) Craig et al. (2015) Lipner & Huron (2018) Robison (2003) Spellman (2019)
Developmental Specialist	Als and Gilkerson (1997) Lawhon & Hedlund (2008) Masten et al. (2019)

Feeding Specialist	Barbosa (2013) Ermarth et al. (2020) Lipner & Huron (2018)
Care Planner/Contributor (e.g., participate in multi-disciplinary rounds)	El Helou et al. (2017) Griffiths et al. (2020)
Quality Improvement Team Member	Lee et al. (2012)
Committee Member	El Helou et al. (2017)
Parent Mentor (e.g., provide psychosocial support, and parent training)	Barbosa (2013) Craig et al. (2015) Hall et al. (2017)
Discharge Planner (e.g., attend capacity huddle)	Barbosa (2013) Holterman et al. (2016)
Inferred Roles	
Individualized Developmental Care Provider	Altimier et al. (2015) Benzies et al. (2019) Fathi et al. (2021) Lee et al. (2012) O'Brien (2013)
Care Planner (e.g., participate in multi-disciplinary rounds)	Jenkyns (2016) Ravi et al. (2020) Trujillo et al. (2017) White (2010)
Parent Mentor (e.g., provide psychosocial support, and parent training)	Altimier et al. (2015) Crawshaw (2012) Erdei et al. (2019) Fathi et al. (2021) O'Brien (2013) White (2010)
Shared Decision Maker	Barbosa (2013) Dunn et al. (2018) Jenkyns (2016)
Unit Culture Contributor	Barbosa (2013) Brown et al. (2003) Jenkyns (2016)
Unit Safety Monitor	Ravi et al. (2020)
Policy Developer	Erdei et al. (2019)
Documenter of Services in Health Record	Froehlich (1996)

2.4 Aspects of Integration

Publications included in this review are discussed according to which of the seven aspects of integration the authors described, and each publication may be mentioned in the results more than once accordingly (Table 2.1). A list was compiled of operationalized strategies according to

the aspect of integration described; however, most strategies could be categorized into multiple aspects (Table 2.4). Those aspects of ICC that had the fewest examples of operationalization, and hence the largest gaps in literature, were “shared workspace/service availability” and “integration between or among settings.”

Table 2.4: Operationalized Strategies of Integrated Collaborative Care

Strategy	Philosophy	Team Structure	Communication Processes	Shared Workspace/Service availability	Patient Experience Measures/Outcomes	Leadership/Organizational Structures	Integration Among or Between Settings
Schedule routine multi-disciplinary developmental care meetings/Rounding (Als and Gilkerson, 1997; Barbosa, 2013; el Helou et al., 2017; Erdei, 2019; Griffiths et al., 2020; Holterman et al., 2016; Jenkyns, 2016; Lawhon and Hedlund, 2008; Ravi et al., 2020; Spellman, 2019; Trujillo et al., 2017; White, 2010)		X	X	X	X	X	
Offer team process training/Education to staff (Altimier, 2015; Brown et al., 2003; Craig et al., 2015; Jenkyns, 2016; Lee et al., 2012; Ravi et al., 2020)	X	X	X			X	
Participate in policy revision committees to ensure FCDC oriented policies and procedures (Craig et al. 2015; Erdei, 2019; Lee et al., 2012; White, 2010)		X	X			X	
Provide mental health support to staff (Craig et al., 2015; Hall et al., 2017; Ravi et al., 2020)						X	

Provide infant individualized care plan created by multi-disciplinary input (Craig et al., 2015; Lawhon and Hedlund, 2008; Lee et al., 2012)		X	X		X		
Communicate/ follow-up with providers about family risk factors (Ermarth et al., 2020; Hall et al., 2017; Jenkyns, 2016)			X				X
Document team processes/rounding decisions/parent interactions in health record (Fathi et al., 2021; Griffiths et al., 2020)			X				
Implement reflective processes (Als and Gilkerson, 1997; Jenkyns, 2016)	X		X			X	
Place whiteboards at bedside to facilitate parent-staff and staff-staff communication (Crawshaw, 2012; Jenkyns, 2016)			X				
Hold debriefing sessions after critical events (Hall et al., 2017; Ravi et al., 2020)			X			X	
Implement a parent empowerment program with multi-disciplinary participation (Fathi et al., 2021; O'Brien, 2013)					X		
Streamline interdisciplinary forms and documentation in patient health record (Froehlich, 1996; Lee et al., 2012)			X			X	
Create sub-teams of staff to enhance continuity of care (Fathi et al., 2020)	X	X		X			
Send a copy of individualized developmental care report to other hospital units for			X				X

continuity of care (Griffiths et al., 2020)							
Create a Home Enteral Feeding Transition clinic (Ermarth et al., 2020)		X					X
Implement “triage and scheduling” meeting among NTs (Spellman, 2019)		X	X				
Establish NICU competencies for new staff members (Spellman, 2019)		X	X				
Establish telemedicine services to discharged families (Hall et al., 2017)						X	X
Engage staff in organizational development activities such as “World Café,” “Open Space,” and “Appreciative Inquiry” (Jenkyns, 2016)	X					X	
Use visual signals, non-verbal visual communication (White, 2010)			X		X		
Consider common spaces, private family space, and workspaces in mock-ups when designing or redesigning units (White, 2010)					X		
Post Team Improvement Progress throughout unit (Lee et al., 2012)			X			X	
Develop a shared purpose statement for the NICU staff with interdisciplinary input (Brown et al., 2003)	X		X			X	
Create a unit newsletter to distribute information about committees (Brown et al., 2003)			X			X	
Hire a salaried Developmental Specialist position (Als and Gilkerson, 1997)		X				X	

Note: Strategies are organized from most to least frequently mentioned in articles and then alphabetical author order.

2.4.1 Philosophy

ICC emphasizes holistic approaches to healthcare. Ideally, the psychosocial aspects and well-being of the infant and family are considered as important as the medical diagnosis and management (Blount & Bayona, 1994; Heath et al., 2013). Several articles addressed the mindset, culture, attitudes, or motivations underlying the approaches to care that reflected this holistic approach, and these articles provided several frameworks or models of care. Als and Gilkerson (1997) and Lawhon and Hedlund (2008) described aspects of the Newborn Individualized Developmental Care and Assessment Program (NIDCAP), including the importance of relational care, individualized assessment, and strategies for implementing this model on a unit. Altimier (2015) described the compassionate family care framework, which “begins with recognizing a family’s suffering, internally responding to the suffering, and then addressing that suffering through presence, word and action” (p.35).

Other authors framed their NICUs with emphasis on either parenting or infant growth. Hall et al. (2017) described their version of a nursery unit with the guiding concern of “the physical and emotional well-being of the family” as a “neonatal intensive parenting unit (NIPU)” (p.1259). Erdei et al. (2019) expanded the idea of the NIPU with a purpose to create a nursery to “optimize infant outcomes, parent-infant attachment, and parent mental health” (p.1684). They called it a Growth and Development Unit (GDU) and designed it to “serve a subset of convalescent infants recognized to be at highest neurodevelopmental risk” (p.1684). Fathi et al. (2020) described a small baby unit (SBU) also intended to serve a subset NICU population. The authors’ intent was to decrease variability in attitudes toward care of infant born <27 weeks gestation and move toward a standard approach to care that would maximize the use of kangaroo care and other “joyful”

experiences for parents. The SBU is unique because it is a sub-unit within a larger nursery but also includes a subset of staff.

Brown et al. (2003) addressed operationalizing aspects of creating a shared philosophy among team members. These authors used a plan-do-study-act (PDSA) approach to establishing a collaborative culture of care in the NICU; they named the potentially better practice, the rationale behind it, potential benefits, potential risks, and how the practice was operationalized. Some examples of operationalization included developing a shared purpose statement for NICU staff, implementing team process training, and implementing leadership strategies for all staff members.

Benzies et al. (2019) and Masten et al. (2019) took a critical approach to aspects of teamwork. Benzies et al. used a qualitative design and Masten et al. used a survey. However, both articles described barriers and facilitators to collaborative teamwork and providing family-centered care in the NICU. Facilitators were both interpersonal and logistical in nature. Interpersonal aspects included having respect and trust for other team members, valuing leadership, sharing a mission for care, and using effective conflict management skills. Logistical facilitators included ease of access to policies, frequent policy reviews, and multiple ways to communicate. Barriers included real or perceived resource disparities between the NICU and other units, lack of shared decision-making among team members (e.g., obvious hierarchies among health disciplines), and inconsistent teaching practices toward parents. Multiple barriers led to higher conflict among team members.

2.4.2 Team Structures

Several articles specified which health disciplines were included in projects or as members of their teams (Als & Gilkerson, 1997; Altimier, 2015; Altimier et al., 2015; Barbosa, 2013; Craig et al., 2015; Dunn et al., 2018; el Helou et al., 2017; Erdei et al., 2019; Ermarth et al., 2020; Fathi

et al., 2021; Hall et al., 2017; Holtermann et al., 2016; Lee et al., 2012; Masten et al., 2019; O'Brien et al., 2013). The primary author did not analyze these lists of team composition as team structure, because it was not always clear if the included disciplines were a subset of all disciplines available to a neonatal unit for the purposes of a specific project. The PI considered team structure as more than a roll call of disciplines; rather, it was considered an aspect of functioning and dynamic interactions among team members, or statements or descriptions of the contributions of each discipline.

Barbosa (2013) comprehensively described models of team service delivery including multi-disciplinary, inter-disciplinary, and trans-disciplinary approaches. She also outlined the potential roles of different healthcare professionals on neonatal teams, including those with non-patient care roles such as unit secretaries, volunteers, and housekeeping staff. Lipner and Huron (2018) provided one example of how healthcare professionals fulfil roles to provide “interprofessional developmental care.” In the only article specific to NTs, Spellman (2018) recounted how NTs of each discipline delineate roles and coordinate care in their NICU. While these authors described specific health professional roles, other authors described general types of team members without necessarily naming a discipline (Dunn et al., 2018; Griffiths et al., 2021; Robison, 2003). In other cases, NT disciplines were specifically mentioned for developmental specialist roles (Als & Gilkerson, 1997; Dunn et al., 2018; Griffiths et al., 2021; Lawhon, 1997; Robison, 2003). Those authors describing specific programs for subpopulations in the NICU described roles, processes, or other ways in which patients and families may interact with various healthcare disciplines on the teams that encapsulate examples of integrated team structures (el Helou et al., 2017; Ermarth et al., 2020; O'Brien et al., 2013). Operationalized strategies that overlap with team structures are outlined in Table 2.4.

2.4.3 Communication Processes

Most included articles mentioned some aspect of communication among team members. However, articles in this section are those that specifically mentioned operationalized strategies for communication. The most mentioned strategy for communication was rounding or huddles. The terms “daily rounds” (Als & Gilkerson, 1997), “bedside rounds” (Trujillo et al., 2017; White, 2010), “team rounds” (Barbosa, 2013), “medical rounds” (Erdei et al., 2019), and “interdisciplinary rounds” (el Helou et al., 2017) were all used as general opportunities for problem solving, conflict resolution, informing about plans of care, and shared decision-making. Spellman (2019) delineated how doing a weekly “huddle” among the NTs in their unit provided an opportunity to discuss goals, barriers to meeting goals, and progression towards goals. Other authors described similar discussions as “developmental rounds,” where aspects of providing developmental care were specifically discussed with the larger neonatal team (Griffiths et al., 2021; Lawhon, 1997). Holtermann et al. (2016) described a “daily capacity huddle” with the goal to prioritize treatments, do discharge planning, and review bed capacity.

Opportunities to discuss other information relevant to the team, patient, and family can also be presented in a team huddle. Ravi et al. (2020) described “multi-disciplinary safety rounds” and “executive walk rounds” as strategies to influence safety culture on the unit. In addition to bedside rounding, Trujillo et al. (2017) described “interdisciplinary family conferences,” which shared commonalities with developmental rounds. Hall et al. (2017) also recommended holding team debriefs after critical events, which is another form of a team meeting. Other forms of in-person communication strategies were education programs and trainings. Education offerings were suggested for staff development (Altimier et al., 2015; Lee et al., 2012) and to promote other communicative or team processes (Brown et al., 2003; Ravi et al., 2020).

Team members used multiple written forms of communication. Several low technological solutions proved effective to several teams such as white boards (Crawshaw, 2012), a unit newsletter (Brown et al., 2003), posters throughout the unit (Lee et al., 2012), and streamlined data forms where multiple disciplines completed the same form to share information (Froehlich, 1996). Fathi et al. (2020) and Griffiths et al. (2020) mentioned adding results and decisions from rounding to the electronic health record.

Policy creation is another strategy mentioned to communicate to stakeholders, staff, or parents how the unit functioned (Craig et al., 2015; Erdei et al., 2019; Lee et al., 2012; White, 2010). Policies are often a reflection of the underlying philosophy, mission, or values of a unit. Relatedly, Spellman (2019) also mentioned that on her unit, NTs established competencies for new staff members to reflect the skills needed to work in the NICU. Daily workflow communication on a unit may also be influenced by the layout of the space.

White (2010) described challenges and opportunities of single-family room design. He related how the physical layout of a unit, including whether the unit had open-bays or private rooms, impacts staff member-to-member non-verbal communication (e.g., facial expressions, hand signals) and auditory forms of communication (e.g., equipment and monitor alarms). Additionally, White discussed how the layout of single-family rooms may aid or detract from in-person rounds, depending on the team size, and the medical condition and alertness state of the infant. Jenkyns (2016) also noted that the physical spaces and comfort level of breakrooms may facilitate conversations among staff which helps build rapport, trust, and openness.

2.4.4 Shared Workspace/ Service Availability

Several articles described how disciplines shared workspace or had various healthcare service availability. Holtermann et al. (2016), Trujillo et al. (2017) and White (2010) noted within

their nurseries where various forms of multi-disciplinary rounds took place. El Helou et al. (2017) and White (2010) outlined alternative unit designs and bed location assignments, and their impact on staff communication and patient/family satisfaction. Similarly, Fathi et al. (2021) delineated the creation of sub-teams of staff to enhance continuity of care by maintaining bed locations and staff assignments to a set of patients. Jenkyns (2016) described design strategies specifically for breakrooms and staff common areas to facilitate staff interactions and foster professional relationships.

2.4.5 Patient Experiences/Outcomes

Authors described aspects of ICC where patient and/or family needs are considered by all members of the neonatal team (Table 2.1). Healthcare professionals' use of FCDC strategies was a common theme that fit into this aspect. Often, NICUs investigated ways to include the family in decisions or to help them feel welcome within the unit, using both measurable outcomes, and qualitative methods.

Trujillo et al. (2017) described “interdisciplinary family conferences” as a form of rounding for staff to communicate with and involve parents as collaborators. Notably, Trujillo et al. explained that parents could opt out of the family conferences if they were “overwhelmed” with too much information at once, thus making the conferences individualized to the family’s perceived needs (p. 243). O’Brien et al. (2013) outlined a pilot study for Family Integrated Care; this approach supports and encourages parents to take an active role during the NICU stay, requiring parents to stay in the unit up to 8 hours a day, and complete tasks such as diaper changes, feeding, bathing, dressing, skin-to-skin care, and basic charting.

Both O’Brien et al. (2013) and Fathi et al. (2021) described use of coaching and education to parents as part of parent empowerment programs to support family well-being and participation.

Lee et al. (2012) addressed barriers and opportunities for skin-to-skin contact between parents and babies; they emphasized that eliminating parking hassles and offering food vouchers supported parents enough to increase visitation to the units and thus increase skin-to-skin opportunities, which promoted parent/infant bonding (Lee et al., 2012). Craig et al. (2015) and Hall et al. (2017) described potentially better practices for how to involve families in developmental and parenting tasks when in the NICU. Both sets of authors recommended fully incorporating parents into daily tasks and encouraged procedural strategies to support parents such as updating them on how and when rounds take place, using welcoming signage, and offering accessible resources. Additionally, they outlined how leaders should support staff, which also secondarily supports families in the NICU. Erdei et al. (2019) and Fathi et al. (2021) described unit designs that include physical spaces and team structures that support unique NICU populations (e.g., those who are born extremely low birth weight and are placed in small baby units or those who have extended NICU stays and are hospitalized to a post-term age due to chronic medical complications). The intent of these programs was to enhance and cater to the needs of both infants and families as sub-populations within larger NICUs.

The articles offered several operationalized strategies to improve infant outcomes secondarily through facilitating increased parent participation. For example, Lee et al. (2012) suggested the use of bedside mirrors to view babies when participating in skin-to-skin contact. Crawshaw (2012) described the use of whiteboards so parents can write questions. Additionally, several authors discussed posting bedside individualized developmental care reports for parent reference (Craig et al., 2015; Lawhon, 1997; Lee et al., 2012).

2.4.6 Leadership/Organizational Structures

Unit leaders and hospital administrators are often gatekeepers to culture and change as they have the means to support staff with funding, time, trust, and other means to shape the department. Robison (2003) published an *Organizational Guide for an Effective Developmental Program in the NICU*. She outlined the types of leaders necessary to create FCDC-oriented standards and to operationalize those standards. Als and Gilkerson (1997) mentioned the importance of relationships in providing individualized FCDC. They also emphasized the importance of leadership support to maintain reflective processes with staff. These reflective processes are meant to give time for staff self-assessment regarding individualizing care. Als and Gilkerson also recommended a salaried position for a developmental specialist, whose role would be to assess, monitor, and develop education for staff. Providing education to staff on various topics was also mentioned by Altimier et al. (2015), Brown et al. (2003), Lee et al. (2012), and Ravi et al. (2020). Education topics were related to the objectives of each publication (e.g., compassion, skin-to-skin care, leadership).

Staff members with expertise or knowledge of a topic may provide in-services or annual competency checkoffs. However, even informal education may require administrative support. Support may come in the form of paid time to attend mandatory meetings or scheduling ample staff to allow for members to be away from bedside for in-services. Leadership may also bring in outside consultants or education teams. Altimier et al. (2015) described the success of a unit-wide developmental care training program called *Wee Care*. *Wee Care* was initiated with leadership first so that unit goals and an implementation plan could be developed prior to introducing it to staff members. Pre- and post-implementation surveys showed significant improvements in each of seven “core measures” of developmental care (p.9). Ravi et al. (2020) also described cultural

transformation to their unit that was initiated with leadership and administration. Earlier, Ravi et al.'s communication strategies were described as strategies to change safety culture on a unit. Ravi et al.'s operationalized strategies included executive walk rounds, multi-disciplinary safety rounds, "mindful organizing," "relational coordination," and formal team process training, all of which were initiated or led by leadership. Leader-driven operational improvements were mentioned in several other articles and included facilitating changes to electronic health record systems (Froehlich, 1996; Lee et al., 2012), establishing telemedicine services to discharged families (Hall et al., 2017), supporting policy revisions (Craig et al., 2015; Lee et al., 2012; White, 2010), communicating to staff through unit poster announcements (Lee et al., 2012), and a unit newsletter (Brown et al., 2003).

Besides facilitating direct patient care, leadership was also described as being critical to support staff well-being. As previously mentioned, Hall et al. (2017) recommended debriefing sessions following critical events to promote safety culture and support the emotional health of staff. Brown et al. (2003) published potentially better practices for creating a culture of collaboration, which includes several leader-driven initiatives (e.g., how to develop a shared purpose statement for staff, strategies for conflict management, leading by example, and fostering trust and respect). Benzies et al. (2019) described a qualitative study about the perspectives of healthcare providers and hospital administrators regarding neonatal care. The article was unique in that the authors addressed the administrative perspective of encountering challenges with providing FCDC in the NICU setting. Finally, Jenkyns (2016) used action research to explore collaboration and shared leadership in the NICU. Following several focus groups with staff members, Jenkyns delineated four main conclusions:

- 1) Shared dialogues on collaboration, shared leadership, and empowerment at the frontline led to empowering individual paradigm shifts.
- 2) Individual paradigm shifts influenced the collective.
- 3) Fulfilment was associated with connection.
- 4) Ideal team relationships resembled a community (p. 94).

2.4.7 Integration Among or Between Settings

Few examples of integrating care among or between settings were described in detail. Examples authors briefly mentioned were establishing telehealth services to discharged families (Hall et al., 2017) and communicating with follow-up providers about family risk factors for post-discharge visits (Ermarth et al., 2020; Hall et al., 2017). Griffiths et al. (2020) described sending a copy of an individualized developmental care report to other hospital units to promote care continuity after discharging from a neonatal surgical unit. The most detailed description of integrating care between settings in this review was by Ermarth et al. (2020). Ermarth and colleagues described outcomes of utilizing a home enteral nutrition program to discharge infants on nasogastric feeding tubes to home with follow-up in a feeding clinic. The authors outlined the program's timeline for home health services, the process of referral, inclusion criteria for the program, and roles of each discipline involved.

2.5 Discussion

The aim of this scoping review was to identify literature available regarding ICC in the NICU with a role for NTs and to identify any gaps in that literature related to NT ICC practice patterns. This review identified 28 articles for inclusion that had either a stated or inferred role for NTs. Of those 28 articles, 13 articles specifically stated a role for NTs. To use Evans et al.'s (2013) classification of integration strategies, articles included in this review predominantly described

strategies that fell into institution-centered, organizational, and patient-level integration strategies. It was difficult at times to determine the primary aspects of ICC described in some articles. This challenge should have been expected given the complexity of ICC. In general, there is ample literature that describes strategies of ICC in the NICU setting; however, specific descriptions of NT representation are lacking. Despite being present in the NICU since the 1970s, NT representation in literature may be scarce due to the perception that NTs serve an adjunctive role in this setting.

Several of the included articles discussed family-centered developmentally-minded models of care. FCDC is a common approach to neonatal care in the United States and FCDC drives many unit policies (Kaye, 2016; Milette et al., 2017). Evidence of a FCDC approach was plentiful in most included articles. Larocque et al. (2021) clarified that FCDC was a philosophical approach but was at risk of being considered a practice model in the literature. Many patient experiences/outcomes also related back to underlying tenets of FCDC. Analysis of the articles in this review revealed that the concept of ICC may become muddled with FCDC, especially if FCDC is mistakenly considered a practice model of care practices rather than a philosophy that drives care practices. ICC considers the philosophy of, or approach to care in a healthcare setting. For the NICU, FCDC is the philosophical approach that encompasses individualization of care to consider the social, environmental, and cultural context of each patient-family dyad. Additionally, FCDC care supposes that nurturing and neuroprotective practices within the NICU (e.g., protective handling, positioning, breastfeeding, or environmental controls) influence physical as well as mental health and are relational (Altimier & Phillips, 2013).

Articles that included the ICC aspect of philosophy also addressed at least one other aspect of ICC (Als & Gilkerson, 1997; Altimier, 2015; Benzies et al., 2019; Brown et al., 2003; Dunn et

al., 2018; Erdei et al., 2019; Fathi et al., 2021; Hall et al., 2017; Lawhon, 1997; Masten et al., 2019). For example, several authors described a novel framework for a unit-wide philosophy and organization of their unit (Erdei et al., 2019; Fathi et al., 2021; Hynan & Hall, 2015; Lawhon, 1997). In each of these branded unit model descriptions (e.g., GDU, NIPU, SBU), healthcare disciplines included on the general team were listed but the specific roles of those disciplines were not always defined. Team members may identify with both professionally defined roles and generalized roles (Barbosa, 2013; Dunn et al., 2018; Spellman, 2019).

Craig et al. (2018), Sweeney et al. (2009), and ASHA (2004) provided guidelines for the NICU setting for background knowledge, skills, and potential interventions for NTs from OT, PT, and SLP, respectively. Common to all disciplines is some description of roles and skills necessary to be a team member, with the terms “communicate,” “educate,” and “collaborate,” often used. These terms are also common in ICC literature. None of the guidelines mentioned using ICC models or even listed this concept as a basic knowledge competency. Using ICC, however, requires more than the skills necessary to being a team member; ICC encompasses how one’s skills as a team member contribute to the overall well-being and health of the patient (and their parents) at all levels of integration. Role delineations for NTs in the NICU are likely guided by leadership, hiring practice, personal values, professional training, or philosophy, which influences communication strategies (Hall, P., 2005; Nancarrow et al., 2013). Brown et al. (2003), Jenkyns (2016), Dunn et al. (2018), and Masten et al. (2019) discussed strategies to include staff members in creating role definitions and unit mission statements and reflecting on personal roles and influence within the unit. Authors researching culture transformation and role construction also note that sharing a mission and collaboratively defining roles and boundaries are most successful in facilitating positive teamwork (Chatfield et al., 2017; MacNaughton et al., 2013).

Blount (2003) emphasized that integrated services have a level of *co-location*, the extent to which services are available within the same workspace. Healthcare disciplines represented on the neonatal team are often members of, and budgeted under other departments (e.g., rehabilitation department for NTs, case management for social workers, dietary for dieticians, etc.) (Sturdivant, 2013). While each department may be apt to manage or staff workers in the NICU within the acute care setting, this disparate way of staffing the team leaves opportunity for better teamwork and integration, especially among or between health settings. Due to the paucity of articles describing integration among or between health settings, it is unknown if staffing NTs in other health units within a hospital facilitates or detracts from the needs of neonates or other hospitalized populations.

Jenkyns' (2016) action research regarding shared leadership, collaboration, and empowerment of team members in the NICU suggested that sharing not just workspace but also rest spaces (e.g., breakrooms) facilitates workplace relationships, which indirectly impacts patient care. Both Fathi et al.'s (2020) description of a small baby unit and el Helou et al.'s (2017) description of creating micro-systems in the NICU considered that workspace for healthcare providers in specialized sub-populations may facilitate the needs of those populations best. The authors portrayed that these programs may be most successful because of the shared philosophy, space, and structure of the teams.

2.6 Limitations

While best efforts to be comprehensive and inclusive have been described, some literature may have been missed in this review. Perrier, Adhihetty, and Soobiah (2016) examined semantics in interprofessional research and determined that medical subject headings (MeSH) did not identify all relevant studies for interprofessional, multidisciplinary, and teamwork-related review

papers. Furthermore, the MeSH headings for variations of “inter” and other team or collaboration synonyms were not available until 2003. This weakness could also affect the search results of the present review based on the proposed time-period and similar search terms.

This review only included peer-reviewed literature, professional articles, and published dissertations; books, book chapters, conference presentations, or formal educational program content were not included. These latter resources may offer valuable information for NTs or other NICU professionals. Many references from the reference page of included articles were excluded because they were not specific to the NICU setting. Articles regarding ICC in other critical care areas (e.g., intensive care units, pediatric intensive care units, or surgical units) may provide valuable ideas and innovations that would work well with few, if any, modifications for the NICU setting. Additionally, integration among or between settings is an aspect that stretches into other levels of healthcare. Alternate database searches or keywords may better capture this broader or macro-view of ICC. Barriers to integration among or between levels could be differences in payment systems, qualifications for services such as referral diagnoses, or lack of community and professional resources for specialty clinics. These examples could be evidence of the “[f]ailure to develop consensus on the purposes of health systems integration among managers, policy-makers, clinicians, and patients...” which hinders integration at multi-levels or between settings (Evans et al., 2014, p.143).

The vital role of leadership in promoting ICC was obvious in review results. However, the searched databases may not have captured administrative or healthcare leadership literature which may have provided more insight into organizational or leadership operationalization strategies for ICC. However, had healthcare leadership literature searches been performed, the articles may not have qualified for inclusion due to poor identification of a role for NTs. The role of rehabilitation

directors, neonatal therapy managers, or other formal leadership roles specifically held by NTs may also be a focus of future inquiry.

2.7 Conclusion

This scoping review has highlighted publications that described examples of each of seven aspects of ICC, both with conceptual models as well as operationalized examples that are within NTs' scopes of practice. Results afford NTs evidence to validate or improve their ICC practice. Additionally, this review offers evidence of the types of roles that NTs are taking or could take in the NICU, reflects current practice, and highlights the value of NTs as neonatal team members. Gaps in the literature reflect poor representation of the role of NTs in leadership both among NTs and among the NICU units in general to facilitate ICC. Other gaps include a paucity of articles that related integration among or between settings. Schot, Tummers, and Noordegraaf (2020) emphasized that to "understand how collaboration occurs and why it works...it is important to pay attention to the 'doing' of collaboration" (p. 333). Future studies or articles describing the role of NTs in leadership roles, either formally or informally, as well as more articles that explicitly describe how NTs perform 'the doing' of ICC are recommended.

2.8 References

Als, H., & Gilkerson, L. (1997). The role of relationship-based developmentally supportive newborn intensive care in strengthening outcome of preterm infants. *Seminars in Perinatology*, 21(3), 178-189.

Altimier, L. (2015). Compassionate family care framework: A new collaborative compassionate care model for NICU families and caregivers. *Newborn & Infant Nursing Reviews*, 15(1), 33-41. <https://doi.org/10.1053/j.nainr.2015.01.005>

- Altimier, L., Kenner, C., & Damus, K. (2015). The Wee Care neuroprotective NICU program (Wee Care): The effect of a comprehensive developmental care training program on seven neuroprotective core measures for family-centered developmental care of premature neonates. *Newborn & Infant Nursing Reviews*, 15(1), 6-16. <https://doi.org/10.1053/j.nainr.2015.01.006>
- Altimier, L., & Phillips, R. M. (2013). The neonatal integrative developmental care model: Seven neuroprotective core measures for family-centered developmental care. *Newborn & Infant Nursing Reviews*, 13(1), 9-22. <https://doi.org/10.1053/j.nainr.2016.09.030>
- American Academy of Pediatrics. (2017). *Guidelines for perinatal care* (Eighth ed.). American Academy of Pediatrics (and) the American College of Obstetricians and Gynecologists.
- American Speech-Language- Hearing Association. (2004). Knowledge and skills needed by speech-language pathologists providing services to infants and families in the NICU environment. <https://www.asha.org/policy/KS2004-00080/>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19-32. <https://doi.org/10.1080/1364557032000119616>
- Baldwin, D. C., Royer, J. A., & Edinberg, M. A. (2007). Maintenance of health care teams: Internal and external dimensions. *Journal of Interprofessional Care*, 21, 38-51. <https://doi.org/10.1080/13561820701580032>
- Barbosa, V. M. (2013). Teamwork in the neonatal intensive care unit. *Physical & Occupational Therapy in Pediatrics*, 33(1), 5-26. <https://doi.org/10.3109/01942638.2012.729556>

Benzies, K. M., Shah, V., Aziz, K., Lodha, A., & Misfeldt, R. (2019). The health care system is making 'too much noise' to provide family-centred care in neonatal intensive care units: Perspectives of health care providers and hospital administrators. *Intensive & Critical Care Nursing, 50*, 44-53. <https://doi.org/10.1016/j.iccn.2018.05.001>

Blount, A. (2003). Integrated primary care: Organizing the evidence. *Families, Systems & Health: The Journal of Collaborative Family HealthCare, 21*(2), 121-133. <https://psycnet.apa.org/doi/10.1037/1091-7527.21.2.121>

Blount, A., & Bayona, J. (1994). Toward a system of integrated primary care. *Family Systems Medicine, 12*(2), 171-182. <https://psycnet.apa.org/doi/10.1037/h0089151>

Boon, H., Verhoef, M., O'Hara, D., & Findlay, B. (2004). From parallel practice to integrative health care: A conceptual framework. *BioMed Central*.(4)1.

Boynton, B. (2016). Chapter 10: Collaboration and team development. *Successful Nurse Communication* (pp. 130-142). F.A. Davis Company.

Brown, M. S., Ohlinger, J., Rusk, C., Delmore, P., & Ittmann, P. (2003). Implementing potentially better practices for multidisciplinary team Building: Creating a neonatal intensive care unit culture of collaboration. *Pediatrics, 111*(4), e482-e488. <https://doi.org/10.1542/peds.111.SE1.e482>

Chatfield, J. S., Longenecker, C. O., Fink, L. S., & Gold, J. P. (2017). Ten CEO imperatives for healthcare transformation: Lessons from top-performing academic medical centers. *Journal of Healthcare Management, 62*(6), 371-383. DOI: 10.1097/JHM-D-16-00003

- Craig, J., Carroll, S., Sturdivant, C., & Ludwig, S. (2018). Occupational therapy's role in the neonatal intensive care unit. *American Journal of Occupational Therapy*, 72, 1-9. <https://doi.org/10.5014/ajot.2018.72S204>
- Craig, J.W., & Smith, C.R. (2020). Risk-adjusted/neuroprotective care services in the NICU: The elemental role of the neonatal therapist (OT, PT, SLP). *Journal of Perinatology*, <https://doi.org/10.1038/s41372-020-0597-1>
- Craig, J., Glick, C., Phillips, R., Hall, S. L., Smith, J., & Browne, J. (2015). Recommendations for involving the family in developmental care of the NICU baby. *Journal of Perinatology*, 35, S5-S8. <https://doi.org/10.1038/jp.2015.142>
- Crawshaw, C. (2012). Changing the culture of care in NICU. *Alberta RN*, 68(1), 22-23.
- Curtis, R., & Christian, E. (2012). *Integrated care : Applying theory to practice*. Routledge, Taylor & Francis Group.
- Doherty, W. J., McDaniel, S. H., & Baird, M. A. (1996). Five levels of primary care/behavioral healthcare collaboration. *Behavioral Healthcare Tomorrow*, (October), 26-28.
- Dunn, S. I., Cragg, B., Graham, I. D., Medves, J., & Gaboury, I. (2018). Roles, processes, and outcomes of interprofessional shared decision-making in a neonatal intensive care unit: A qualitative study. *Journal of Interprofessional Care*, 32(3), 284-294. <https://doi.org/10.1080/13561820.2018.1428186>

- el Helou, S., Samiee-Zafarghandy, S., Fusch, G. et al. (2017). Introduction of microsystems in a level 3 neonatal intensive care unit—an interprofessional approach. *BMC Health Services Research*, 17(61). <https://doi.org/10.1186/s12913-017-1989-6>
- Erdei, C., Inder, T. E., Dodrill, P., & Woodward, L. J. (2019). The growth and development unit. A proposed approach for enhancing infant neurodevelopment and family-centered care in the Neonatal Intensive Care Unit. *Journal of Perinatology*, 39(12), 1684-1687. <https://doi.org/10.1038/s41372-019-0514-7>
- Ermarth, A., Thomas, D., Ling, C. Y., Cardullo, A., & White, B. R. (2020). Effective tube weaning and predictive clinical characteristics of NICU patients with feeding dysfunction. *Journal of Parenteral & Enteral Nutrition*, 44(5), 920-927. doi: 10.1002/jpen.1717
- Evans, J. M., Baker, R. G., Berta, W., & Jan, B. (2014). The evolution of integrated health care strategies. *Advanced HealthCare Management*, 15, 125-161. [https://doi.org/10.1108/s1474-8231\(2013\)0000015011](https://doi.org/10.1108/s1474-8231(2013)0000015011)
- Fathi, O., Nelin, L. D., Shepherd, E. G., & Reber, K. M. (2021). Development of a small baby unit to improve outcomes for the extremely premature infant. *Journal of Perinatology : Official Journal of the California Perinatal Association*, 42, 157-164. <https://doi.org/10.1038/s41372-021-00984-0>
- Froehlich, S. A. (1996). Interdisciplinary documentation in the NICU. *Nursing Management*, 27(3), 48F-48I.

- Gibbins, S., Hoath, S. B., Coughlin, M., Gibbins, A., & Franck, L. (2008). The universe of developmental care: A new conceptual model for application in the neonatal intensive care unit. *Advances in Neonatal Care: Official Journal of the National Association of Neonatal Nurses*, 8(3), 141-147. <https://10.1097/01.ANC.0000324337.01970.76>
- Goes, J., Savage, G. T., & Friedman, L. H. (2013). *Annual review of health care management: revisiting the evolution of health systems organization*. Emerald.
- Goodwin, N. (2016). Understanding integrated care. *International Journal of Integrated Care*, 16(4), 6. <https://doi.org/10.5334%2Fijic.2530>
- Griffiths, N., James-Nunez, K., Spence, K., Crowle, C., Pettigrew, J., Loughran-Fowlds, A., & Samra, H. A. (2021). The evolution of an interdisciplinary developmental round in a surgical neonatal intensive care unit. *Advances in Neonatal Care (Lippincott Williams & Wilkins)*, 21(1), E2-E10. <https://doi.org/10.1097/anc.0000000000000741>
- Hall, P. (2005). Interprofessional teamwork: professional cultures as barriers. *Journal of Interprofessional Care*, 19 Suppl 1, 188-196. <https://doi.org/10.1080/13561820500081745>
- Hall, Hynan, M. T., Phillips, R., Lassen, S., Craig, J. W., Goyer, E., Hatfield, R. F., & Cohen, H. (2017). The neonatal intensive parenting unit: An introduction. *Journal of Perinatology: Official Journal of the California Perinatal Association*, 37(12), 1259-1264. <https://doi.org/10.1038/jp.2017.108>
- Heath, B., Wise Romero, P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, D.C.: SAMHSA-HRSA Center for Integrated Health

Solutions. <https://www.pcpsc.org/sites/default/files/resources/SAMHSA-HRSA%202013%20Framework%20for%20Levels%20of%20Integrated%20Healthcare.pdf>

Holtermann, K., Forknall, J., Nyagumbo, P., Williams, B., Singh, A., & Rasiah, S. V. (2016). The daily capacity huddle: Improving NICU patient flow. *Infant, 12*(5), 182-183.

Hynan, M. T., & Hall, S. L. (2015). Psychosocial program standards for NICU parents. *Journal of Perinatology, 35*, S1-S4. <https://doi.org/10.1038/jp.2015.141>

Karol, R. L. (2014). Team models in neurorehabilitation: Structure, function, and culture change. *NeuroRehabilitation, 34*(4), 655-669. <https://doi.org/10.3233/nre-141080>

Kaye, S. (2016). Historical trends in neonatal nursing: Developmental care and NIDCAP. *The Journal of Perinatal & Neonatal Nursing, 30*(3), 273-276. <https://doi.org/10.1097/jpn.0000000000000200>

Kumar, S., Deshmukh, V., & Adhish, V. S. (2014). Building and leading teams. *Indian Journal of Community Medicine, 39*(4), 208-213. <https://doi.org/10.4103%2F0970-0218.143020>

Larocque, C., Peterson, W. E., Squires, J. E., Mason-Ward, M., Mayhew, K., & Harrison, D. (2021). Family-centered care in the Neonatal Intensive Care Unit: A concept analysis and literature review. *Journal of Neonatal Nursing, 27*(6), 402-411. <https://doi.org/10.1016/j.jnn.2021.06.014>

Lawhon, G. (1997). Providing developmentally supportive care in the newborn intensive care unit: An evolving challenge. *The Journal of Perinatal & Neonatal Nursing, 10*(4), 48-61. <https://doi.org/10.1097/00005237-199703000-00013>

- Lee, H. C., Martin-Anderson, S., Dudley, R. A., Lee, H. C., Martin-Anderson, S., & Dudley, R. A. (2012). Clinician perspectives on barriers to and opportunities for skin-to-skin contact for premature infants in neonatal intensive care units. *Breastfeeding Medicine*, 7(2), 79-84. <https://doi.org/10.1089%2Fbfm.2011.0004>
- MacNaughton, K., Chreim, S., & Bourgeault, I. L. (2013). Role construction and boundaries in interprofessional primary health care teams: A qualitative study. *BMC Health Services Research*, 13(1), 1-23. <https://doi.org/10.1186/1472-6963-13-486>
- Masten, M., Sommerfeldt, S., Gordan, S., Greubel, E., Canning, C., Liroy, J., & Chuo, J. (2019). Evaluating teamwork in the neonatal intensive care unit: A survey of providers and parents. *Advances in Neonatal Care*, 19(4), 285-293. <https://doi.org/10.1097/anc.0000000000000604>
- Milette, I., Martel, M., Ribeiro da Silva, M., & Coughlin McNeil, M. (2017). Guidelines for the institutional implementation of developmental neuroprotective care in the neonatal intensive care unit. Part A: Background and rationale. A joint position statement from the CANN, CAPWHN, NANN, and COINN. *The Canadian Journal of Nursing Research = Revue Canadienne De Recherche En Sciences Infirmieres*, 49(2), 46-62. <https://doi.org/10.1177/0844562117708126>
- Nancarrow, S. A., Booth, A., Ariss, S., Smith, T., Enderby, P., & Roots, A. (2013). Ten principles of good interdisciplinary team work. *Human Resources for Health*, 11, 19. <https://doi.org/10.1186/1478-4491-11-19>
- O'Brien, K., Bracht, M., Macdonell, K., McBride, T., Robson, K., O'Leary, L., Christie, K., Galarza, M., Dicky, T., Levin, A., & Lee, S. K. (2013). A pilot cohort analytic study of Family

Integrated Care in a Canadian neonatal intensive care unit. *BMC Pregnancy & Childbirth*, 13, 1-8. <https://doi.org/10.1186/1471-2393-13-s1-s12>

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ (Online); BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>

Pineda, R., Bender, J., Hall, B., Shabosky, L., Annecca, A., & Smith, J. (2018). Parent participation in the neonatal intensive care unit: Predictors and relationships to neurobehavior and developmental outcomes. *Early Human Development*, 117, 32-38. <https://doi.org/10.1016/j.earlhumdev.2017.12.008>

Pineda, R., DeGaetano, S., Kindra, M., Hand, T., Craig, J., Fernandez-Fernandez, A., & Collette, D. (2019). Neonatal therapy: A survey of current practice. *Journal of Pediatric Rehabilitation Medicine*, 12(3), 285-294. <https://doi.org/10.3233/prm-180565>

Robison, L. D. (2003). An organizational guide for an effective developmental program in the NICU. *JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing*, 32(3), 379-386. <https://doi.org/10.1177/0884217503253536>

Spellman, T. (2019). Interprofessional collaboration makes the difference to infants in the NICU: Practice across disciplines offers the best outcomes for critically ill infants. Here's how one program makes it work. *ASHA Leader*, 24(12), 36-38. <https://doi.org/10.1044/leader.OTP.24122019.36>

- Sturdivant, C. (2013). A collaborative approach to defining neonatal therapy. *Newborn Infant Nurs Rev*, 13(1), 23-26. <https://doi.org/10.1053/j.nainr.2012.12.010>
- Sweeney, J. K., Heriza, C. B., & Blanchard, Y. (2009). Neonatal physical therapy. Part I: Clinical competencies and neonatal intensive care unit clinical training models. *Pediatric Physical Therapy*, 21(4), 296-307. <https://doi.org/10.1097/pep.0b013e3181bf75ee>
- Thompson, D. S., Fazio, X., Kustra, E., Patrick, L., & Stanley, D. (2016). Scoping review of complexity theory in health services research. *BMC Health Services Research*, 16, 1-16. <https://doi.org/10.1186/s12913-016-1343-4>
- Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K., K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., . . . Straus, S. E. (2018). PRISMA Extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine; Ann Intern Med*, 169(7), 467-473. doi: 10.7326/M18-0850. Epub 2018 Sep 4. PMID: 30178033.
- Trujillo, J. A., Fernandez, Y., Ghafoori, L., Lok, K., & Valencia, A. (2017). Interdisciplinary family conferences to improve patient experience in the neonatal intensive care unit. *Health & Social Work*, 42(4), 241-245. <https://doi.org/10.1093/hsw/hlx039>
- Welch, M. G., Hofer, M. A., Brunelli, S. A., Stark, R. I., Andrews, H. F., Austin, J., & Myers, M. M. (2012). Family nurture intervention (FNI): Methods and treatment protocol of a randomized controlled trial in the NICU. *BMC Pediatrics*, 12(1), 14. <https://doi.org/10.1186/1471-2431-12-14>

White, R. D. (2010). Single-family room design in the neonatal intensive care unit -- challenges and opportunities. *Newborn & Infant Nursing Reviews*, 10(2), 83-86. doi: 10.1053/j.nainr.2010.03.011. Epub 2010 May 21. PMID: 32288654; PMCID: PMC7106039.

World Health Organization. Framework on integrated, people-centred health services. Paper presented at the *Sixty-Ninth World Health Assembly A69/39 Provisional Agenda Item 16*, 1-12. https://apps.who.int/gb/ebwha/pdf_files/WHA69/A69_39-en.pdf

Chapter 3: Neonatal Therapists' Perceptions of Integrative and Collaborative practices in the Neonatal Intensive Care Unit

The neonatal intensive care unit (NICU) is a complex environment where coordination of services among many healthcare professions is crucial for positive infant and family outcomes (Hall et al., 2016; Milette et al., 2017). Neonatal therapists (NTs) are increasingly present in NICUs and use a preventative or habilitative approach to care (Pineda et al., 2019). Craig and Smith (2020) highlighted that neonatal therapy is also “optimally provided through an integrated collaborative-care [ICC] model” (p.3). While professional guidelines of the three disciplines of neonatal therapy (occupational therapists [OTs], physical therapists [PTs] and speech-language pathologists [SLPs]) all discuss the importance of collaboration and communication between therapists and other healthcare professionals, they do not specifically mention ICC (American Speech-Language-Hearing Association, 2004; Craig et al., 2018; Sweeney et al., 2009,).

Current descriptions of neonatal therapy practice have only indirectly addressed how NTs contribute to ICC in the NICU (Pineda et al., 2019; Ross et al., 2017; Spellman, 2019). No identified literature has directly described how NTs perceive they use ICC either among other NT disciplines or among the larger NICU team of healthcare professionals. Research about how NTs work in an ICC environment can be instrumental for healthcare organizations to maintain patient safety guidelines, provide positive patient and family care services, and enhance employee engagement and work satisfaction.

3.1 Background

ICC evolved from the concept of *integrated care*, one individualized health plan with both medical and behavioral components, where multiple providers collaborate about the health plan to address patient needs holistically (Blount & Bayona, 1994; Blount, 2003). As healthcare services

have specialized and diversified, collaboration among healthcare providers has become a staple of acute health care. However, the extent to which healthcare providers collaborate and address their patients with a holistic mindset varies across communities and health service systems.

ICC is complex, with administrative, technological, and operational layers beyond the individualized health plan (Goodwin, 2016). Heath et al. (2013) defined integration as “how services are delivered, and practices are organized and managed” and collaboration as “how resources [or healthcare professionals] are brought together” (p.7). Heath et al.’s framework categorized ICC in levels (Table 1.1). Boon et al. (2004) also described aspects of ICC (Boon et al., 2004); each aspect was considered to be on a spectrum with more integration present as one moves from left to right on the spectrum. Boon et al. additionally incorporated traditional categorical labels of team composition on an overall spectrum of integrative care (e.g., multi-, inter-, or trans-disciplinary). The two frameworks are complementary (Table 1.1).

In the NICU, patients and families could see providers from ten or more healthcare professions throughout a single stay, lasting from days to months at a time. A NICU stay is often unexpected for families, entails uncertainty, and impacts the infant’s and parent’s mental health. The NICU is an ideal setting for ICC where healthcare professionals consider medical and psychosocial aspects to create individualized health plans (Browne, 2021). For longer lengths of stay, the relationships that infants and families develop with healthcare providers often mitigate the stress and trauma from an unexpected birth outcome (Browne, 2021; Couper, 2022; Sabnis et al., 2019). The importance of infant-to-parent and parent-to-staff relationships to support parent-infant bonding have been well documented (Altimier, 2015; Hall et al., 2016). However, professional peer-to-peer relationships have also been described by Als and Gilkerson (1997) to potentially influence the quality of NICU care.

Several authors have explored teamwork and ICC in the NICU and related it to the quality of care provided (Barrett, 2003; Brown et al., 2003; Tawfik et al., 2017). However, in a scoping review of ICC publications that included roles for NTs, only one article focused entirely on NTs (Chapter 2). NTs have the potential to influence individual infant and family outcomes in addition to patient safety, unit policy, and unit culture. The purposes of the current study were to explore: 1) how NTs perceive that they demonstrate ICC practices among their NT coworkers to plan and deliver discipline-specific services in the NICU, and 2) how NTs perceive that they demonstrate ICC practices among other members of the NICU team to deliver neonatal services to infants and families.

3.2 Methods

3.2.1 Participant Recruitment

The authors used a multi-case study research design grounded in relativistic and constructionist philosophical assumptions (Crotty, 1998; Denzin & Lincoln, 2011; Yin, 2018). The primary investigator (PI) sought out cases from across the United States, with a case defined as a team of NTs that included at least one OT, one PT, and one SLP, who worked in a Level III or Level IV NICU (American Academy of Pediatrics, 2017). Following institutional review board (IRB) approval from The University of Texas at El Paso, the PI posted research participation notices to social media sites relevant to neonatal therapy between June 2021 and January 2022 (American Occupational Therapy Association, 2021a; Facebook, 2022a; Facebook, 2022b; Texas Occupational Therapy Association, n.d.). As individuals demonstrated interest, the PI secured letters of participation agreement for each hospital site. Then, following informed consent, each participant completed a single one-on-one interview with the PI. Interviews were virtual, audio-recorded, and used a semi-structured interview template. Once transcribed, interview transcripts

were reviewed by participants for the purpose of member checking. Between three and six NTs were interviewed from each team, even if there were more than six NTs on their respective team. One participant from each team was designated to provide descriptive demographic information regarding their worksite and team members' qualifications.

3.2.2 Data Analysis

The PI analyzed interview transcripts using an adapted version of a reflexive, hybrid thematic analysis approach described by Swain (2018) that used concurrent inductive and deductive data analysis. The PI adapted Swain's hybrid analysis version to become both cyclical for case study and to include oversight by a senior researcher. This oversight ensured trustworthiness of the data analysis and provided an additional source of methodological rigor. A full description of strategies to ensure rigor and trustworthiness of the research methodology is presented in Appendix J.

Thematic analysis had three phases with two stages in each phase (Figure 3.1). For Phase 1-Stage 1, *a priori* codes were defined based on previous literature review of integrated care publications (Boyatzis, 1998). Literature review of integrated care publications identified several common aspects of ICC including: a) communication processes, b) integration among or between settings, c) leadership or organizational structures, d) patient/family experiences or outcomes, e) philosophy, f) team structures and dynamics, g) shared workspace, and h) service availability (Table 3.1) (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014). Table 3.1 is similar to Table 2.1, however reflects minor changes made as a result of thematic analysis during the multi-case study. During analysis, the PI and the senior researcher determined there was a need to distinguish service availability and shared space into two unique aspects of ICC. Furthermore, Team Structures was expanded to include "and dynamics" to reflect team roles or interaction styles

versus a list of healthcare disciplines. For the first case, both the PI and a senior researcher worked from Phase 1-Stage 2 through Phase 2-Stage 4 individually, then collaboratively completed analysis through Phase 3-Stage 6 to confirm trustworthiness and credibility of the thematic analysis process. The PI and senior researcher also created a case report which included thematic analysis conclusions and descriptive information for the first case. The case reports were created for the purpose of member checking and to act as a unit of analysis for cross-case analysis. For the second case, both the PI and senior researcher read all case transcripts. The PI completed coding of all transcripts independently, identified themes, and drafted a case report. The senior researcher then reviewed the PI's transcript coding and the case report. The PI and senior researcher met to discuss results of data analysis and resolve discrepancies. Once the PI finalized the case report for the second case, the process was repeated for the third through sixth cases (Appendices C-H). Qualitative data analysis was managed using NVivo software (QSR Party International Ltd., 2018). The PI then sent each team's case report to its respective participants for member checking.

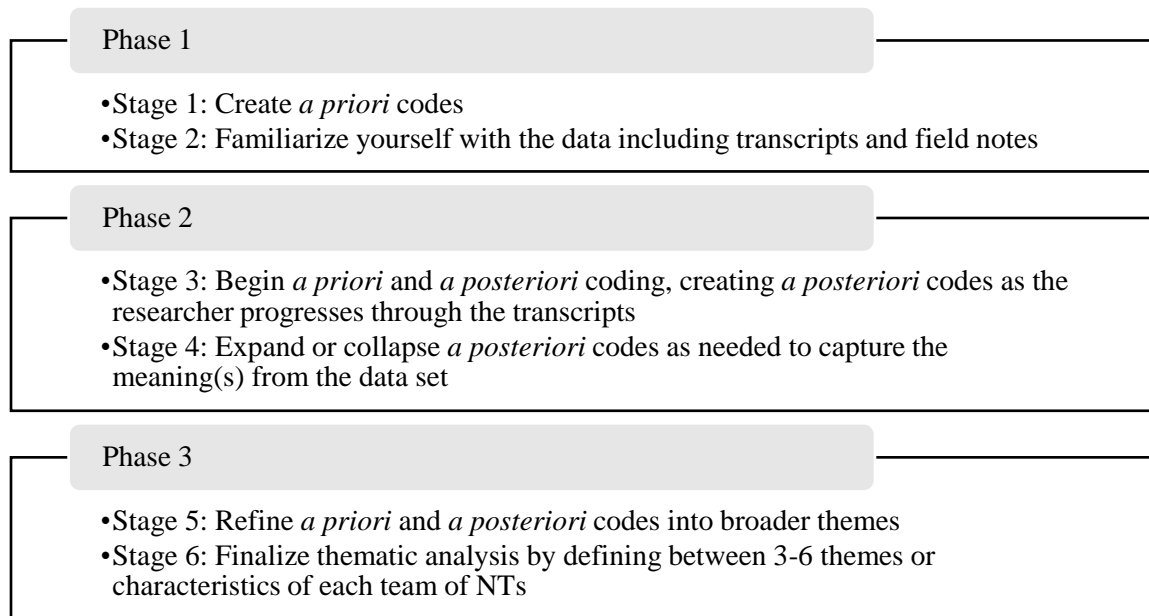


Figure 3.1: A Hybrid Approach to Thematic Analysis (Adapted from Swain, 2018)

Table 3.1: Aspects of Integrated Collaborative Care (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014)

Aspect of Integration	Description
Communication processes	The systems or opportunities in place to share information either in electronic, verbal, non-verbal, or written form
Integration among or between settings	The extent to which integration exists among the NICU and immediate hospital setting or between the NICU and non-acute care settings.
Leadership/organizational structures	The extent to which administrators, managers and other leaders support the NICU through funding, promotions, and allow time for team building activities separate from patient care.
Patient and family experiences/ outcomes	The extent to which patient needs are considered separate issues by individual disciplines or in which all aspects of the patient are considered by all members of the neonatal team. Improved health is determined not just by an absence of a condition but as the overall well-being of the infant/family dyad.
Philosophy	The extent to which the hospital system and/or team emphasizes the treatment of the whole infant/family dyad in the social, environmental, and cultural context of the NICU and recognizes the potential impact of social determinants of health.
Team structures and dynamics	The structure of decision-making processes by specific or all team members, and the inclusion of health disciplines on the team and extent of multi-directional communications among team members.
Shared workspace	The extent to which healthcare team members share workspace within the hospital facility.
Service availability	Descriptions of the overlapping shifts, or full-time equivalent coverage of NTs or other NICU health disciplines.

In case study research, Yin (2018) recommends using a cross-case analysis strategy; one strategy is to inductively look for relationships among cases. For cross-case analysis in the current study, the PI used the six case reports as a new dataset and used only inductive thematic analysis to discover themes across cases. Cross-case inductive analysis followed the phases in Figure 3.1, excluding stages with *a priori* codes.

3.3 Results

Six teams (26 total NTs) participated in the study between June 2021 and January 2022 and represented diverse geographical locations across the United States (Table 3.2). Throughout

the member checking process, participants recommended no substantive changes to the transcripts. Findings were generally distinguishable between operational themes and themes regarding relationship cultivation and maintenance. This article focuses on four operational themes from the study. The findings presented here address both purposes of the study. Relational themes which highlight how NTs create and maintain relationships both with NTs and other NICU staff will be described in Chapter 4.

Table 3.2: Demographic Information from Participating Teams

Team Location	Total number of NTs on the team	Number of beds in the hospital site	Hospital is associated with a medical residency program (yes/no)	Hospital served a mixed population (e.g., adults and infants) (yes/no)*
East	6	20-40	Yes	Yes
Midwest A	20	80+	Yes	No
Midwest B	4	20-40	Yes	Yes
Southwest	3	20-40	No	Yes
Northwest A	7	20-40	No	Yes
Northwest B	4	Less than 20	No	Yes

3.3.1 Feeding Decisions are a Source of Collaboration and Conflict

All participating teams noted the imperative role of feeding assessment and interventions to prepare infants for discharge. Nutrition and feeding decisions were an opportunity for collaborative conversations, conflict, or both, among NTs and the larger NICU team. Conflicts entailed perceived value of feeding goals compared to other developmental care goals, respecting NT recommendations regarding feeding decisions, and role definition.

Participants described feeding progress and success as a metric of discharge readiness. Feeding performance was prioritized over developmental interventions, requiring Participant 12 (PT) to defer her interventions to the feeding therapist(s). Participant 4 (PT) inferred that feeding interventions and those who perform them are more valued than other developmental care goals.

She stated, “I feel like a lot of [the unit’s] goals [are] focused on feeding... So, despite if [the baby] reach[es] the goal for OT or PT, if [the baby] already reach[ed] their goal for feeding, they're going home.” In contrast, Participant 15 (SLP) mentioned, “I don't think...[feeding goals are] more important goals, but I would say that maybe feeding is just something that a lot of people focus a lot on because of the discharge requirement.”

There was a range of responses about whether NTs’ feeding recommendations were respected by other NICU staff. When asked if her recommendations were respected, Participant 22 (SLP) stated, “Yes and no. It just depends...I feel like I am well received by the nurses a lot. The provider sometimes pushes back.” Participant 2 (SLP) recognized “push-back” from nurses in context of the limitations of NT service availability on the unit because NTs may only be able to feed an infant once or twice a week.

Another participant described inconsistency about who was considered competent to feed infants, resulting in poor trust among healthcare professionals. At their facility, the SLP was the primary feeding therapist. Participant 25 described that as the SLP, she predominantly prescribed feeding guidelines to medical providers and occasionally circumvented nursing input due to their perceived poor developmental care knowledge (Table 3.3). The OT and PT on her team also had some feeding knowledge; nonetheless, they were excluded from being able to feed infants because they were not allowed to pass a unit competency for feeding. The unit competency was reportedly intended for nurses, nursing students, and volunteers. The NT participants from this team described their anxiety and resentment about the situation after witnessing poor feeding strategies.

Two teams mentioned that feeding assessment and intervention are currently shared among OTs and SLPs. These collaborative efforts historically emerged out of intra-NT team conflict of who should primarily take the role of feeding expert. On one team, conflict arose when hiring an

OT who had feeding expertise but the current precedent for feeding was with the SLP. Another team also described uncertainty among the NTs about who should primarily address feeding as their team grew in knowledge and size. A compromise to begin co-assessing feeding emerged as an infant and family centric solution. Participant 15 (SLP) relayed, “we worked really hard to come up with a way that we could kind of both bring...our expertise to the table because we did agree that it seemed best for the patient to do that.” On that team, OTs and SLPs worked out a system of co-assessment and developed plans of care that were weighted toward services of OTs or SLPs, where OTs focused more on sensory regulation deficits of feeding and SLPs focused on swallow or oral motor deficits.

3.3.2 Co-assessment and Co-treatment is a Logistical Strategy to Meet Infant Needs

Results indicated mixed use of co-assessment and co-treatment. Some teams never co-treated or co-assessed due to not having overlapping shifts with other NTs. However, for those who did, several participants perceived co-treatments as an optimal way to meet patient needs. Participating teams noted the value of having the broad perspective of each NT discipline as part of the NICU team during co-assessment and co-treatment. NTs typically planned co-assessment/co-treatment during morning huddles or care hand-offs and considered service availability and the caseload of each therapist.

Using co-treatment, NTs could facilitate state regulation and autonomic stability, or facilitate movement patterns where infants have mobility limitations, or multiple lines and tubes. Additionally, co-treatment allowed for real time collaboration with peer NTs while not overtaxing an infant’s energy resources and was also a way to validate observations or clarify a plan of care. Participant descriptions of their perceptions of co-treatment are presented in Table 3.3.

3.3.3 Service Planning and the Ripple Effect of Leadership

Broadly speaking, service availability, or lack thereof, dictated: how interventions were planned through use of communication strategies; how frequently each patient was seen by which discipline; to what extent NTs could participate in performance improvement projects or committee work; and the parameters for how relationships were formed among NTs and the greater team. Leaders' staffing decisions have a ripple effect on how therapists work and on NTs' perceptions of how their work is valued.

Communication strategies varied among NTs depending on the size of their team, and whether they were staffed for overlapping shifts or not. Communication strategies among NICU staff were both low- and high-tech. Low-tech strategies included use of bedside white boards, resource binders, and verbal communication. High-tech strategies included a shared electronic document, cell phone use, Vocera audio-recorders (San Jose, California), and various electronic health record tools. Teams had many strategies at their disposal to communicate and coordinate care. Coincidentally, all teams used Epic Systems (Verona, Wisconsin) for their electronic health record which has several built-in tools such as Health Insurance Portability and Accountability Act (HIPAA) compliant chat, text, email, and sticky note features. When available, these features were some NTs' preferred way to communicate with each other, or with other NICU staff if face-to-face communication was not possible.

In one large NICU, a neonatal therapy team had assignments on micro-teams, which included nurses, medical providers, and other health disciplines. Two years prior, their rehabilitation department leader had redesigned how the NTs divided their caseloads so that each micro-team had an assigned OT and a PT. SLPs, who were responsible for feeding, were assigned to two or more micro-teams. These assignments were semi-permanent and were perceived by

participants from this team to facilitate both communication and relationship building with parents and staff.

Some teams voiced having to advocate and justify their hours and presence in the NICU while other teams were included in the NICU from day one of opening. At one site, leaders encouraged specialization to help advocate to high-level administrators for NT service availability. Participants emphasized their efforts to establish unique skills sets to justify their presence (Table 3.3). Justification was less necessary if the unit's leaders shared the same philosophical values to provide holistic care. For one team, participating NTs described their transdisciplinary approach and triaged therapy visits based on infant and family needs. Participant 7 (PT) was the supervisor for this team and echoed how this approach played to the strengths of the team as a whole.

We basically share-pair between OT and PT for younger babies. And then as they get older, we will add in Speech. And we just communicate really well, I feel, like as a team. And we try not to be redundant, but we may have what looks quite similar [treatments] between OT and PT from one day to the next. But I always say that we all bring a little bit different perspective to the table, and that we'll definitely play to our own strengths for the team.

On this team, participants emphasized their belief that family-centered developmental care influenced long-term outcomes through the team's efforts to integrate neonatal therapy between NICU hospitalization and NICU follow-up clinic. Full-time equivalent (FTE) hours were intentionally divided between the NICU and follow-up clinic to provide continuity of care (Table 3.3). Trade-offs for this service availability strategy included therapists feeling disconnected from overall unit cohesiveness and missing the small daily changes in an infant's progress.

In efforts to be responsive to the nursing staff's input, participants on the transdisciplinary team made intentional efforts to listen to nursing feedback about patient's feeding performance and adjusted their work hours to be more available. Participants on that team extended their hours into night shifts and staffed on Saturdays. Participant 7 (PT) explained: "if you really want to be

respected as part of the team, you got to be there.” Other teams expressed that leadership deferred weekend coverage to adult services. One participant viewed the weekend as a break for families while other teams provided no patient-centered justification for not covering weekend shifts (Table 3.3).

3.3.4 Collaborative Culture Impacts NTs’ Empowerment

Some NTs portrayed confidence and satisfaction about their perceived integrated position on their NICU team. These participants often voiced sharing holistic values with other NICU staff members to meet the needs of the families. Additionally, they described having leaders who intentionally created a culture of collaboration. Participants perceived that these holistic and inclusive values benefitted families (Table 3.3).

Participation in performance improvement committees for highly confident teams was also routine. Participants often described attending several committees. Teams who were on multiple committees or who had been a part of their units from their inception reported few barriers to presenting new ideas to the team. Participant 17 (PT) mentioned that meetings were not always about how NTs could contribute, but were also valuable for gathering information and listening for the needs of the unit:

[W]e have a meeting that occurs once a month. And it's not always fully about babies... we have a lot of different meetings that are just bigger than our rehab department and oftentimes there are those of us who go and represent and gather information. It's about creating policy and, you know, workflows and things like that...

The role of leadership in establishing and fostering a collaborative environment on empowered teams was evident (Table 3.3). However, not all teams expressed complete satisfaction with those in leadership positions nor vocalized a clear and consistent philosophical approach. Teams shared challenges of splitting an FTE between the NICU and adult acute care. Despite support from their immediate supervisors, NTs on two teams described frustration with moving

between the NICU and adult acute care. Participants expressed that the expectations for shared decision-making for rehabilitation therapists in adult acute care do not match the same intensity that they do for NTs (Table 3.3). This disconnect in understanding the philosophical differences in approach to care in the NICU and adult acute care extended to rehabilitation leaders, possibly because those leaders had not worked as a clinician in the NICU. Participant 5 (SLP) described that a barrier to reliable neonatal therapy was uncertainty of service availability when NTs were asked to cover adult care:

I definitely think, like, sometimes the barrier, and this has gotten better over time, has been that, because we're managed by therapists who don't have a knowledge of the NICU, we're often the first to get pulled as the adult census gets flooded. And so that could be a barrier... your whole day is scheduled and set up, and then your PT colleague like, has to go off and see an adult in ICU because their boss told them to.

How nurse and rehabilitation leaders respond to conflict resolution can also impact NTs' sense of empowerment and perception of having an integrated unit. Participating NTs on one team expressed mistrust that nursing managers held nurses accountable for deviations from family-centered developmental care policies or procedures. Ineffective conflict resolution suggestions left one participant feeling discouraged that speaking out did not always outweigh the risk of damaging a working relationship. While some participants valued being able to speak out safely and feeling heard, others expressed frustration they had to channel their ideas indirectly, did not feel heard, or that their presence at meetings was not valued (Table 3.3).

Even participants who expressed frustration with the aforementioned barriers to care reported positive progress and improvements over time. NTs on the most confident teams reported the fewest barriers to participation in committees and shared other similarities. These similarities included valuing service to infants and families, valuing every discipline's contribution to the

team, and having good communication and collaborative relationships with other NICU professionals.

Table 3.3: Supporting Qualitative Data by Theme

Theme	Subtopic	Supporting Quotations
Feeding decisions are a source of collaboration and conflict	SLP primarily dictates feeding recommendations	[T]heir PO order comes based off of my recommendation. And so, I'll do my assessment, or the medical team will...say, you know, 'Hey, can you check in on so and so,' or like, even if the nurse [will ask the provider], 'Hey can we feed?' They'll say, 'Well can you have [Participant 22 name] assess, or ask what she says?' And then I usually go back, and I'll tell [the providers], 'Hey, this is what they need to do,' so, I...literally write out what the order should be..., and they put it in. SLP25
Co-assessment and co-treatment is a logistical strategy to meet infant needs	Many benefits of co-assessment and co-treatment	<p>...there are a lot of times where we do co-treat babies. So, depending on what that baby has going on...sometimes with our bigger babies, it takes extra hands to like, improve their alignment... PT14</p> <p>We often try to co-treat...we don't both have to go in and do the same thing ten minutes after one another. We can go in and do it together and often infants do better that way... SLP5</p> <p>...we're working for the same things for different end goals...but we try to communicate throughout the co-treatment session. SLP5</p> <p>...if it's a situation where we just want like a second opinion, or you know, we are not seeing the same thing going on, we will kind of co-treat just to make sure that we're both on the same page. SLP17</p>
Service planning and the ripple effect of leadership	<p>Specialization justified increased service availability</p> <p>Intentional use of part-time FTEs</p> <p>NTs have mixed opinions about</p>	<p>[F]rom like an administrative standpoint, to justify having various disciplines in NICU, we have to sort of establish...what is it that you bring uniquely to the table that somebody else can't also do. And so, to get more therapy in the NICU, we've really worked hard to delineate that. SLP5</p> <p>[O]ur manager was kind of like, 'Okay, if I'm really going to bat for you guys, I need to be able to give the evidence. I need to be able to give the reasoning behind why everybody needs these specific hours PT3</p>

	weekend coverage	<p>I don't have anybody who's full-time on the team. Everybody also works in outpatient and that's intentional so that they can also cover babies after discharge; the same babies that they met in the unit. PT7</p> <p>...we're asked not to do NICU on weekends...I think it's still [not] seeing NICU as a priority...not really valuing the NICU...this is also visits. This is patient care. PT21</p> <p>I think it's not an expectation, so I think it's hard to make sure that our care plans are carried over...I think of the weekend just like a quiet [break for our families]. PT3</p> <p>[W]e just haven't done it, and nobody really wants to mention it because everybody has to pick up their kids after work or get home early...I couldn't stay all night if they wanted me to. PT24</p>
Collaborative culture impacts NTs' empowerment	<p>Holistic and inclusive values of ICC benefit families</p> <p>Effective leadership fosters unit culture</p> <p>Differences between adult acute care and NICU services</p>	<p>I would say making sure that we are using like a holistic approach and including all of our disciplines, whether it's dietary, medical team, therapy, all those people, but also the families. I feel like that's something that our unit does really strongly is, involving the parents in the care, and giving them decisions, and informing them, but also just like, including them as part of the medical team. So, I would say it's making sure that we're all kind of involved together to provide the care for the baby. PT17</p> <p>We got really lucky. [Our nurse manager has] moved on to higher endeavors, but she's the one that really set the culture. She did all the hiring so, she just had a great sense of the personalities that needed to be there, and there were some trickier people over the years that, they just weren't a good fit...and she did what she needed to do to send them on. And also, the medical director. He is fantastic as well. I think the two of them worked really well together to make sure that the staff and the culture, and all that was exactly as they imagined. OT19</p> <p>Like nursing and the adult world very much relinquish its feeding to speech, which is why the shift [to NICU] was very hard. Like, I was not used to coming in and having people be like, 'I hear what you're saying, but no.' SLP5</p> <p>I think the care of infants is different than caring for critical care adults...what we need to do for adults versus</p>

	<p>Participants are unempowered when they feel unheard</p>	<p>the developmental care we do for the infants, it's just so different. You know, with adults, we're like, 'Okay, let's sit up' or, 'Let's mobilize you on the bench,' versus with infants, it's more protecting the brain versus moving the body, I guess. So, just that shift, going back and forth, rushing to see patients, I think that that... that shift, was really hard to balance. OT21</p> <p>I found that initiatives work much better when it's nurse's idea first ...'Here's some information, here's some ideas,' and then they'll take it into their meeting and do it, but I'm not like really there anymore, at that point. Does that makes sense? Like, I'm like one step removed from the meeting. OT23</p> <p>We have been part of their [nursing] committees or we've been asked to help with projects on various committees, but we've found that going... they kind of like operate in their nursing space about whatever they're talking about in their committee anyways so, by the time you get to the meeting..., we're so out of the loop that it's not even helpful. So, ... we've gone to all the different meetings that there are...nothing really worked great for our team. OT23</p>
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3.4 Discussion

The current study investigated how NTs perceive that they demonstrate ICC practices among their NT coworkers to plan and deliver discipline-specific services in the NICU and to understand how NTs perceive that they demonstrate ICC practices among other members of the NICU team. NTs perceived that they use ICC among their NT coworkers and among other NICU staff in a variety of ways and that they value ICC principles. The PI identified both operational and relational themes based on thematic analysis of participant interviews and case reports. The four operational themes described here transected the eight aspects of ICC identified for deductive analysis and reflect the variability of where individual teams may fall on various spectra or levels of ICC (Table 3.1). Discussion of each theme highlights novel issues in *how* NTs work with each other and NICU staff that warrant consideration for both researchers and NTs.

3.4.1 Feeding Decisions are a Source of Collaboration and Conflict

Infant nutrition is a key component of discharge readiness (Shaker, 2017). Infants born premature or with medical complications often struggle with feeding related issues during hospitalization due to both intrinsic (e.g., body system functions) and extrinsic factors (e.g., environment, caregiver attributes, NICU policies) (Fucile et al., 2019). Both OTs and SLPs have entry-level education standards for feeding and swallowing topics (American Speech-Language-Hearing Association, 2022; Clark et al., 2007). However, feeding expertise required for the NICU may require advanced specialization (American Speech-Language-Hearing Association, 2022; Clark et al., 2007). There is a lack of clear feeding and swallowing role delineation among the disciplines of occupational therapy and speech-language pathology, which renders opportunities for both collaboration and conflict among individuals of these health disciplines.

Results of the present study exemplify that conflicts among NTs regarding role definitions exist and come with a range of individualized solutions. Co-managing feeding among rehabilitation disciplines is one way to defray perceptions some NTs are more integrated or valuable than others among NICU peers. Feeding conflict is not limited to NT disciplines, however. Study participants also portrayed multiple perspectives of how individuals of healthcare disciplines contribute to feeding plans and can act as barriers or collaborators. Most often in the present study, participants voiced that nurses or physicians may not always respect or follow NTs' feeding recommendations. However, interviews revealed that NTs can also individually be barriers to feeding collaboration if there are perceptions that NTs are more qualified to manage feeding orders or feeding skill progression.

Consistent presentations of bottle and/or breast contribute to positive feeding experiences and establish healthy long-term feeding habits (Shaker, 2017). Therefore, respectful collaboration

among co-workers is ideal to provide consistency and avoid confusing parents with mixed instructions regarding feeding plans. One risk of inconsistency may be prolonged length of stay or oral aversions (Pados, 2021). Any NT who serves as a feeding specialist should consider and value the input from nurses or other NICU staff members for their role in an infant's feeding success. Ideally, leadership should provide cross-discipline education both within the NT team and among the larger NICU staff. Educating the NICU team about the contributions of each NT discipline to feeding plans, and to the infant's overall plan of care may help NTs feel more valued or integrated onto the team.

3.4.2 Co-assessment and Co-treatment are Logistical Strategies to Meet Infant Needs

Participants portrayed co-assessment and co-treatment as strategies to manage caseloads and meet the needs of infants and families by not overtaxing their limited energy resources. Using co-assessment and co-treatment to demonstrate mindfulness of an infant's well-being and needs fits nicely into the context of ICC. Furthermore, co-treatment lends itself to real-time collaborative problem-solving, which also nests into several aspects of ICC (e.g., shared space, service availability, patient-centered outcomes, and team dynamics) (Boon et al., 2004; Heath et al., 2013). Caution should be taken, however, regarding the use of co-assessment or co-treatment to fit NTs' productivity needs and ensure that the motivations for co-treatments are infant-centered.

Service availability for each discipline varied due to multiple factors, including the number of beds served, the FTEs assigned to the NICU, and individual work availability. Participants reported that infant caseloads also fluctuate, which impacts NTs' daily work flow and patient assignments. Most participating teams balanced having each discipline available to the NICU by employing NTs for partial FTEs (Appendices C-H). The American Academy of Pediatrics (AAP) has offered minimal standards for NT availability for Level III and Level IV certified NICUs

(American Academy of Pediatrics, 2017). Craig and Smith (2020) proposed an equation to staff FTEs in Level III and Level IV NICUs at 90% of the annualized average daily NICU census. It is unknown if participating teams used this equation to determine their staffing. Additionally, once the AAP minimal standards are met, there is potential for variability for which discipline may fill any remaining FTEs. For smaller units, some teams had service availability for each discipline using alternating shifts; other teams had multiple disciplines present during the same shift but then had to prioritize infants' needs or defer treatments to other disciplines at the risk of productivity measures. Therefore, co-treatment was a strategy to serve the infant and meet productivity requirements.

On each participating team, at least one NT talked about the value of getting every discipline's perspective to provide optimal care for infants and families. This is a holistic and integrative perspective. However, a larger challenge for leaders to staff NTs than bed-to-staff ratios or use of co-assessment is the persistent regulatory need from individual state practice acts to have clear goals and plans of care among NT disciplines (American Occupational Therapy Association, 2021b; Sturdivant, 2013). There is a disconnect between recognizing the value of each discipline's perspective and providing evidence of that value in today's healthcare reimbursement system (DeJong, 2016).

3.4.3 Service Planning and the Ripple Effect of Leadership

Boone et al. (2004) described the most integrated point on the ICC spectrum as transdisciplinary care, where there is one overarching plan with a common set of goals that all healthcare disciplines address through their own unique perspectives. In the present study, two teams reportedly used a transdisciplinary model until required to divide their goals and services based on regulatory needs. They appeared to have successfully maintained their pre-existing

transdisciplinary mindset and unit culture after delineating discipline-specific goals to meet these regulatory needs. However, not all teams were fortunate enough to have an established transdisciplinary approach and were on various points on their paths to integration. Those teams that appeared to be most integrated frequently spoke about their unit-wide efforts to serve the needs of infants and families and that their leaders maintained that culture through supportive actions.

Guidelines for the Institutional Implementation of Developmental Neuroprotective Care in the NICU indicate that units should have a mission and vision, and a leadership team that endorses those statements (Milette et al., 2017). A challenge for NICU leadership is to hire staff that have expertise and who share the values of the unit's mission and vision. In the NICU, fully integrated collaborative care supports the needs of each family individually through customizing the human resources and services available in that unit. Human resources could be considered individuals' temperaments, knowledge base, and experience in addition to skills sets requiring certification or licensure. Customizing human assets to family needs rather than ordering a set of consults from health disciplines (e.g., dietitians, OTs, SLPS, etc.) does not necessarily fit with regulatory and administrative needs to define roles and to justify presence (i.e., FTE hours) in the NICU. This challenge is especially felt when NTs are assigned to the NICU by rehabilitation department leaders who may not wholly understand the nuances of neuroprotective or a habilitative approach to care. Leaders may advocate for NTs' FTE hours through specific skill set justification, such as being able to offer an intervention that no other healthcare discipline can provide. This justification is contrary to the philosophical mindset of ICC and transdisciplinary care.

A second challenge for leaders who assign FTEs to a NICU is how to balance discipline representation with the number of beds on each unit. To meet AAP recommendations for Level III or Level IV certification that an OT or PT, and a therapist with feeding expertise be available on

each unit, many leaders hire NTs into part-time positions (American Academy of Pediatrics, 2017). Pineda et al. (2021) estimated that in Level III NICUs, each NT covers an average 0.59 FTE (23.5 hours per week) and in Level IV NICUS, each NT covers an average 0.68 FTE (27 hours per week). Demographic information from the present study also reflects many NTs are working partial FTEs in the NICU (Appendices C-H).

Many participants described advocacy efforts to secure more NICU coverage. However, while most participants agreed when asked if night shift or weekend coverage for neonatal therapy services was needed, few participants voiced action plans to incorporate coverage into practice or discussed the potential detrimental effects of not offering neonatal therapy services around the clock. One participant's rationalization that poor weekend coverage is a "break for families" from the busy visitation schedule during the week seems contradictory to the argument that neonatal therapy services should be as integrated as other health services. NTs should consider the contradictory nature of advocating for weekday neonatal therapy and wanting to be seen as equal contributors as nurses, physicians, and other healthcare disciplines who staff 24/7 if they are unwilling to also staff weekend hours. An infant and family's developmental needs do not pause over the weekend nonetheless, not all therapy interventions may be needed or appropriate to offer 24/7. More research is needed on the weekend staffing practices of NTs.

3.4.4 NT Empowerment

Milette et al. (2017) proposed that the first step of implementing an interprofessional family-centered program is to establish a leadership quality improvement team (Milette et al., 2017). This team includes professionals with influence (e.g., NTs, nurses, parents), professionals with authority (e.g., nurse managers, head nurses, and administrators), and professionals with power (e.g., medical providers) (Robison, 2003). The assignment of power to medical providers

is arguably contrary to ICC principles to flatten hierarchies. However, Milette et al. (2017) additionally noted that neonatal therapists have the potential to make “invaluable contribution[s]” to the care of infants and families” (p.65). The designation that NTs should be part of a leadership team to influence unit policy, education, and performance assessment reinforces the idea that NTs should have an integrated, rather than consultative, role in the NICU. Study results indicated opportunities for improvement for several teams to be included or welcome on process improvement committees. Future research should explore how the role of leadership and service availability may influence NTs sense of autonomy and empowerment in the NICU.

3.5 Limitations and Future Research

This study represents only a portion of the variability of NICUs across the United States showcasing teams in different brackets of bed capacity, numbers of NTs who work in the NICU, and geographical location of teams. However, because of the complexity of neonatal care and unique contributing factors to each site, any representation of NICUs across the United States will have variability; therefore, reproducibility of results is limited. This study sought teams of NTs which had one representative of each rehabilitation discipline to potentially capture any unique data that may emerge from each discipline regarding the perceived use of ICC. However, according to Pineda et al. (2021), only approximately 35% of NICUs across the country have a multi-disciplinary team with all three disciplines represented, while an estimated 77% have a dedicated multi-disciplinary team of NTs. SLPs are the least represented discipline in the NICU. It is unknown if similar feeding-related conflicts would be found in teams where only one rehabilitation discipline is available to provide feeding expertise.

Future research to investigate if there are differences in perceived implementation of ICC among NTs who work in Level II NICUs versus Levels III or IV is needed. Finally, there is little

known about the perceptions of NICU leaders regarding NTs' role in ICC. More research in this area is warranted given the key role leadership plays in shaping NICU collaborative culture and staffing. Nonetheless, this investigation was the first to address the perceptions of NTs using ICC in the NICU and presents a novel description of how NTs organize, communicate, and structure their services among themselves and other NICU staff.

3.6 Conclusion

Study results affirm that NTs utilize many strategies and collaborative practices in NICUs that reflect varying positions within existing ICC frameworks (Table 1.1 and Table 3.1). Those teams that perceived they were well integrated on their unit described sharing a common family-centered philosophy with the rest of the NICU staff, having frequent and positive communication with their NT co-workers and other NICU staff, using a family-centered mindset for conflict resolution, and feeling empowered to initiate or participate in performance improvement tasks. Opportunities for improved integration included: cross-discipline education about roles, especially feeding expertise; increased leader awareness of the differences in therapist approach to care between adult and NICU settings; and consideration of how service availability impacts relationships with other disciplines.

3.7 References

Als, H., & Gilkerson, L. (1997). The role of relationship-based developmentally supportive newborn intensive care in strengthening outcome of preterm infants. *Seminars in Perinatology*, 21(3), 178-189.

- Altimier, L. (2015). Compassionate Family Care Framework: A new collaborative compassionate care model for NICU families and caregivers. *Newborn & Infant Nursing Reviews*, 15(1), 33-41. <https://doi.org/10.1053/j.nainr.2015.01.005>
- American Academy of Pediatrics. (2017). *Guidelines for perinatal care* (Eighth ed.). American Academy of Pediatrics (and) the American College of Obstetricians and Gynecologists.
- American Occupational Therapy Association. (2021a). *CommunOT research survey requests 2021*. American Occupational Therapy Association.
- American Occupational Therapy Association. (2021b). Occupational therapy scope of practice. *American Journal of Occupational Therapy*, 75, 1-9. <https://10.5014/ajot.2021.75S3005>
- American Speech-Language- Hearing Association. (2004). Knowledge and skills needed by speech-language pathologists providing services to infants and families in the NICU environment. <https://www.asha.org/policy/KS2004-00080/>
- American Speech-Language-Hearing Association. (2022). *Clinical specialty certification*. American Speech-Language-Hearing Association Website. <https://www.asha.org/Certification/Clinical-Specialty-Certification/>
- Barrett, G. (2003). Step by step guide: Teamwork in the NICU effectively. *Journal of Neonatal Nursing*, 9(6), insert 4p.
- Blount, A. (2003). Integrated primary care: Organizing the evidence. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 21(2), 121-133. <https://psycnet.apa.org/doi/10.1037/1091-7527.21.2.121>

- Blount, A., & Bayona, J. (1994). Toward a system of integrated primary care. *Family Systems Medicine*, 12(2), 171-182. <https://psycnet.apa.org/doi/10.1037/h0089151>
- Boon, H., Verhoef, M., O'Hara, D., & Findlay, B. (2004). From parallel practice to integrative health care: A conceptual framework. *BioMed Central*.(4)1.
- Boyatzis, R. E. (1998). *Transforming qualitative information*. Sage Publications.
- Brown, M. S., Ohlinger, J., Rusk, C., Delmore, P., & Ittmann, P. (2003). Implementing potentially better practices for multidisciplinary team building: Creating a neonatal intensive care unit culture of collaboration. *Pediatrics*, 111(4), e482-e488. <https://doi.org/10.1542/peds.111.SE1.e482>
- Browne, J. V. (2021). Infant mental health in intensive care: Laying a foundation for social, emotional and mental health outcomes through regulation, relationships and reflection. *Journal of Neonatal Nursing*, 27(1), 33-39. <https://10.1016/j.jnn.2020.11.011>
- Clark, G. F., Avery-Smith, W., Wold, L. S., Anthony, P., & Holm, S. E. (2007). Specialized knowledge and skills in feeding, eating, and swallowing for occupational therapy practice. *The American Journal of Occupational Therapy*, 61(6), 686-700. <https://doi.org/10.5014/ajot.61.6.686>
- Couper, J. (2022). Micro-preemie parents' perceptions of trauma-informed developmental neuroprotective care and nursing support. *Advances in Neonatal Care (Lippincott Williams & Wilkins)*, 33(5), 422-431. <https://doi.org/10.1097/anc.0000000000000972>

- Craig, J., Carroll, S., Sturdivant, C., & Ludwig, S. (2018). Occupational therapy's role in the neonatal intensive care unit. *American Journal of Occupational Therapy*, 72, 1-9. <https://doi.org/10.5014/ajot.2018.72S204>
- Craig, J.W., & Smith, C.R. (2020). Risk-adjusted/neuroprotective care services in the NICU: The elemental role of the neonatal therapist (OT, PT, SLP). *Journal of Perinatology*, <https://doi.org/10.1038/s41372-020-0597-1>
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. (1st ed.). Sage Publications.
- DeJong, G. (2016). Coming to terms with the IMPACT Act of 2014. *American Journal of Occupational Therapy*, 70(3), p1-p6. <https://doi.org/10.5014/ajot.2016.703003>
- Denzin, N. & Lincoln, Y. (2011). *The SAGE handbook of qualitative research* (4th ed.). Sage Publications.
- Facebook. (2022a). *National Association of Neonatal Therapists Closed Group*. www.facebook.com. Retrieved February 5, 2022, from <https://www.facebook.com/groups/feed/>
- Facebook. (2022b). *Neonatal Therapists Private Group*. www.facebook.com. Retrieved February 5, 2022, from <https://www.facebook.com/groups/1310703832279337>
- Fucile, S., Caulfield, A., & Geleynse, S. (2019). Oral feeding in preterm infants: A conceptual model for health care practitioners. *Neonatal Network*, 38(6), 348-356. DOI: 10.1891/0730-0832.38.6.348

Goodwin, N. (2016). Understanding integrated care. *International Journal of Integrated Care*, 16(4), 6. <https://doi.org/10.5334/ijic.2530>

Hall, S. L., Phillips, R., & Hynan, M. T. (2016). Transforming NICU care to provide comprehensive family support. *Newborn & Infant Nursing Reviews*, 16(2), 69-73. <https://doi.org/10.1053/j.nainr.2016.03.008>

Heath, B., Wise Romero, P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, D.C.: SAMHSA-HRSA Center for Integrated Health Solutions. <https://www.pcpsc.org/sites/default/files/resources/SAMHSA-HRSA%202013%20Framework%20for%20Levels%20of%20Integrated%20Healthcare.pdf>

Karol, R. L. (2014). Team models in neurorehabilitation: Structure, function, and culture change. *NeuroRehabilitation*, 34(4), 655-669. <https://doi.org/10.3233/nre-141080>

Milette, I., Martel, M., da Silva, M. R., & Coughlin McNeil, M. (2017). Guidelines for the institutional implementation of developmental neuroprotective care in the NICU. Part B: Recommendations and justification. A joint position statement from the CANN, CAPWHN, NANN, and COINN. *The Canadian Journal of Nursing Research = Revue Canadienne De Recherche En Sciences Infirmieres*, 49(2), 63-74. <https://doi.org/10.1177/0844562117708126>

Pados, B. F. (2021). Milk flow rates from bottle nipples: What we know and why it matters. *Nursing for Women's Health; Nurs Womens Health*, 25(3), 229-235. <https://doi.org/10.1016/j.nwh.2021.03.006>

- Pineda, R., DeGaetano, S., Kindra, M., Hand, T., Craig, J., Fernandez-Fernandez, A., & Collette, D. (2019). Neonatal therapy: A survey of current practice. *Journal of Pediatric Rehabilitation Medicine, 12*(3), 285-294. <https://doi.org/10.3233/prm-180565>
- Pineda, R., Lisle, J., Ferrara, L., Knudsen, K., Kumar, R., & Fernandez-Fernandez, A. (2021 Dec 14). Neonatal therapy staffing in the United States and relationships to neonatal intensive care unit type and location, level of acuity, and population factors. *American Journal of Perinatology*, <https://doi.org/10.1055/a-1678-0002>.
- QSR Party International Ltd. (2018). NVivo qualitative analysis software [computer software]
- Robison, L. D. (2003). An organizational guide for an effective developmental program in the NICU. *JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing, 32*(3), 379-386. <https://doi.org/10.1177/0884217503253536>
- Ross, K., Heiny, E., Conner, S., Spener, P., & Pineda, R. (2017). Occupational therapy, physical therapy and speech-language pathology in the neonatal intensive care unit: Patterns of therapy usage in a level IV NICU. *Research in Developmental Disabilities, 64*, 108-117. <https://doi.org/10.1016/j.ridd.2017.03.009>
- Sabnis, A., Fojo, S., Nayak, S. S., Lopez, E., Tarn, D. M., & Zeltzer, L. (2019). Reducing parental trauma and stress in neonatal intensive care: Systematic review and meta-analysis of hospital interventions. *Journal of Perinatology, 39*(3), 375-386. <https://doi.org/10.1038/s41372-018-0310-9>

- Shaker, C. S. (2017). Infant-guided, co-regulated feeding in the neonatal intensive care unit. Part I: Theoretical underpinnings for neuroprotection and safety. *Seminars in Speech & Language, 38*(2), 96-105. <https://doi.org/10.1055/s-0037-1599107>
- Spellman, T. (2019). Interprofessional collaboration makes the difference to infants in the NICU: Practice across disciplines offers the best outcomes for critically ill infants. Here's how one program makes it work. *ASHA Leader, 24*(12), 36-38. <https://doi.org/10.1044/leader.OTP.24122019.36>
- Sturdivant, C. (2013). A collaborative approach to defining neonatal therapy. *Newborn Infant Nursing Review, 13*(1), 23-26. <https://doi.org/10.1053/j.nainr.2012.12.010>
- Swain, J., (2018). A hybrid approach to thematic analysis in qualitative research: Using a practical example. In *Sage Research Methods Cases Part 2*. Sage Publications, Ltd, <http://doi.org/10.4135/9781526435477>
- Sweeney, J. K., Heriza, C. B., & Blanchard, Y. (2009). Neonatal physical therapy. Part I: Clinical competencies and neonatal intensive care unit clinical training models. *Pediatric Physical Therapy, 21*(4), 296-307. <https://doi.org/10.1097/pep.0b013e3181bf75ee>
- Tawfik, D. S., Sexton, J. B., Adair, K. C., Kaplan, H. C., & Profit, J. (2017). Context in quality of care: Improving teamwork and resilience. *Clinics in Perinatology, 44*(3), 541-552. <https://doi.org/10.1016/j.clp.2017.04.004>
- Texas Occupational Therapy Association. (n.d.). *Research surveys*. Texas Occupational Therapy Association. Retrieved January 30, 2021, from <https://www.tota.org/research>

The Council on Academic Accreditation in Audiology and Speech-Language Pathology. (2020).
Standards for accreditation of graduate education programs

in audiology and speech-language pathology. Council of Academic Accreditation of the
American Speech-Language-Hearing Association. Retrieved October 7, 2022, from
<https://caa.asha.org/siteassets/files/accreditation-standards-for-graduate-programs.pdf>

Yin, R. (2018). *Case study research and applications design and methods* (6th ed.). Sage
Publications.

Chapter 4: Relationships are Key to Successful Integrated Collaborative Care in the Neonatal Intensive Care Unit: Neonatal Therapists' Perceptions

Integrated Collaborative Care (ICC) is the organization, delivery, and management of healthcare services with collaborative efforts of healthcare professionals and considers both medical and behavioral components of the healthcare plan (Blount, 2003; Goodwin, 2016; Heath et al., 2013). The regard for both medical and psychosocial needs of patients is a holistic and individualized approach to care; however, professionals' internalization of this holistic approach may vary among individuals and/or practice settings. Frameworks of ICC exist, suggesting a continuum from least to most integrative practice characteristics (Boon et al., 2004; Heath et al., 2013; Nancarrow et al., 2013). The most integrated healthcare settings are complex with many interrelated and unpredictable components including but not limited to organizational structure, technology, and community partnerships (Goodwin, 2016).

A neonatal intensive care unit (NICU) is a complex setting where consideration of the medical and psychosocial aspects of care are pivotal to positive outcomes for the infant and family (Milette et al., 2017). Several authors have described the perceptions of healthcare professionals using ICC in the NICU; however, no literature exists describing neonatal therapists' (NTs) perceptions of using ICC in the NICU or their perceptions of how using ICC in the NICU potentially influences patient outcomes (Benzies et al., 2019; Dunn et al., 2018; Tawfik et al., 2017). NTs may be occupational therapists (OTs), physical therapists (PTs), or speech-language pathologists (SLPs) who have advanced training to work in the NICU (Sturdivant, 2013). NTs are increasingly present in NICUs across the United States and NTs' presence is recommended by the American Academy of Pediatrics; therefore, NTs' role in ICC is relevant to the quality of care provided to infants and families (American Academy of Pediatrics, 2017; Pineda et al., 2021). This

article presents a portion of the results of a multi-case qualitative research study on the perceptions of NTs using ICC in the NICU. The authors' purpose was to explore how NTs perceived they demonstrated ICC practices both among their NT coworkers and among other NICU team members to deliver neonatal services to infants and families. Findings revealed operational and relational care themes. Operational themes are described in Chapter 3. This paper describes relational care themes and how they related to operational aspects of ICC.

4.1 Background

Multiple descriptions of ICC exist (Blount, 2003; Boon et al., 2004; Heath et al., 2013). Boon et al. (2004) proposed that components of ICC (e.g., philosophy, team structure, process, and outcomes) can be considered on respective spectra of integration. In this manner, each workplace may be considered as having its own ICC profile. Less integrated healthcare settings may have parallel healthcare practices that occasionally share information about common patients to meet medical and behavioral needs. Highly integrated settings include several health disciplines with little hierarchical structure (Boon et al., 2004). The authors of the current study utilized the following aspects of ICC, compiled from the literature for their investigation: a) communication processes; b) integration among or between settings; c) leadership or organizational structures; d) patient/family experiences or outcomes; e) philosophy; f) team structures and dynamics; g) shared workspace; and h) service availability (Blount, 2003; Boon et al., 2004; Heath et al., 2013) (Table 3.1). Each of the aforementioned ICC aspects can be considered on its own spectrum, and each has the potential to contribute to or distract from the professional relationships needed to complete work tasks and provide quality patient care in any healthcare setting.

Task completion and effective interactions among co-workers (including NTs) require regular communication. Relational coordination is “a mutually reinforcing web of communication

and relationships carried out for the purpose of task integration” (Gittell, J. H. et al., 2010, p.491). Relational coordination theory was first used to describe effective work organization components that supported service line worker performance, such as in the airline industry (Gittell, J. H., 2000). Gittell (2000) theorized that teams will be high performing when work relationships are based on: 1) shared goals; 2) shared knowledge; and 3) mutual respect, when interdependent work tasks are uncertain, time constrained, and require frequent, quality communication. Frequent, respectful, and timely communication for the purpose of problem solving reinforces shared goals, shared knowledge, and respect, which facilitates a positive communication cycle (Gittell, J. H. et al., 2008). Relational coordination may be one mechanism to explain highly integrated healthcare practices. As a complex, service-oriented work setting, NICUs often have time constrained interdependent work tasks and a high level of uncertainty requiring frequent, quality communication (Barbosa, 2013; Milette et al., 2017). Gittell and colleagues have previously demonstrated that relational coordination contributes to the quality of patient care and to worker satisfaction in other healthcare settings (Gittell, J. H. et al., 2000; Gittell, J. H. et al., 2008; Havens et al., 2018). Exploring how NICU professionals relate to each other in terms of shared goals, shared knowledge, and mutual respect may provide a clearer picture of both a NICU’s hypothetical ICC profile as well as the quality of care a NICU provides.

Relationships in the NICU impact patient and family outcomes. Authors have emphasized the importance of facilitating nurturing relationships between parents and their newborn infants in the critical care setting of the NICU (Axelin et al., 2020; Browne, 2021; Welch, 2016). Additionally, relationships between NICU staff and parents have been shown to impact parental presence on the unit (Hallowell et al., 2019; van Veenendaal et al., 2022). Gittell (2000) and Havens et al. (2010) discussed that the quality of relationships among co-workers also impacts

patient care. Co-workers in the NICU can encompass many healthcare professionals, including NTs. The relationships that NTs have with their NICU team members are also relevant to the quality of care and patient outcomes (Pineda et al., 2021). However, thorough descriptions of how NTs interact and relate to other NICU staff to coordinate patient care are not well-documented in peer-reviewed publications.

4.2 Design

The authors used a multi-case study research design that was grounded in relativistic and constructionist philosophical assumptions (Crotty, 1998; Denzin & Lincoln, 2011; Yin, 2018). Following institutional review board (IRB) approval from The University of Texas at El Paso, the primary investigator (PI) recruited teams of NTs from neonatal therapy related social media sites (American Occupational Therapy Association, 2021; Facebook, 2022a; Facebook, 2022b; Texas Occupational Therapy Association, n.d.). The PI sought teams of NTs who worked together in the same Level III or Level IV NICU and which had at least one OT, one PT, and one SLP who worked together at the time of the study (American Academy of Pediatrics, 2017). Letters of collaboration from each hospital were secured and informed consent from each participant obtained. Then, the PI individually interviewed and audio-recorded each participating therapist in a virtual meeting room, using a semi-structured interview template (Appendix B). Audio recordings were transcribed, and then interview transcripts were sent to individual participants for member-checking. Participants approved transcripts for data analysis and did not request any substantial changes.

After interview transcription, a senior researcher and the PI collaboratively applied hybrid thematic analysis to each participating team's set of transcripts (Braun & Clarke, 2006; Swain, 2018). An adapted version of Swain's (2018) hybrid approach included concurrent deductive and

inductive portions of thematic analysis (Figure. 3.1). The deductive portion of data analysis used the working definitions of the eight aspects of ICC described earlier (Table 3.1). For the inductive portion of the first and second case, the first author and senior researcher separately coded the transcripts, identified initial themes and then collaboratively refined themes. Following thematic analysis, the PI created team case reports that also incorporated demographic information for each team and each team’s work site (Appendices C-H).

Early collaboration between the first author and a senior researcher ensured trustworthiness and rigor of the hybrid thematic analysis approach (Appendix J). The first author completed subsequent analysis for the remaining cases with oversight by the senior researcher, who read all transcripts and reviewed case reports. Case reports were sent to participant teams for member-checking. The PI then used inductive thematic analysis with all case reports as a new data set to determine final themes and conclusions (Figure 4.1). Inductive thematic analysis for cross-case analysis followed the same process as hybrid thematic analysis (Figure 3.1), excluding those portions that refer to *a priori* coding.

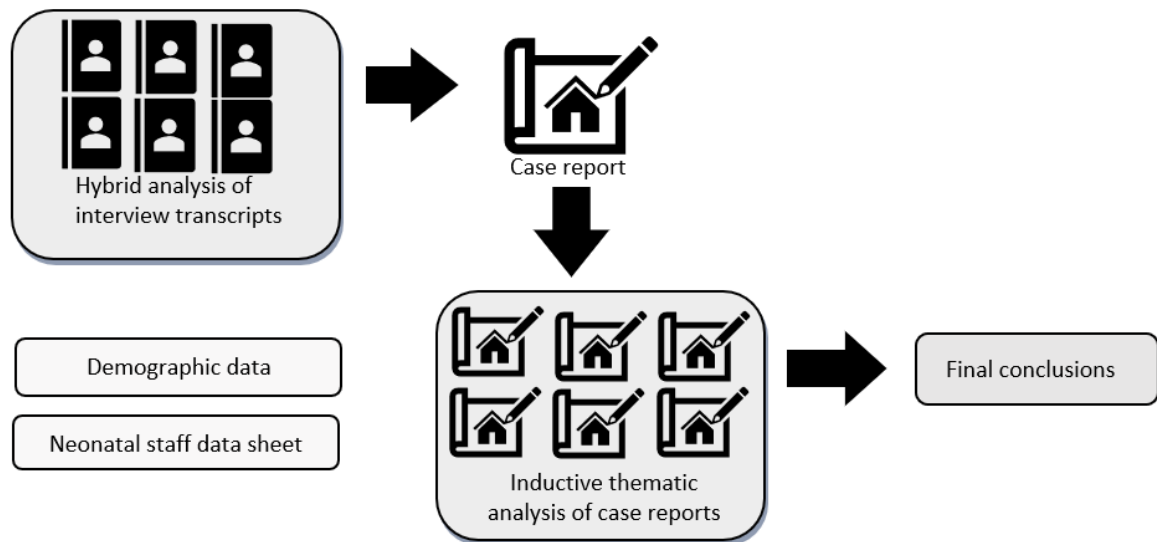


Figure 4.1: Data Analysis Methodology

4.3 Results

Twenty-six NT participants representing six teams from across the United States were interviewed between June 2021 and January 2022. Ten participants were OTs, eight were PTs, and eight were SLPs. There were two teams from the Midwestern states, one team from an Eastern state, one team from a Southwestern state, and two teams from a Western state. Four teams were categorized as working in a NICU that had between 20 and 80 beds, one team worked in a NICU with 80+ beds, and one team worked in a NICU with 20 or fewer beds. The number of NTs on each participating team (including NTs who were not study participants) ranged from three to twenty NTs. All teams except one worked in mixed population hospitals (i.e., infants and adult populations were served by the hospital). All participating teams reported using a general family-centered developmental care approach to care with emphasis on holistically addressing infant and family needs through process improvement initiatives. Thematic results were distinguishable between operational and relational themes.

Operational themes previously described in Chapter 3 included: 1) Feeding decisions are a source of collaboration and conflict; 2) Co-assessment and co-treatment are logistical strategies to meet infant needs; 3) Service planning and the ripple effect of leadership; and 4) Collaborative culture impacts NTs' empowerment. The operational themes transected all eight aspects of ICC (Table 3.1). Operational themes described daily care coordination and integrative characteristics among NTs, and between NTs and other NICU professionals. However, the themes also alluded that the decisions that leaders make impact staffing patterns, hiring patterns, and unit culture, all of which also influence the quality of relationships. The four relational themes presented below are additional results from the multi-case study and emphasize the interrelatedness of daily operations and relational care.

4.3.1 Learning Together Leads to Growth and Respect Among Peers

Participants who worked together over time learned from one another and other NICU staff. As a result, teams often grew in numbers and shared knowledge. At least one participant from each team discussed the evolution of their neonatal therapy team. Some teams had long-established relationships with medical providers and other healthcare professionals on their NICU teams. Others voiced the growing pains that come with developing relationships. All teams, whether established or not, reported that there were ample opportunities for NTs and NICU staff members to learn more about neonatal therapy and each other. These educational opportunities occurred at bedside, during work-related meetings, during formal educational opportunities, and during unstructured work hours (e.g., when documenting care in the electronic health record).

While all participants mentioned learning from both their NICU peers and fellow NTs, a few felt it was easier to learn from and be vulnerable with other NTs on their team. Participants expressed variable comfort levels with being vulnerable. Being willing to ask for help or being able to recognize one's lack of expertise or knowledge also supported conversations with nurses or medical providers where there was uncertainty about how to approach a problem or decision.

Participants perceived that nurses also learned from them when NTs provided interventions alongside nursing staff and families. Bedside communication provided an opportunity to teach both the nurse and the family about neonatal therapy topics or interventions, either with direct explanation, or through modeling. Additionally, participants reflected on how frequent rounding with physicians gave them a sense of equality in shared decision-making and increased respect for alternate points of view. Participant 15 (SLP) described the importance of having a learning mindset and understanding common ground with physicians:

I think it's important to understand where [physicians] are coming from, because I think sometimes as a therapist, it's easy to stay focused on or to get trapped in the model of

thinking like, 'I'm right, and they don't understand'. And so, I think it's important to kind of understand what the physician is thinking like, 'Why does the physician think that my recommendation of low flow nipple is ridiculous?' Right? So, I think it's important to kind of have those conversations, not just like, 'Hey, I want to tell you that I'm recommending this low flow nipple for this baby because of X, Y, Z, but instead, you know, 'Hey, I heard that you were questioning this recommendation ... you know, let's talk about what you think will be better,' you know, and see where they're coming from...I think it's important for them to know that we want to know what their goals are too because...in the end, we want a baby to do well.

Participants discussed that it took time for them to be comfortable with being vulnerable with co-workers and having a reflective mindset. One team of NTs had long-standing relationships with physicians from sharing workspace and experiences in a NICU follow-up clinic. This familiarity translated into the NICU setting and created a safe space for those NTs to approach their physician colleagues with questions and for discussion. Several teams expressed that they had worked years to build their programs to have full-time equivalent hours dedicated only to the NICU (versus other areas of the hospital) and that having dedicated time within the NICU helped create the relational infrastructure that supported their integrated neonatal therapy practice.

Participant 3 (PT) stated:

[H]onestly, probably took us like a good solid like five or six years. And I think a lot of that had to do with, we didn't have that protected time in the NICU, so we were there very sporadically in the beginning. And then once we were able to actually have time that was carved out on our schedule to be able to go to the NICU and not worry about getting pulled to see adults, I think that helped because then we were there more often, we were able to build more relationships.

Having dedicated time in the NICU created more frequent opportunities for indirect learning. One participant noted that she believed continued unit presence developed trust and respect, especially between NTs and nurses. Increased trust and respect led to more opportunities to see infants at bedside, and fortified nurse understanding of neonatal therapy principles and goals. Additionally, some participants noted examples of nurses sharing what they learned with other nurses, extending the influence of NTs beyond direct interactions.

While NTs often share knowledge and training, participants also expressed how learning from NT co-workers was valuable. They emphasized that the process of studying together for the Certification in Neonatal Therapy (CNT) credential built comradery as well as instilled a deeper respect among NT co-workers, especially between neonatal therapy disciplines. Participant 8 (SLP) stated:

[W]e just had a multidisciplinary group that we did weekly study sessions to study for CNT, we were able to...use each other collaboratively to work together towards this shared goal that we had...things like that...really kind of brought us together...

4.3.2 Interpersonal Relationships: The Connective Tissue of the Unit's Daily Operations

Participants on several teams described that familiarity and longevity especially among NT co-workers contributed to trust and reliance among the NTs to advance the mission and goals of their teams. Participants from both large and small teams consistently noted that trust and reliance on NT co-workers contributed to care coordination. When asked what about the interpersonal relationships among NTs may contribute to ICC, Participant 18 (PT) stated:

I think we all really enjoy each other, which I know is like not necessarily going to magically happen in every place, you know? We've done [gatherings] outside of work, which I feel does help...to bring that relationship a little bit more personal...And so, I think that that's something that carries over-- always having, always thinking the best intentions of people because you know them on a deeper level than just, you know, that work that you're handing off to each other. I recognize like that's unique, that's not always possible, but I do feel like it's something that's really helped us to grow the team...

The value placed on knowing about each other's families and personal lives was not unique to this team. Other participants voiced that they had been co-workers for years, and as a result, understood the nuances of each other's moods and needs; this understanding contributed to their resilience in the workplace and their teams being able to build their neonatal therapy programs over time.

Understanding co-workers on a personal level afforded opportunities to affect the quality of communication in the NICU. The frequency with which participants perceived having personal connections with non-NT NICU staff were fewer than among other NTs; however, their value was still recognized, as Participant 6 (PT) illustrated:

I do feel like...sharing life experiences...has helped and...I, you know as crazy as it sounds, with social media, you know, being Facebook or Instagram friends with some of those [non-NT NICU staff] and seeing them post about the first day of school for their kiddo or posting about sending their kid off to college, and then being able to [say], "oh I saw that they left for college, how you doing?" ...[B]eing able to speak to the joys and struggles of life together, that I wouldn't necessarily know if I was just walking down the hallway, it opens up an opportunity to get to know them more on a deeper level. And so, some of those relationships have grown because of having that element.

Participants described personal, informal interactions as occurring in in-between spaces, such as at documentation stations, in meeting rooms before or after meetings, or in breakrooms. However, public praise or introductions of staff also boosted participants' perceptions of feeling welcomed and valued. Participant 6 (PT) recalled:

Physicians promote therapy and it helps others value therapy...a lot of these newer physicians are very pro-therapy, and really respect a lot of what we do and what we bring to the table, and I think that that's honestly helped the full team recognize it as well. So, you know when we're in rounds, and, the parents are there and maybe they've got an ultrasound or MRI finding that's not ideal and the physician will be like, "Oh, and this is [Participant 6's name] from PT, she's going to help you guys with exercises. You're gonna see her... after discharge too, they're a great team", and literally they speak us up in front of everyone else, right?...I mean it feels good that you're a well-respected member of the team...

Participants also reflected on the impact of COVID-19 pandemic restrictions on ICC. Several commented how opportunities for face-to-face or in-person interactions became limited during the height of the COVID-19 pandemic. Some group meetings, shadowing opportunities, or other social workplace gatherings were cancelled altogether and had not yet fully recovered to pre-pandemic patterns at the time of the interviews. Participant 12 (PT) explained, "COVID really has

challenged a lot of our committees and projects, so, I feel like, at least from my perspective...I feel like we're just starting again.” Some participants voiced that despite the work-arounds that technology and virtual meetings afforded, face-to-face interactions were preferred.

4.3.3 Intentional Actions Facilitate Trust and Respect Among Peers

As they expressed the evolution of their respective neonatal therapy programs, participants described a myriad of intentional strategies to build or maintain relationships. Additionally, these strategies aimed to increase acceptance on the unit, facilitate lines of communication, advocate for increased presence through increased FTE hours, build respect for recommendations, and overcome tension between NICU nursing staff and NTs. Participant 23 (OT) expressed her intentional approach to observe before offering any neonatal therapy recommendations. She did not assume she knew better than her non-NT co-workers by making immediate recommendations because she was also learning. She stated:

[W]hen I started, [I came in] as an outside person who's never done NICU. [I] had to learn like everything from the beginning and I didn't see patients for a long time. I just was like, reading, and learning, and watching, and helping, you know? But for me to come in as a new person and like, ask them to change how they're doing care, and how they do their job, and like, making different recommendations like, they had to trust me. So, it's taken time, and it's really nice to see that we've gotten to a point now where, yeah, we have that like, back and forth [communication]...

In addition to this reflective approach, another intentional way participants developed relationships was through mindfulness of the pulse of the workday. Participants expressed that they would intentionally support the nurses through helping with non-billable patient care because it was for the benefit of the patient; however, it also built respect with the nurses. In another example of respecting or responding to nursing care and responsibilities, Participant 22 (SLP) described her acknowledgement of nursing's contribution to feeding:

...usually when I'm working with a baby...I always make sure to acknowledge that like, I'm here for one feeding twice a week, like [the nurses are] here for 12 hours just with

babies so, really just making sure that they know, that I know, that the baby is more than just the 20 minutes that I'm with them.

Multiple participants from one team described how they intentionally created individualized educational opportunities for newly hired nurses, to help foster open and collaborative relationships by having nurses shadow the therapists for part of the day. This approach was especially helpful to build relationships with night shift nurses the therapists did not routinely see as well as teach about neonatal therapy.

Intentionally considering workspace and space utilization also proved valuable to several teams. On one large unit, NTs had historically been assigned to infants in multiple units, or sections of the NICU. As a result, they were spending precious time walking through hallways across the hospital. After their leader restructured assignments to microteams (i.e., healthcare teams within the NICU which include a medical provider, social worker, nursing staff, an OT, PT and SLP), participants expressed the positive impact of increased visibility and availability on communication and relationships with both families and co-workers. They noted more frequent, brief communications in passing among co-workers, and that the frequency of parent-NT interactions also increased.

Participants from several teams reported that they had neonatal therapy offices separate from the NICU patient care space. For some, this distinct area was a welcome space for NTs to collaborate, problem solve, or share a friendly lunch hour. However, Participant 8 (SLP) reported intentionally using the NICU breakroom to build interpersonal relationships:

I think it takes time to build relationships and being present...like today, I brought my lunch up here to eat in the NICU staff room break room, to be more present, because we [NTs] tend to default to our outpatient setting because that's more of our home base for us, that's where our charting area is and our desk space, but just trying to even make small talk while we're checking in with nurses, asking questions about their personal family. 'How are your kids doing, what vacations are you going on?' Just trying to make more of those conversations, I think builds that relationship foundation.

Participant 25 (SLP) also expressed how she intentionally completed her charting at the nursing station:

[O]ur office is not on the unit, it's somewhere else...but I spend a lot of time on the unit...I'll chart at the nursing station or like connect with [the nurses] so, there's a little bit of socializing that I'll do as well, which...kind of humanizes the relationship, but also kind of builds trust, right?

Participants mentioned additional intentional actions. These included attending social mixers, participating in holiday gift exchanges with those outside the neonatal therapy team, and providing information for the unit newsletter.

4.3.4 Poor Relationships Threaten ICC

Not all interactions were positive among NTs and other NICU staff. All teams described or alluded to particular physicians or nurses who were less receptive to NTs recommendations or involvement at bedside. Attitudes and responses to these individuals varied. Some participants internalized this rejection and responded with avoidance or deflection, while others embraced these bedside denials as opportunities to reflect or learn about alternate perspectives. Participants offered examples of how poor relationships impacted their perception of being an integrated part of the NICU team.

Some participants perceived nurses as being territorial, making the NTs feel they had to choose their words carefully, prepare justifications for being at bedside, or consider the timing of their requests. Participant 5 (SLP) voiced that she had felt bullied by nursing staff:

...I think bullying can take a lot of different forms. I think that it can be active or passive bullying, in the sense of like, you can like literally say, "I don't care what you have to think" or, "I'm not gonna let you touch my baby" to like, every time you come in the room I'm gonna leave because I don't even want to deal with you. And I think that that's a level of like unprofessionalism that at some point has affected how integrated we are. And I don't think it's unique to our NICU just because I've heard about other NICUs in our own health system, having a similar challenging culture...

In contrast, Participant 5 (SLP) also relayed her “perspective shift” about feeling bullied by considering others’ perspectives or reflecting on how her actions may be interpreted:

I think, I felt really bullied at the beginning until I was able to take a perspective shift. And I think, always on an individual basis, you're not going to get along with every colleague you interact with right? And so that will always exist...And I think, it's like easy to feel like a victim. And it's much harder to turn it around and look at yourself.

How NTs interacted with individual physicians also contributed to perceptions of ICC. Multiple participants also explained that they intentionally waited for a particular provider to be on or off service before placing certain care requests due to the perception that physicians have the ultimate decision on care recommendations. Despite having these negative experiences, several participants discussed that over time, and through relational care, they identified the importance of having a forgiving mindset, or reflecting on others’ perspectives to improve their own relational approaches. Participant 7 (PT) described that her team intentionally worked to incorporate night shift notes into their recommendations, because her team recognized the importance of everyone’s contribution. She stated, “So, we've done a lot of work around that, so that people do feel heard and part of the team because, it was when people really felt like they weren't being heard, that they wanted to go their own way.”

In general, participants expressed positive attitudes regarding the perceived impact and acceptance of neonatal therapy services as their programs developed over time. However, participants from one team shared several examples of tension between NTs and nurses, and with nursing leadership. On this team, relationships among NTs were solid, but relationships with the rest of the NICU staff were strained; participants expressed feeling unempowered and frustrated.

4.4 Discussion

This study’s researchers sought to understand how NTs perceive they use ICC among themselves and with other NICU staff. ICC is comprised of several aspects that are both

operational (e.g., service availability, shared workspace, team structures and dynamics) and those that reflect the relational aspects of healthcare practices. Results from the present study suggest that when both operational and philosophical aspects of ICC are positioned at the far-right end of the hypothetical spectra of ICC, these teams are well-integrated. Well-integrated teams may provide higher quality patient care than poorly-integrated teams. Authors have previously described that teams that are high performing or that demonstrate good interdisciplinary teamwork have a cohesive and clear vision among co-workers that includes shared knowledge and goals (Lanham, 2013; Nancarrow et al., 2013; Pype et al., 2018). Sharing a common philosophy alone however does not result in an immediately effective team (Kornhaber et al., 2022; Nancarrow et al., 2013; Senge, 2006).

Several participating teams discussed the evolution of their team, and that it took time for their co-workers to learn the nuances of others' moods and work habits. Furthermore, familiarity and trust came from both learning about each other on a personal level, and about the details of each other's work over time. Senge (2006) emphasized that teams who are highly effective do not typically begin that way; they become more effective as they learn from each other. Intentional actions to build relationships in the current study often included NTs placing themselves in the work- and rest-spaces of other NICU co-workers to create opportunities to either learn or support each other through interpersonal interactions or patient care tasks.

Relational coordination theory authors propose that high-quality relationships are “exemplified by shared goals, shared knowledge (providers understand the connections between their own role and the roles of the providers with who they are coordinating), and mutual respect, to support communication that is timely, frequent, accurate and problem solving” (Havens et al., 2018, p.132). Intentional actions described by participants in the present study support relational

coordination theory; specifically, participants' excerpts exemplified shared knowledge as defined by Havens et al. with the purpose to build mutual respect on behalf of their shared goal to provide family-centered developmental care in the NICU. Furthermore, themes presented from the current study appear to be mutually reinforcing, as relational coordination theory proposes. For example, as NTs intentionally created opportunities to share space, NTs communicated more frequently and problem-solved more collaboratively with their NICU co-workers, which created a deeper level of shared knowledge and respect over time. The variability in participants' comfort with being vulnerable with NICU co-workers could be evidence of this mutually reinforcing cycle at work over varying periods of time based on each participating team's unique NICU history.

Additionally, sharing common spaces and having adequate service availability increases visibility and familiarity among co-workers. Visibility and familiarity are key to setting up opportunities for relationship building, which then leads to building trust, respect, mindfulness, and so forth. Trust, mutual respect, and mindfulness of others have been associated with highly effective teams (Gittell et al., 2010; Hartgerink et al., 2014). Participants in this study described learning among co-workers and developing interpersonal relationships at bedside, as well as in-between spaces on the unit, such as hallways, documentation areas, or conference rooms. Fay, Real, and Haynes (2022) investigated the use of corridors, huddle stations, and decentralized nursing stations for teamwork and found that healthcare workers of multiple disciplines used these spaces frequently for conversations. They concluded that these types of spaces are important for collaboration and should be strategically considered when designing units (Fay et al., 2022).

Other authors have also considered the use of space for communication opportunities, particularly in considering remodeling for single family room (SFR) designs (Jones et al., 2022; White, 2010; Winner-Stoltz et al., 2018). Winner-Stoltz et al. (2018) noted nursing staff perceived

SFR designs as favorably as open-bay designs for patient care and safety, but staff did voice there is more time spent walking within the unit for collaborative work tasks. Additionally, open-bay design was perceived as facilitating better mindfulness of what was happening in the unit (Winner-Stoltz et al., 2018). In the present study, participants noted that redesigning workflows saved time traversing the hospital, and facilitated relationships when NTs were assigned to a certain unit or block of patient beds for continuity of care. Keeping patient caseload assignments to one small area of the NICU facilitated familiar and frequent communication with nurses, physicians, and social workers. Additionally, participants perceived that being aware and mindful of nurses’ needs on the unit and then intentionally acting on those needs built respect between NTs and nursing staff, while also being in line with their family-centered values to act on behalf of the infant and family’s needs.

Boon et al. (2004) emphasized that aspects of ICC can be considered as resting on respective spectra of integration; in this manner of thinking, each NICU could have a unique ICC profile. Chapter 3 presented operational themes from this study and described that how work was distributed across the eight aspects of ICC potentially impacted the relationships among NTs and other NICU staff. There was an emphasis on leaders’ roles in structuring service availability and fostering a positive climate to empower NTs. Examples of how operational and relational aspects of ICC are interrelated are described in Table 4.1.

Table 4.1: Impact of Operational Aspects of ICC on Co-worker Relationships

Operational Aspect	Potential Impact on Relationships
Shared Space	Unit design facilitates opportunities for co-worker interactions and staff-to-infant/family interactions
Service Availability	Staffing predictability, familiarity, and dependability which lends itself to trust, respect, and opportunities for mutual learning by either co-workers or patient families
Communication Strategies	Frequent and intentional communication builds shared knowledge, trust, and respect

Unit Philosophy	Sharing a unit philosophy in conjunction with frequent communication supports compromises and problem-solving on behalf of patient-centered care
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Mindfulness of how operational and relational aspects are interrelated could potentially influence how NTs plan and schedule their work, how leaders manage and organize their teams, or how administrators perceive healthcare provision in the NICU to provide quality care. Results from the current study suggest that time spent fostering relationships in the NICU is value-added time, even if not billable and will help foster ICC which also benefits infants and families (Craig & Smith, 2020). Recommendations for how NT teams can facilitate ICC practices are presented in Table 4.2.

Table 4.2: Recommendations for Facilitating ICC Practices

Action	Benefit
Spend time in NICU outside of patient care, especially when NT office space is not on the physical NICU unit (i.e., document in NICU, attend meetings, eat lunch in nursing breakroom)	Fosters more trusting relationships through familiarity, and building shared interpersonal and professional knowledge
Establish predictable and dependable schedules for NT service availability	Increases trust and fosters familiarity which may lead to NTs' recommendations being more respected or adopted
Attend unit meetings with the mindset to build shared knowledge of patient and unit demands outside of neonatal therapy's purview	Supports interpersonal and professional relationships
Attend bedside interactions with other healthcare providers, with the mindset that each bedside interaction is an opportunity to either learn or teach	Builds mutual respect and trust, especially over time
Plan and/or attend celebrations, or workplace gatherings with co-workers of other disciplines	Builds interpersonal knowledge and trust

4.4 Limitations

This study represents only a small fraction of NICUs across the United States. Authors made efforts to sample NICUs of different bed capacities and hospital characteristics to maximize the variability of the results. Recruiting teams of NTs with all three neonatal therapy disciplines was purposeful to explore the complexity of how those NTs work among themselves as well as with other NICU professionals. However, only approximately 35% of NICUs across the country have a multi-disciplinary team with all three disciplines represented (Pineda et al., 2021). Authors of the current study have emphasized the individualization of each hospital site's hypothetical ICC profile; therefore, reproducibility of the results is limited.

This study is the first to describe NTs' perceptions of using ICC in the NICU, among other NT co-workers and among other NICU staff. Other investigations have explored nurses' perceptions of teamwork and aspects of ICC in the NICU, but not specifically their perceptions of NTs (Dunn et al., 2018; Masten et al., 2019). Future research about other NICU healthcare workers' perceptions of the integrative aspects of neonatal therapy is recommended, especially studies that consider the dynamic interactions of aspects of ICC, to better assess point-in-time quality and to guide future process improvement cycles. Furthermore, research regarding the mechanism of relational coordination in the NICU may support NTs efforts to advocate for increased service availability in the NICU. Many NTs work part-time hours in the NICU (Pineda et al., 2021). Research regarding the relational coordination and/or ICC practices of part-time versus full-time NTs would also be helpful to explore if there is a value to service availability on quality of care beyond billable patient care time.

4.5 Conclusion

Studies focusing on the quality of neonatal intensive care often fail to recognize more than a few aspects of ICC at a time. Teasing out the components of ICC, however, can never fully describe how any unit will function as a whole. The present study explored how NTs perceived they used ICC, and results support interrelatedness of operational and relational aspects of ICC, both among NT co-workers and among other NICU co-workers. The work that takes place in the NICU is a symphony of healthcare practices that are arranged according to each hospital's unique profile of resources. A snapshot of any given NICU, as presented through each case study included in this multi-case study, reflected a hypothetical profile of the state of integration of each participating unit. However, complexity theory suggests that actions can change the dynamics of a team and authors of relational coordination theory suggest communication ties and relational ties are mutually reinforcing (Gittell et al., 2010; Lanham, 2013). Evidence from the current study supports both complexity theory and relational coordination; ICC is therefore considered to be an iterative process that requires constant, intentional cultivation.

4.6 References

American Academy of Pediatrics. (2017). *Guidelines for perinatal care* (Eighth ed.). American Academy of Pediatrics (and) the American College of Obstetricians and Gynecologists.

American Occupational Therapy Association. (2021). *CommunOT Research Survey Requests 2021*. American Occupational Therapy Association.

Axelin, A., Raiskila, S., & Lehtonen, L. (2020). The development of data collection tools to measure parent–infant closeness and family-centered care in NICUs. *World Views on Evidence Based Nursing*, 17(6), 448-456. doi: 10.1111/wvn.12475.

Barbosa, V. M. (2013). Teamwork in the neonatal intensive care unit. *Physical & Occupational Therapy in Pediatrics*, 33(1), 5-26.

Benzies, K. M., Shah, V., Aziz, K., Lodha, A., & Misfeldt, R. (2019). The health care system is making 'too much noise' to provide family-centred care in neonatal intensive care units: Perspectives of health care providers and hospital administrators. *Intensive & Critical Care Nursing*, 50, 44-53. <https://doi.org/10.1016/j.iccn.2018.05.001>

Blount, A. (2003). Integrated primary care: Organizing the evidence. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 21(2), 121. <https://10.1037/1091-7527.21.2.121>

Boon, H., Verhoef, M., O'Hara, D., & Findlay, B. (2004). *From parallel practice to integrative health care: A conceptual framework*. BioMed Central.

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Browne, J. V. (2021). Infant mental health in intensive care: Laying a foundation for social, emotional and mental health outcomes through regulation, relationships and reflection. *Journal of Neonatal Nursing*, 27(1), 33-39. <https://doi.org/10.1016/j.jnn.2020.11.011>
- Craig, J.W., & Smith, C.R. (2020). Risk-adjusted/neuroprotective care services in the NICU: The elemental role of the neonatal therapist (OT, PT, SLP). *Journal of Perinatology*, <https://doi.org/10.1038/s41372-020-0597-1>
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. (1st ed.). Sage Publications.
- Denzin, N. & Lincoln, Y. (2011). *The SAGE handbook of qualitative research* (4th ed.). Sage Publications.
- Dunn, S. I., Cragg, B., Graham, I. D., Medves, J., & Gaboury, I. (2018). Roles, processes, and outcomes of interprofessional shared decision-making in a neonatal intensive care unit: A qualitative study. *Journal of Interprofessional Care*, 32(3), 284-294. <https://doi.org/10.1080/13561820.2018.1428186>
- Facebook. (2022a). *National Association of Neonatal Therapists Closed Group*. www.facebook.com.
- Facebook. (2022b). *Neonatal Therapists Private Group*. www.facebook.com.

- Fay, L., Real, K., & Haynes, S. (2022). The healthcare workspace: Understanding the role of decentralized nursing stations, corridors, and huddle spaces as locations for teamwork in a Neonatal Intensive Care Unit. *Health Environments Research & Design Journal (HERD)* (Sage Publications, Ltd.), 15(4), 270-282. <https://doi.org/10.1177/19375867221106503>
- Gittell, J. H. (2000). Organizing work to support relational co-ordination. *International Journal Human Resource Management*, 11(3), 517-539. <https://doi.org/10.1080/095851900339747>
- Gittell, J. H., Fairfield, K. M., Bierbaum, B., Head, W., Jackson, R., Kelly, M., Laskin, R., Lipson, S., Siliski, J., Thornhill, T., Zuckerman, J., Gittell, J. H., Fairfield, K. M., Bierbaum, B., Head, W., Jackson, R., Kelly, M., Laskin, R., Lipson, S., & Siliski, J. (2000). Impact of relational coordination on quality of care, postoperative pain and functioning, and length of stay: a nine-hospital study of surgical patients. *Medical Care*, 38(8), 807-819.
- Gittell, J. H., Weinberg, D., Pfefferle, S., & Bishop, C. (2008). Impact of relational coordination on job satisfaction and quality outcomes: a study of nursing homes. *International Journal of Human Resource Management*, 18(2), 154-170. <https://doi.org/10.1111/j.1748-8583.2007.00063.x>
- Gittell, J. H., Seidner, R., & Wimbush, J. (2010). A relational model of how high-performance work systems work. *Organization Science*, 21(2), 490-506. <https://doi.org/10.1287/orsc.1090.0446>
- Goodwin, N. (2016). Understanding integrated care. *International Journal of Integrated Care*, 16(4), 6. <https://doi.org/10.5334%2Fijic.2530>

Hallowell, S. G., Rogowski, J. A., Lake, E. T., Dowling, D., & Thibeau, S. (2019). How nurse work environments relate to the presence of parents in neonatal intensive care. *Advances in Neonatal Care (Lippincott Williams & Wilkins)*, 19(1), 65-72.

<https://doi.org/10.1097%2FANC.0000000000000431>

Hartgerink, J. M., Cramm, J. M., de Vos, A., J.B.M., Bakker, T. J., Steyerberg, E. W., Mackenbach, J. P., & Nieboer, A. P. (2014). Situational awareness, relational coordination and integrated care delivery to hospitalized elderly in the Netherlands: a comparison between hospitals. *BMC Geriatrics*, 14, 3. <https://doi.org/10.1186/1471-2318-14-3>

Havens, D. S., Gittell, J. H., & Vasey, J. (2018). Impact of relational coordination on nurse job satisfaction, work engagement and burnout: Achieving the quadruple aim. *JONA: The Journal of Nursing Administration*, 48(3), 132-140.

<https://doi.org/10.1097/nna.0000000000000587>

Heath, B., Wise Romero, P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, D.C.: SAMHSA-HRSA Center for Integrated Health Solutions. <https://www.pcpc.org/sites/default/files/resources/SAMHSA-HRSA%202013%20Framework%20for%20Levels%20of%20Integrated%20Healthcare.pdf>

Jones, C. W., Moya, F., Lynch, N., & Forsythe, P. L. (2022). Unintended consequences of the neonatal intensive care unit environment: Integrative review of single-family room unit design. *Advances in Neonatal Care : Official Journal of the National Association of Neonatal Nurses*, <https://doi.org/10.1097/anc.0000000000001023>

Karol, R. L. (2014). Team models in neurorehabilitation: Structure, function, and culture change. *NeuroRehabilitation*, 34(4), 655-669. <https://doi.org/10.3233/nre-141080>

Kornhaber, R., Cross, M., Mulvogue, J., Kaphle, S., & Cleary, M. (2022). Research collaborations: Like minds, diversity and safe spaces. *Issues in Mental Health Nursing*, 43(11), 1069-1071. <https://doi.org/10.1080/01612840.2021.2009605>

Lanham, H. J. (2013). A complexity science perspective of organizational behavior in clinical microsystems. In Sturmberg, J.P. & Martin, C.M. (Ed.), *Handbook of Systems and Complexity in Health* (pp. 715-725). Springer Science.

Masten, M., Sommerfeldt, S., Gordan, S., Greubel, E., Canning, C., Liroy, J., & Chuo, J. (2019). Evaluating teamwork in the neonatal intensive care unit: A survey of providers and parents. *Advances in Neonatal Care*, 19(4), 285-293. <https://doi.org/10.1097/anc.0000000000000604>

Milette, I., Martel, M., Ribeiro da Silva, M., & Coughlin McNeil, M. (2017). Guidelines for the institutional implementation of developmental neuroprotective care in the neonatal intensive care unit. Part A: Background and rationale. A joint position statement from the CANN, CAPWHN, NANN, and COINN. *The Canadian Journal of Nursing Research = Revue Canadienne De Recherche En Sciences Infirmieres*, 49(2), 46-62. <https://doi.org/10.1177/0844562117708126>

Nancarrow, S. A., Booth, A., Ariss, S., Smith, T., Enderby, P., & Roots, A. (2013). Ten principles of good interdisciplinary team work. *Human Resources for Health*, 11, 19. <https://doi.org/10.1186/1478-4491-11-19>

- Pineda, R., Lisle, J., Ferrara, L., Knudsen, K., Kumar, R., & Fernandez-Fernandez, A. (2021 Dec 14). Neonatal therapy staffing in the United States and relationships to neonatal intensive care unit type and location, level of acuity, and population factors. *American Journal of Perinatology*, <https://doi.org/10.1055/a-1678-0002>. Epub ahead of print. PMID: 34695863.
- Pype, P., Mertens, F., Helewaut, F. *et al.* (2018). Healthcare teams as complex adaptive systems: understanding team behaviour through team members' perception of interpersonal interaction. *BMC Health Services Research* 18, 570. <https://doi.org/10.1186/s12913-018-3392-3>
- Senge, P. M. (2006). *The fifth discipline: The art & practice of the learning organization* (2nd ed.). Currency.
- Sturdivant, C. (2013). A collaborative approach to defining neonatal therapy. *Newborn Infant Nursing Review*, 13(1), 23-26. <https://doi.org/10.1053/j.nainr.2012.12.010>
- Swain, J., (2018). A hybrid approach to thematic analysis in qualitative research: Using a practical example. In *Sage Research Methods Cases Part 2*, Sage Publications, Ltd. <https://doi.org/10.4135/9781526435477>
- Tawfik, D. S., Sexton, J. B., Adair, K. C., Kaplan, H. C., & Profit, J. (2017). Context in quality of care: Improving teamwork and resilience. *Clinics in Perinatology*, 44(3), 541-552. <https://doi.org/10.1016/j.clp.2017.04.004>
- Texas Occupational Therapy Association. (n.d.). *Research Surveys*. Texas Occupational Therapy Association. Retrieved January 30, 2021, from <https://www.tota.org/research>

van Veenendaal, N.,R., Labrie, N. H. M., Mader, S., van Kempen, A.,A.M.W., van der Schoor, S.,R.D., & van Goudoever, J.,B. (2022). An international study on implementation and facilitators and barriers for parent-infant closeness in neonatal units. *Pediatric Investigation*, 6(3), 179-188. <https://doi.org/10.1002/ped4.12339>

Welch, M. G. (2016). Nurture in the neonatal intensive care unit. *Acta Paediatrica*, 105(7), 730-731. <https://doi.org/10.1111/apa.13294>

White, R. D. (2010). Single-family room design in the neonatal intensive care unit -- challenges and opportunities. *Newborn & Infant Nursing Reviews*, 10(2), 83-86. doi: 10.1053/j.nainr.2010.03.011. Epub 2010 May 21. PMID: 32288654; PMCID: PMC7106039.

Winner-Stoltz, R., Lengerich, A., Hench, A. J., O'Malley, J., Kjelland, K., Teal, M., Samra, H. A., & O'Malley, J. (2018). Staff nurse perceptions of open-pod and single family room NICU designs on work environment and patient care. *Advances in Neonatal Care (Lippincott Williams & Wilkins)*, 18(3), 189-198. <https://doi.org/10.1097/anc.0000000000000493>

Yin, R. (2018). *Case study research and applications design and methods* (6th ed.). Sage Publications.

Chapter 5: Conclusion

Previous descriptions of neonatal therapy have emphasized the clinical expertise, types of interventions, and current employment trends of NTs (Pineda et al., 2019; Pineda et al., 2021; Ross et al., 2017; Sturdivant, 2013). These metrics are valuable to monitor the integrity of the profession; inform national professional organizations for educational needs; establish goals that strengthen the employment security of NTs; and ensure infants and families receive support for their NICU journeys. This doctoral research contributes to neonatal therapy literature by providing qualitative information about how NTs work together among themselves and among other healthcare professionals. National organizations of NT disciplines all have guidelines for practice in the NICU which reflect the importance of both clinical expertise and interprofessional collaboration to serve the infant and family in the NICU setting (American Speech-Language-Hearing Association, 2004; Craig et al., 2018; Sweeney et al., 2010). The overall purpose of this two-phase doctoral research was to explore how NTs perceive that they use ICC practices in the neonatal setting. ICC however is more than interprofessional collaboration and reflects the complexity of the work setting including the structural, organizational, and human resource infrastructure of each site.

Four research questions were posed for this doctoral work. Chapters 2-4 primarily answered the first three research questions. Chapter 2 addressed Phase 1 of the research plan by presenting a scoping review of published literature of ICC models or descriptions of practice specific to the NICU that included a role either stated or inferred for NTs. Chapters 3 and 4 explored how NTs perceived that they demonstrate ICC practices among their NT coworkers as well as among their NICU co-workers. Results support that each aspect of ICC could be considered on a spectrum from least to most integrated and that over time, typically NICUs become more

integrative as co-workers learn and share more of themselves personally and professionally. The interrelatedness of operational and relational themes reflects the complexity of NICU workplaces and emphasizes the importance of NTs having advanced clinical knowledge as well as demonstrating professionalism. This chapter reviews overall conclusions about how NTs work within an ICC model based on study results. Additionally, the fourth research question about defining ICC from the NTs' perspective will be addressed.

5.1 A Model of ICC in the NICU

Results of this doctoral research emphasized the interrelatedness of operational and relational themes. Furthermore, several aspects of ICC used for the deductive portion of analysis were found to contribute to opportunities to develop positive co-worker relationships. This author found no other published visual model of the complexity of the NICU with emphasis on aspects of ICC, co-worker relationships, or that included NTs. Therefore, Figure 5.1 was developed to depict this PI's interpretation of how NTs interact with other key stakeholders in the NICU in the context of the aspects of ICC presented in the current study, based on study conclusions and literature review. Key stakeholders aside from NTs include: 1) infants, 2) family members, 3) other NICU healthcare professionals, 4) nursing leaders, 5) rehabilitation leaders, and 6) healthcare professionals involved in non-NICU follow-up services. The key in the bottom left corner reflects the aspects of ICC involved in each of these stakeholder components. Understanding how stakeholders interact within the complexity of the NICU setting may help NTs better understand their role in ICC or develop potential strategies to shift their hypothetical ICC profiles to more integrative positions. The following paragraphs provide further explanation of the roles of each stakeholder in a NICU grounded in FCDC, as illustrated in Figure 5.1.

FCDC is the standard philosophical approach to care across NICUs in the United States (Craig et al., 2015; Larocque et al., 2021). Principles of FCDC emphasize that the care of an infant should not be considered outside of the context of its caregivers (Eichner & Johnson, 2012). Researchers have demonstrated that programs to increase family involvement can be empowering and often result in more positive outcomes for infants and less stress for the parents (Altimier, 2015; Cheng et al., 2021; Melnyk et al., 2008). Practice guidelines for NTs also emphasize how NTs should support, advocate, and empower families to care for their infants (American Speech-Language-Hearing Association, 2004; Craig et al., 2018; Sweeney et al., 2009; Sweeney et al., 2010). Figure 5.1 is a model of ICC team dynamics in the NICU. Notable is that the infant/parent dyad is at the center of the web, representing the FCDC emphasis on the needs of the infant and family in addition to the family being represented as an active decision-maker and team member.

Previous authors have depicted a web of interactions among healthcare disciplines or services in other complex healthcare settings that reflects the structure of communication among team members (Karol, 2014; Purdy et al., 2020). Figure 5.1 also uses a web to depict the number of healthcare professionals involved in any given NICU. The number of disciplines may vary among hospitals; however, given the extent of services available in Level III or Level IV units (Table 1.2), a web of interactions among many healthcare professionals best represents the complexity of interactions required to deliver quality patient care. The variations of weighted lines in the figure represent the potential frequency of interactions between disciplines. The frequency or weight of each line between any two disciplines may vary depending on any given NICU's human resources, team roles, and processes, and may differ depending on the quality of their relationships. Appropriately so, several healthcare disciplines have heavily weighted lines

connecting to the family representing the strength of staff-family relationships that may exist during a NICU stay.

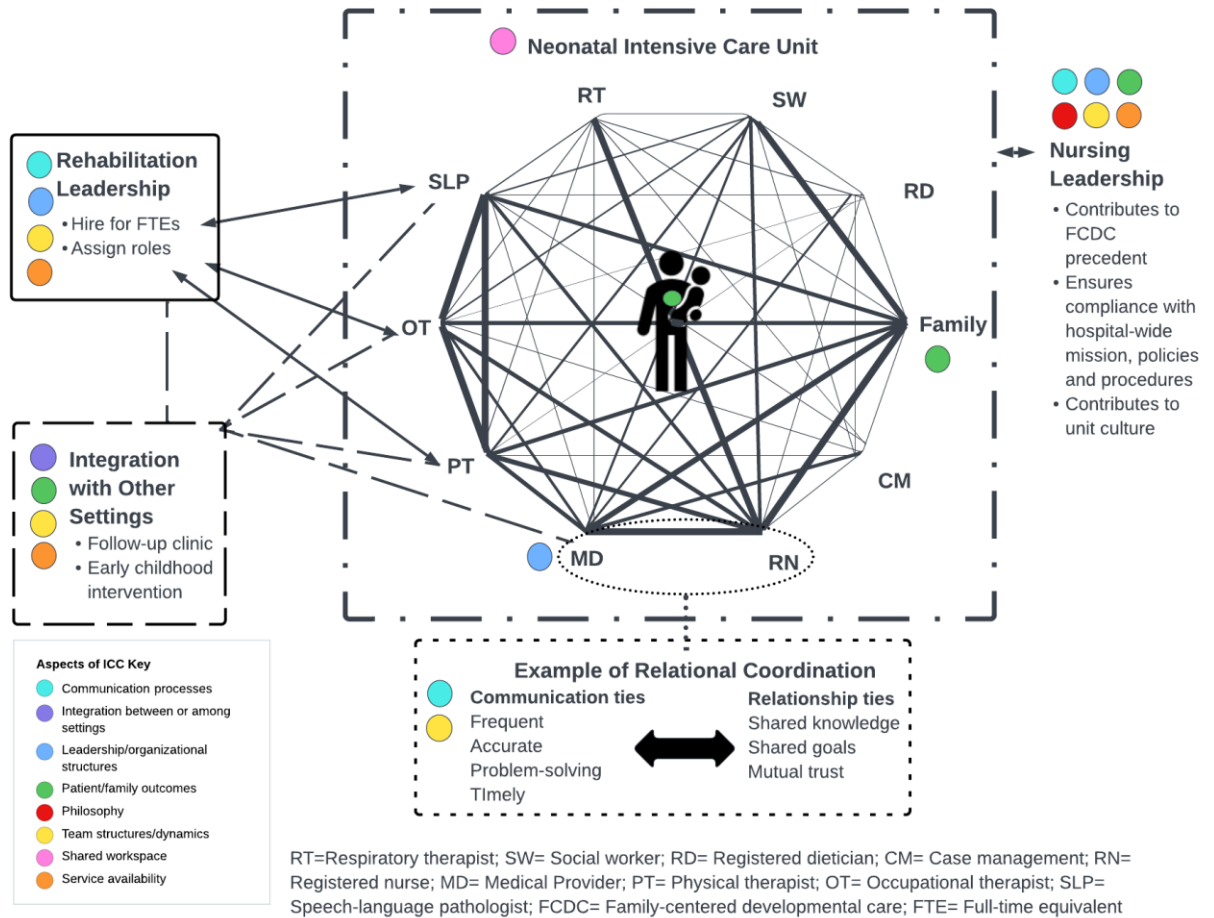


Figure 5.1: ICC Dynamics in the NICU

At the bottom of the web is an oval that represents an example of relational coordination between a medical provider and a nurse. These two health disciplines have a heavily weighted line reflecting the frequency of communication that occurs due to the nature of those two roles in patient care decisions and implementation. Relational coordination is a mutually reinforcing phenomenon between communication ties (i.e., frequent, timely, accurate communication for the purpose of problem-solving on behalf of patients and their families) and relationship ties (i.e.,

shared knowledge, shared trust, and mutual respect) (Gittell et al., 2008). Relational coordination occurs in complex settings and has been shown to influence worker satisfaction and outcomes (House et al., 2022). As seen in Chapter 4, this PI interpreted through thematic analysis that interpersonal relationships are the “connective tissue” to daily operations and that interpersonal relationships become stronger over time. Additionally, poor relationships among coworkers can also act as a barrier to work tasks. In Figure 5.1, relational coordination is occurring on an individual level to varying extents among all combinations of healthcare professionals, but likely more strongly for those who have heavier weighted communication lines and who have worked together in the NICU over a longer period of time.

While the manuscripts in this dissertation primarily focused on NTs, several participants mentioned the crucial role of leadership (beyond NT leadership) in Chapter 3. In Figure 5.1, nursing leadership is depicted as influencing all disciplines in the NICU. Nursing leadership must be aware of all disciplines entering the unit, and manage nurse staff assignments, training, and development (e.g., aspects of service availability and competence). Therefore, nurse leaders have a key role to play in setting a precedent for the unit culture (Meyer et al., 2014). In Chapter 3, participants reflected on both positive and negative influences of nurse leaders as their influences related to carrying out patient care from a FCDC philosophy. Additionally, unit policies and procedures are often routed through medical and nursing leadership for approvals, even if they are the product of a process improvement committee. Policies and procedures can also be a reflection of using a FCDC philosophy, especially when they are created with patient and family outcomes in mind (Eichner & Johnson, 2012). Nursing leadership has a crucial role to play in how time and space are organized for operational tasks such as patient care and documentation, as well as how non-patient care time is spent, which is fuel for relational coordination (Buckley et al., 2021; Naef

et al., 2020). Operational infrastructure may influence nursing attitudes and time management. All healthcare disciplines contribute a valuable role to an infant's plan of care; however, nursing staff are responsible for bedside care 24 hours a day, so their attitudes may have considerable influence on other healthcare disciplines performing bedside tasks. Furthermore, time management may influence nurses' availability to learn and be present at bedside with NTs or other disciplines.

Rehabilitation leaders are also depicted in Figure 5.1 as contributing to NICU interactions. At some hospitals, NTs are managed by nursing leadership; however, most often NTs are managed by rehabilitation leadership (Sturdivant, 2013). Chapter 3 presented examples of how rehabilitation leaders influenced NTs' role in the NICU particularly with establishing service availability. Service availability also appeared to be related to a NICU leader's understanding and support of the habilitative approach to care in the NICU setting. Service availability and the length of time NTs worked together also influenced communication styles and comfort level with sharing knowledge and approaching challenging cases. Rehabilitation leaders who manage NTs may also contribute to how roles are assigned (i.e., team processes and structures). For example, rehabilitation leaders may hire SLPs and/or OTs, delegate which discipline(s) will address feeding services and determine how those assessments and interventions are coordinated among NTs (i.e., co-treatment options).

There are several opportunities to integrate services between the NICU and other services post-NICU discharge. Chapter 2 described examples from the literature of ways units were communicating with service providers outside of a NICU hospital stay (e.g., sending developmental care reports to a surgical unit and using a follow-up feeding clinic to support use of nasogastric feedings post-discharge) (Ermarth et al., 2020; Griffiths et al., 2021). Both examples had a potential role for NTs. Additionally, in Chapter 3, NT participants described how they were

assigned work at NICU follow-up clinics with physicians. On one participating team, rehabilitation leaders intentionally split the service availability of NTs between the NICU and follow-up clinic to ensure continuity of care for the patient and family's benefit. Participating NTs reflected on barriers of having their time split between two settings, especially on keeping familiar with the nuanced changes in an infant's condition. Additionally, NT participants commented on the positive influence of seeing the medical providers outside of the NICU in other medical settings such as early intervention or a follow-up clinic. Often, these NTs perceived their recommendations were more respected by medical providers, and the communication between them and medical providers was more frequent with fewer barriers than if they did not have well established relationships with medical providers.

While Figure 5.1 is a static diagram, ICC in the NICU has a dynamic nature. According to complexity theory, a complex system has rules that are determined by the unique components of the system; however, individuals have the potential to influence and change the dynamics of the system (Lanham, 2013). The mutually reinforcing roles of communication ties and relational ties of relational coordination among any two co-workers in the NICU, especially when the passage of time is considered, reflect this potential to change the dynamics of the unit operations or culture. Furthermore, when leaders hire and manage their constituents with a mindfulness of a shared mission and values as well as provide time away from patient care for employees to learn about and from each other, they create multiple opportunities to influence relational coordination among individuals, and as a whole unit. This approach creates potential for the hypothetical position of each aspect of ICC to shift to the right on its respective spectrum, from less to more integrative, moving the team of NICU professionals closer to the ideal integrative unit and to providing the highest quality of patient experiences.

5.2 Definition of ICC According to NTs

Goodwin (2016) emphasized that integrated care in its simplest form was organizing work components that could be fragmented for the purpose of providing care. Additionally, Goodwin explained that those who are integrating care need “to define and interpret what it will mean to them in their own contexts” (p.1). Therefore, the definition of ICC may vary according to the stakeholders in any given health sector. This section will describe results from Phase 2 of this doctoral research that pertains to the final research question: How do NTs define ICC in the neonatal setting?

As part of the semi-structured interview template used in the multi-case study of Phase 2, the PI asked participants questions about their understanding of ICC (Appendix B). The answers to these questions (Questions 1, 2, 4, and 5) were pooled across all participants. The PI used inductive thematic analysis to determine a definition of ICC from the perspective of NT participants. The senior researcher also reviewed the transcripts and analysis results to validate the accuracy of the definition. The definition of ICC from the perspective of NT participants is as follows:

ICC in the NICU is multiple healthcare professionals and support staff, pooling their professional knowledge, skills, and expertise to communicate and work as a team to individualize support for parents to be confident, competent, and independent to meet a family and unit-wide goal to optimize the infant’s well-being and health to prepare for discharge from the hospital.

Additionally, the PI identified NTs’ perceptions of the benefits of ICC to both families and staff. The definition of ICC from NTs’ perspective reflects the underlying philosophical foundation of FCDC to individualize one overarching treatment plan to not just care for an infant but to support the parents to be active participants in caregiving and decision-making as depicted in Figure 5.1. The definition additionally reflects the importance of both the communication and

relational ties that contribute to relational coordination among NICU professionals and supportive staff in organizing operational details of work that may be fragmented if not otherwise integrated.

Larocque et al. (2021) determined that FCDC was more appropriately labeled a philosophy rather than a model of care. Additionally, Craig and Smith (2020) emphasized the importance of standardized elements of care by healthcare providers in the NICU using a “developmental care philosophy” while also recommending neonatal therapy by delivered using an ICC model (pp. 2-3). These authors have distinguished that FCDC is a philosophy which guides actions such as those operational strategies listed in Table 2.4. However, in general, participants’ comments about understanding ICC appeared derivative based on breaking down the words “integrated,” “collaborative,” and “care.” Two participants admitted to unfamiliarity with the term ICC despite feeling they understood the terms “integrated” and “collaboration” individually. Participants’ use of the term FCDC when explaining care practices was much more common. Chapter 2 also emphasized the ambiguity in the literature regarding FCDC being a philosophical approach and a model of care; therefore, the dissemination of this distinction may not yet be reflected in literature or educational programs marketed toward NTs. Another potential reason may be that educational programs marketed toward NTs tend to emphasize patient-centered outcomes and intervention strategies; therefore, an FCDC emphasis is appropriate. Fewer education programs seem to exist that emphasize operational strategies for staff team building and the potential these strategies have to impact patient outcomes, and so some NTs may not be able to clearly define ICC. Understanding the complexity of ICC in the NICU or other health settings may also reflect practitioner experience working in a healthcare system.

Other conclusions from the thematic analysis for the ICC definition also reinforce the interrelatedness of relationships among co-workers with operational care coordination. Several NT

participants appreciated the value of having an awareness of others' knowledge, expertise, and roles in the infant's overall NICU treatment plan. Participants expressed that predictable service availability created a greater sense of NT presence in the NICU. The larger presence contributed to NTs' awareness of what expertise is available from non-NT colleagues and potential resources to serve each infant/family, as well as let other NICU staff members be aware of how NTs could be a resource. Cross-disciplinary education was also valued to contribute to the growth of the staff's combined pool of expertise through perpetual learning.

When completing the multi-case study, the PI purposely posed structured interview questions to teams of NTs to explore if there were differences in coordinating care among themselves versus with the greater NICU team (Appendix B). Several teams of NTs perceived relationships, problem-solving, and communication were stronger among NT peers because there was more shared jargon, more interpersonal conversations, and a better sense of safety for vulnerability to problem-solve. Based on the supporting evidence of relational coordination in the NICU from Chapter 4 and Figure 5.1, this finding is unsurprising for those teams who shared documentation space, communicated about patient care frequently, and spent years working together. Interestingly, those NTs who worked and documented within the NICU, and who did not overlap schedules with other NTs, expressed similarly strong relationships with nursing staff or other healthcare disciplines. Therefore, it appears that the common factor is not identity as an NT but a shared identity of working together for a length of time in a complex environment that meets the criteria for relational coordination (Figure 1.1).

5.3 Future Research

This chapter has summarized research results from two-phases of a qualitative multi-case research study with the purpose to explore how NTs perceive that they use ICC practices in the

neonatal setting. Both phases of the research identified gaps in knowledge. The scoping review presented in Chapter 2 identified that there is ample evidence for ICC; however, often articles described only one or two aspects of ICC and inferred roles for NTs. Additionally, there were few articles that represented integration among or between settings and representation of NTs in leadership. Future research is needed to support the conclusion of this doctoral study.

This research study explored the perceptions of NTs using ICC who worked in Level III and Level IV NICUs. Chapter 3 indicated that future research was indicated to determine if NTs who work in Level II NICUs would share similar operational and relational themes. Establishing similarities between NICU certification levels would support Figure 5.1 as a model of NICU workplace dynamics and the role of relational coordination in the NICU setting. Chapters 2-4 all identified the crucial role of leadership, predominantly related to service availability and use of space, which was shown to have ramifications on relational coordination in the NICU. Additionally, results suggested leadership contributes to the culture of a unit, and a sense of empowerment of NTs as valuable employees and team members. Exploring leaders' understanding of ICC and the unique, habilitative work of NTs in the NICU should be prioritized to support existing characterizations of neonatal therapy practice and national professional recommendations for each discipline to work in the advanced practice setting of the NICU. Some NTs work under nursing leadership; therefore, both rehabilitation leaders and nursing leaders' understanding would be relevant to investigate. Exploring if there are differences in how communication and relationship ties are developed between part-time and full-time therapists may also help those who lead NTs to make informed staffing decisions to support relational coordination and work-place dynamics in the NICU. Furthermore, these future studies would give NTs who are not yet well integrated into their NICUs evidence to be able to advocate for increased NICU presence. Current

study results imply there is value to having dedicated service availability beyond billable patient care time. This research only explored NTs' perceptions of ICC. Additional research examining the perceptions of non-NT co-workers about relational coordination with NTs would also validate current research findings.

This research could add to the literature that would clarify and reinforce that ICC is an appropriate treatment model in the NICU, especially when approached from a FCDC philosophy. Increasing NICU stakeholders' knowledge of ICC, particularly among healthcare professionals who work in the NICU, is valuable due to the potential impact on patient and family outcomes as well as staff well-being outcomes.

5.4 References for Chapters 1 and 5

- Als, H. (1986). A synactive model of neonatal behavioral organization: Framework for the assessment of neurobehavioral development in the premature infant and for support of infants and parents in the neonatal intensive care environment. *Physical & Occupational Therapy in Pediatrics*, 6(3), 3-53.
- Als, H., & Gilkerson, L. (1997). The role of relationship-based developmentally supportive newborn intensive care in strengthening outcome of preterm infants. *Seminars in Perinatology*, 21(3), 178-189.
- Altimier, L. (2011). Mother and child integrative developmental care model: A simple approach to a complex population. *Newborn & Infant Nursing Reviews*, 11(3), 105-108. <https://doi.org/10.1053/j.nainr.2011.06.004>
- Altimier, L. (2015). Compassionate family care framework: A new collaborative compassionate care model for NICU families and caregivers. *Newborn & Infant Nursing Reviews*, 15(1), 33-41. <https://doi.org/10.1053/j.nainr.2015.01.005>
- Altimier, L., & Phillips, R. M. (2013). The neonatal integrative developmental care model: Seven neuroprotective core measures for family-centered developmental care. *Newborn & Infant Nursing Reviews*, 13(1), 9-22.
- American Academy of Pediatrics. (2017). *Guidelines for perinatal care* (Eighth ed.). American Academy of Pediatrics (and) the American College of Obstetricians and Gynecologists.

American Physical Therapy Association. (2014). Chapter 1: Introduction. *Guide to physical therapy practice*. American Physical Therapy Association.

American Speech-Language-Hearing Association. (2004). Knowledge and skills needed by speech-language pathologists providing services to infants and families in the NICU environment. <https://www.asha.org/policy/KS2004-00080/>

American Speech-Language-Hearing Association. (2016). *Scope of practice in speech-language pathology [Scope of Practice]*. Retrieved April 22, 2023, from www.asha.org.

Baldwin, D. C., Royer, J. A., & Edinberg, M. A. (2007). Maintenance of health care teams: Internal and external dimensions. *Journal of Interprofessional Care*, 21, 38-51. <https://doi.org/10.1080/13561820701580032>

Barbosa, V. M. (2013). Teamwork in the neonatal intensive care unit. *Physical & Occupational Therapy in Pediatrics*, 33(1), 5-26. <https://doi.org/10.3109/01942638.2012.729556>

Denise-Barfield, W. (2012). Levels of neonatal care. *Pediatrics*, 130(3), 587-597. doi:10.1542/peds.2012-1999

Blount, A. (2003). Integrated primary care: Organizing the evidence. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 21(2), 121-133. doi: [10.1037/1091-7527.21.2.121](https://doi.org/10.1037/1091-7527.21.2.121)

Boon, H., Verhoef, M., O'Hara, D., & Findlay, B. (2004). From parallel practice to integrative health care: A conceptual framework. *BioMed Central*.(4)1. <https://doi.org/10.1186/1472-6963-4-15>

Boynton, B. (2016). Chapter 10: Collaboration and Team Development. *Successful nurse communication* (pp. 130-142). F.A. Davis Company.

Brayman, S. J., Frolek Clark, G., DeLany, J. V., Garza, E. R., Radomski, M. V., Ramsey, R., Siebert, C., Voelkerding, K., LaVesser, P. D., Aird, L., & Lieberman, D. (2014). Scope of Practice. *American Journal of Occupational Therapy*, 68, S34-S40.

doi:10.5014/ajot.2014.686S04

Browne, J. V., Jaeger, C. B., & Kenner, C. (2020). Executive summary: Standards, competencies, and recommended best practices for infant- and family-centered developmental care in the intensive care unit. *Journal of Perinatology*, 40, 5-10.

<https://doi.org/10.1038/s41372-020-0767-1>

Buckley, L., Berta, W., Cleverley, K., & Widger, K. (2021). The relationships amongst pediatric nurses' work environments, work attitudes, and experiences of burnout. *Frontiers in Pediatrics*, 9, 807245. <https://doi.org/10.3389/fped.2021.807245>

Cheng, C., Franck, L. S., Ye, X. Y., Hutchinson, S. A., Lee, S. K., & O'Brien, K. (2021). Evaluating the effect of family integrated care on maternal stress and anxiety in neonatal intensive care units. *Journal of Reproductive & Infant Psychology*, 39(2), 166-179.

<https://doi.org/10.1080/02646838.2019.1659940>

Committee on Fetus and Newborn. (September 2012). Levels of neonatal care. *Pediatrics*, 130(3), 587–597. doi: 10.1542/peds.2012-1999

- Craig, J., Carroll, S., Sturdivant, C., & Ludwig, S. (2018). Occupational therapy's role in the neonatal intensive care unit. *American Journal of Occupational Therapy, 72*, 1-9.
doi:10.5014/ajot.2018.72S204
- Craig, J., Glick, C., Phillips, R., Hall, S. L., Smith, J., & Browne, J. (2015). Recommendations for involving the family in developmental care of the NICU baby. *Journal of Perinatology, 35*, S5-S8. doi: 10.1038/jp.2015.142
- Craig, J.W., & Smith, C.R. (2020). Risk-adjusted/neuroprotective care services in the NICU: The elemental role of the neonatal therapist (OT, PT, SLP). *Journal of Perinatology*,
<https://doi.org/10.1038/s41372-020-0597-1>
- Creswell, J. & Poth, C. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (4th Edition ed.). Sage Publications.
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. (1st ed.). Sage Publications.
- Denzin, N. & Lincoln, Y. (2011). *The SAGE handbook of qualitative research* (4th ed.). Sage Publications.
- Dhurjati, R., Wahid, N., Sigurdson, K., Morton, C. H., Kaplan, H. C., Gould, J. B., & Profit, J. (2018). Never judge a book by its cover: How NICU evaluators reach conclusions about quality of care. *Journal of Perinatology, 38*(6), 751-758. <https://doi.org/10.1038/s41372-018-0092-0>

- Edwards, E. M., Greenberg, L. T., Profit, J., Draper, D., Helkey, D., & Horbar, J. D. (2021). Quality of care in US NICUs by race and ethnicity. *Pediatrics*, *148*(2), 1-11.
<https://doi.org/10.1542/peds.2020-037622>
- Eichner, J. M., & Johnson, B. H. (2012). Patient- and family-centered care and the pediatrician's role. *Pediatrics*, *129*(2), 394-404. <https://doi.org/10.1542/peds.2011-3084>
- Ermarth, A., Thomas, D., Ling, C. Y., Cardullo, A., & White, B. R. (2020). Effective tube weaning and predictive clinical characteristics of NICU patients with feeding dysfunction. *Journal of Parenteral & Enteral Nutrition*, *44*(5), 920-927.
<https://doi.org/10.1002/jpen.1717>
- Franck, L. S., Cormier, D. M., Hutchison, J., Moore, D., Bisgaard, R., Gay, C., Ngo, S., Kriz, R. M., Lin, C., Ekno, M., Ribero, D., & Sun, Y. (2021). A multisite survey of NICU healthcare professionals' perceptions about family-centered care. *Advances in Neonatal Care: Official Journal of the National Association of Neonatal Nurses*, *21*(3), 205-213.
<https://doi.org/10.1097/anc.0000000000000805>
- Gibbins, S., Hoath, S. B., Coughlin, M., Gibbins, A., & Franck, L. (2008). The universe of developmental care: A new conceptual model for application in the neonatal intensive care unit. *Advances in Neonatal Care: Official Journal of the National Association of Neonatal Nurses*, *8*(3), 141-147. <https://doi.org/10.1097/01.anc.0000324337.01970.76>
- Gittell, J. H., Fairfield, K. M., Bierbaum, B., Head, W., Jackson, R., Kelly, M., Laskin, R., Lipson, S., Siliski, J., Thornhill, T., Zuckerman, J., Gittell, J. H., Fairfield, K. M., Bierbaum, B., Head, W., Jackson, R., Kelly, M., Laskin, R., Lipson, S., & Siliski, J. (2000). Impact of

relational coordination on quality of care, postoperative pain and functioning, and length of stay: A nine-hospital study of surgical patients. *Medical Care*, 38(8), 807-819.

<https://doi.org/10.1097/00005650-200008000-00005>

Gittell, J. H., Weinberg, D., Pfefferle, S., & Bishop, C. (2008). Impact of relational coordination on job satisfaction and quality outcomes: a study of nursing homes. *International Journal of Human Resource Management*, 18(2), 154-170. <https://doi.org/10.1111/j.1748-8583.2007.00063.x>

Goodwin, N. (2016). Understanding integrated care. *International Journal of Integrated Care*, 16(4), 1-4. <https://doi.org/10.5334/ijic.2530>

Gray, D. (2014). Theoretical perspectives and research methodologies. In D. Gray (Ed.), *Doing Research in the Real World* (pp. 15-38). Sage Publications.

Griffiths, N., James-Nunez, K., Spence, K., Crowle, C., Pettigrew, J., Loughran-Fowlds, A., & Samra, H. A. (2021). The evolution of an interdisciplinary developmental round in a surgical neonatal intensive care unit. *Advances in Neonatal Care (Lippincott Williams & Wilkins)*, 21(1), E2-E10. <https://10.1097/ANC.0000000000000741>

Gröne, O., & Garcia-Barbero, M. (2001). Integrated care: A position paper of the WHO European Office for Integrated Health Care Services. *International Journal of Integrated Care*, 1, e21.

Hall, S. L., Cross, J., Selix, N. W., Patterson, C., Segre, L., Chuffo-Siewert, R., Geller, P. A., & Martin, M. L. (2015). Recommendations for enhancing psychosocial support of NICU

parents through staff education and support. *Journal of Perinatology: Official Journal of the California Perinatal Association*, 35 Suppl 1, S29-S36.

<https://doi.org/10.1038%2Fj.p.2015.147>

Heath, B., Wise Romero, P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, D.C.: SAMHSA-HRSA Center for Integrated Health Solutions. <https://www.pcpcc.org/sites/default/files/resources/SAMHSA-HRSA%202013%20Framework%20for%20Levels%20of%20Integrated%20Healthcare.pdf>

House, S., Wilmoth, M., & Kitzmiller, R. (2022). Relational coordination and staff outcomes among healthcare professionals: A scoping review. *Journal of Interprofessional Care*, 36(6), 891-899. <https://doi.org/10.1080/13561820.2021.1965101>

Karol, R. L. (2014). Team models in neurorehabilitation: Structure, function, and culture change. *NeuroRehabilitation*, 34(4), 655-669. <https://doi.org/10.3233/nre-141080>

Kumar, S., Deshmukh, V., & Adhish, V. S. (2014). Building and leading teams. *Indian Journal of Community Medicine*, 39(4), 208-213. <https://doi.org/10.4103%2F0970-0218.143020>

Lake, E. T., Hallowell, S. G., Kutney-Lee, A., Hatfield, L. A., Guidice, M. D., Boxer, B. A., Ellis, L. N., Verica, L., & Aiken, L. H. (2016). Higher quality of care and patient safety associated with better NICU work environments. *Journal of Nursing Care Quality*, 31(1), 24-32. <https://doi.org/10.1097/ncq.0000000000000146>

Lanham, H. J. (2013). A complexity science perspective of organizational behavior in clinical microsystems. In Sturmberg, J.P. & Martin, C.M. (Ed.), *Handbook of Systems and Complexity in Health* (pp. 715-725). Springer Science.

Larocque, C., Peterson, W. E., Squires, J. E., Mason-Ward, M., Mayhew, K., & Harrison, D. (2021). Family-centred care in the Neonatal Intensive Care Unit: A concept analysis and literature review. *Journal of Neonatal Nursing*, 27(6), 402-411.
<https://doi.org/10.1016/j.jnn.2021.06.014>

March of Dimes. (2021). *2020 March of Dimes U.S. Report Card*. March of Dimes.
<https://www.marchofdimes.org/annual-report-2020>

Melnyk, B. M., Crean, H. F., Feinstein, N. F., & Fairbanks, E. (2008). Maternal anxiety and depression after a premature infant's discharge from the neonatal intensive care unit: explanatory effects of the Creating Opportunities for Parent Empowerment program. *Nursing Research*, 57(6), 383-394.

Meyer, R. M., O'Brien-Pallas, L., Doran, D., Streiner, D., Ferguson-Paré, M., & Duffield, C. (2014). Boundary spanning by nurse managers: effects of managers' characteristics and scope of responsibility on teamwork. *Nursing Leadership (Toronto, Ont.)*, 27(2), 42-55.
<https://10.12927/cjnl.2014.23837>

Milette, I., Martel, M., da Silva, M. R., & Coughlin McNeil, M. (2017). Guidelines for the institutional implementation of developmental neuroprotective care in the NICU. Part B: Recommendations and justification. A joint position statement from the CANN, CAPWHN, NANN, and COINN. *The Canadian Journal of Nursing Research = Revue Canadienne De*

Recherche En Sciences Infirmieres, 49(2), 63-74.

<https://doi.org/10.1177/0844562117708126>

Milette, I., Martel, M., Ribeiro da Silva, M., & Coughlin McNeil, M. (2017). Guidelines for the institutional implementation of developmental neuroprotective care in the neonatal intensive care unit. Part A: Background and rationale. A joint position statement from the CANN, CAPWHN, NANN, and COINN. *The Canadian Journal of Nursing Research = Revue Canadienne De Recherche En Sciences Infirmieres*, 49(2), 46-62.

<https://doi.org/10.1177/0844562117708126>

Milette, I., Martel, M., Ribeiro da Silva, M., & Coughlin, M. (2019). *Guidelines for the Institutional Implementation of Developmental Neuroprotective Care in the NICU: A Joint Position Statement from CANN, CAPWHN, NANN and COINN*. Lippincott Williams & Wilkins. DOI: 10.1097/ANC.0000000000000465

Naef, R., Kläusler-Troxler, M., Ernst, J., Huber, S., Dinten-Schmid, B., Karen, T., & Petry, H. (2020). Translating family systems care into neonatology practice: A mixed method study of practitioners' attitudes, practice skills and implementation experience. *International Journal of Nursing Studies*, 102, N.PAG. <https://doi.org/10.1016/j.ijnurstu.2019.103448>

Nancarrow, S. A., Booth, A., Ariss, S., Smith, T., Enderby, P., & Roots, A. (2013). Ten principles of good interdisciplinary team work. *Human Resources for Health*, 11, 19.

<https://doi.org/10.1186/1478-4491-11-19>

Onwuegbuzie, A. (2002). Why can't we all get along? Towards a framework for unifying research paradigms. *Education*, 122(3), 518.

<https://link.gale.com/apps/doc/A87691062/AONE?u=anon~ea51232c&sid=googleScholar&xid=6b7c1164>

Pineda, R., DeGaetano, S., Kindra, M., Hand, T., Craig, J., Fernandez-Fernandez, A., & Collette, D. (2019). Neonatal therapy: A survey of current practice. *Journal of Pediatric Rehabilitation Medicine*, 12(3), 285-294. <https://doi.org/10.3233/prm-180565>

Pineda, R., Lisle, J., Ferrara, L., Knudsen, K., Kumar, R., & Fernandez-Fernandez, A. (2021 Dec 14). Neonatal therapy staffing in the United States and relationships to neonatal intensive care unit type and location, level of acuity, and population factors. *American Journal of Perinatology*, <https://doi.org/10.1055/a-1678-0002>.

Purdy, E. I., McLean, D., Alexander, C., Scott, M., Donohue, A., Campbell, D., Wullschleger, M., Berkowitz, G., Winearls, J., Henry, D., & Brazil, V. (2020). Doing our work better, together: a relationship-based approach to defining the quality improvement agenda in trauma care. *BMJ Open Quality*, 9(1), e000749. doi: 10.1136/bmjopen-2019-000749.

Robison, L. D. (2003). An organizational guide for an effective developmental program in the NICU. *JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing*, 32(3), 379-386. <https://doi.org/10.1177/0884217503253536>

Ross, K., Heiny, E., Conner, S., Spener, P., & Pineda, R. (2017). Occupational therapy, physical therapy and speech-language pathology in the neonatal intensive care unit: Patterns of therapy usage in a level IV NICU. *Research in Developmental Disabilities*, 64, 108-117. <https://doi.org/10.1016/j.ridd.2017.03.009>

- Schot, E., Tummers, L., & Noordegraaf, M. (2020). Working on working together. A systematic review on how healthcare professionals contribute to interprofessional collaboration. *Journal of Interprofessional Care*, 34(3), 332-342.
<https://doi.org/10.1080/13561820.2019.1636007>
- Sturdivant, C. (2013). A collaborative approach to defining neonatal therapy. *Newborn Infant Nursing Review*, 13(1), 23-26. <https://doi.org/10.1053/j.nainr.2012.12.010>
- Sweeney, J. K., Heriza, C. B., & Blanchard, Y. (2009). Neonatal physical therapy. Part I: Clinical competencies and neonatal intensive care unit clinical training models. *Pediatric Physical Therapy*, 21(4), 296-307. <https://doi.org/10.1097/pep.0b013e3181bf75ee>
- Sweeney JK, Heriza CB, Blanchard Y, Dusing SC. (2010 Spring) Neonatal physical therapy. Part II: Practice frameworks and evidence-based practice guidelines. *Pediatric Physical Therapy*, 22(1), 2-16. doi: 10.1097/PEP.0b013e3181cdba43. Erratum in: *Pediatric Physical Therapy*. 2010 Winter;22(4):377.
- Welch, M. G., Hofer, M. A., Brunelli, S. A., Stark, R. I., Andrews, H. F., Austin, J., & Myers, M. M. (2012). Family nurture intervention (FNI): Methods and treatment protocol of a randomized controlled trial in the NICU. *BMC Pediatrics*, 12(1), 14.
<https://doi.org/10.1186/1471-2431-12-14>
- Yin, R. (2018). *Case study research and applications design and methods* (6th ed.). Sage Publications.

Appendix A: Researcher Reflection

To be transparent about her own beliefs and values, the PI asserts a position and personal value statement that reflects on the personal biases that contribute to this research project.

As a pediatric occupational therapist (OT) who has worked in a variety of settings, I have observed and appreciate the family-centered approach common among my co-workers in educational and healthcare settings. Dedication to families and patients is embedded in goal-writing, in parent and patient interactions, and in workplace policies. Throughout my career, however, I often worked as the only OT among other rehabilitation disciplines and other professions such as educators, nurses, social workers, and physicians. As the only OT on the team, I experienced that my role was either clear or I was limited in expanding my role due to lack of time and adequate strategic knowledge. Early in my career, I had been the only OT in a department that had more than one each of physical therapists and speech-language pathologists. Our department serviced both outpatient and inpatient settings, including the NICU. Once more OTs were hired, and I had more resources to reflect on our patterns of collaboration, I came to believe that our single approach of multi-disciplinary collaboration was not equally effective across these settings.

As I became more knowledgeable of the therapists' role in the NICU through education and experience, I came to believe that our department should consider more collaborative models of practice. I suggested we do a departmental self-reflection and cross train skills, especially in the area of neonatal therapy. I recommended quality improvement projects and sought to provide team-building opportunities for my department. I met resistance on both administrative and interpersonal fronts. It concerned me that despite presenting evidence from conference presentations and literature of

alternate, integrated collaborative care models in other facilities, my peers were hesitant to restructure our model of care. I believe that the professional socialization of myself and my peers, our local context, and differing mental models of professional roles contributed to inefficient integration and collaborative practices. I wondered if my experience was unique. My participation on social media sites related to neonatal therapy topics and networking opportunities during professional instruction engagements demonstrated that neonatal therapy is a diverse but specialized group, and my frustrations and concerns were not isolated.

I believe that neonatal therapists of all professional disciplines ultimately desire to build quality relationships with patients and families. However, professional relationship dynamics are challenging and may not be adequately discussed or role-played in educational programs. I believe that NTs seek strategies for direct interventions and assessment just as often as strategies for how to compare or manage therapy service structures through networking. Learning how other NTs logistically structure their services provides either a way to plan for change or a validation of current practices. I believe that a study that describes a variety of NT experiences and perceptions about integrated collaborative practices will be a helpful first step of developing a research line that supports the needs of NTs to develop better models of care that ultimately support families and infants.

Appendix B: Semi-Structured Interview Questions

- Provide introduction, explain project, and get informed consent for audio recording.

The following questions are about how you communicate and plan care with fellow neonatal therapists

1. Please describe what “integrated collaborative care” means to you as it applies to neonatal therapists.
 - a. If they can answer #1, proceed to Question 2
 - b. If they cannot answer #1, Provide the following prompt and alternate question and skip question #2:

Integrated care describes bringing together key aspects of design and delivery of healthcare systems where healthcare services may be fragmented (Goodwin, 2016). *Collaborative care* implies communication among healthcare professionals and working toward a common goal to deliver care (Boynton, 2016). Another explanation of integrated care is “care “in which there is one treatment plan with behavioral and medical elements” (Blount, 2003). Do you feel like you work within these principles within the NICU setting?

2. Describe what “integrated collaborative care” means to you as it applies to the NICU setting.
3. Does your facility implement an evidence-based integrated collaborative care model such as Family-integrated Care, or NIDCAP?
 - a. Alternately, if they are unfamiliar with these programs: does your facility follow family-centered developmental care principles in the NICU? If so, can you give me some examples of how that is implemented? Then Skip Question 4.
4. Do you feel like you and your co-workers use integrated collaborative care in your workplace? Why or why not?
5. Do you feel like an integrated collaborative care model (or alternately, your strategies to promote family-centered developmental care) benefits patients and families? Why or why not?
6. When a patient receives therapy services from two or more neonatal therapy disciplines (OT, PT, or SLP) tell me about how you ensure a discipline-specific plan of care as neonatal therapists in the same unit.
 - a. Describe any barriers to planning or coordinating care among your neonatal therapist co-workers if two or more disciplines have the same patient on their caseload.
 - b. Describe any aspects of your workplace environment that help you plan or coordinate care with your neonatal therapist co-workers.
 - c. Describe any aspects of your interpersonal relationships with your neonatal therapist co-workers that help you use integrated collaborative care.
7. In what ways do you ensure that your discipline-specific (OT, PT, or SLP) neonatal therapy plan of care for a patient fits into the broader discharge plan of the patient/family?

8. Neonatal therapists share a large knowledge base. Do you feel that professional roles, including your discipline's scope of practice, are clear among your neonatal therapist co-workers? Among other neonatal team members? Why or why not?

The next questions are about how you communicate and plan care with non-neonatal therapist NICU team members who may include physicians, nurses, social workers, family members, etc.

9. Tell me about how you communicate your intervention plans to other neonatal team members.
 - a. How frequent are your communications about patient care with other neonatal team members?
 - b. Describe any aspects of your workplace environment that help you plan or coordinate care with other neonatal team members.
 - c. Describe any aspects of your interpersonal relationships with other neonatal team members that help you use integrated collaborative care.
 - d. Are there meetings, committees, or other policies in place at your worksite that facilitate integration of healthcare services?
10. Do you feel your interventions, plans of care, and recommendations are respected by other neonatal team members? Why or why not?
11. (If not already discussed) How are non-therapy related goals, interventions, and other aspects of a patient's care communicated to you by other neonatal team members?
12. Are there any other details about your workplace you want to discuss related to providing integrated collaborative care?

Appendix C: Case Report 1

Five neonatal therapists from a Level III Neonatal Intensive Care Unit (NICU) in the Eastern United States participated in a research study entitled *Neonatal Therapists' Perceptions of Using Integrated Collaborative Care (ICC)*. The primary investigator (PI) was Sarah Elkington, a PhD candidate from The University of Texas at El Paso, El Paso, Texas. The participating hospital is identified as having between 20-40 NICU beds and serves a mixed population, meaning the hospital serves both adults and children and/or infants. The hospital is considered not-for-profit and is associated with a university medical residency program; however, the presence of residents in the NICU was not specifically addressed in the study. Five of seven therapists working in the NICU participated in the study. Table C.1 outlines the experience and qualifications of the neonatal team.

Table C.1: Experience and Qualifications of Neonatal Therapists in a Level III NICU in the Eastern United States

Discipline*	Full Time Equivalent (FTE)	Years Working in NICU	Total Years as a Licensed Therapist	Specialty Certifications**	Terminal Degree
PT	0.5	8	9		DPT
PT	0.5	13	14	CCI, CNT	MSPT
OT	0.4	7	11		MSOT
SLP	0.5	1	7		MS
SLP	0.5	7	11	CLC	MA
SLP	PRN	2	7		MA
SLP	PRN	10	11	CLC	MA

*Physical Therapist (PT); Occupational Therapist (OT); Speech-language Pathologist (SLP)

**Certified Neonatal Therapist (CNT); Certified Lactation Consultant (CLC); Certified Clinical Instructor (CCI)

Each of the participating neonatal therapists participated in a confidential, individual interview with the PI. Interviews were audio recorded and then transcribed. Transcriptions of individual interviews were provided to each participant to review for accuracy and offer an

opportunity for revisions or to strike comments from data analysis. No revisions were requested; therefore, all therapists’ comments were analyzed through thematic analysis.

The PI used a process of hybrid thematic analysis (Braun & Clarke, 2006; Swain, 2018). Hybrid approaches to thematic analysis have been previously described as a combination of deductive and inductive thematic analysis (Boyatzis, 1998; Fereday & Muir-Cochrane, 2006; Swain, 2018). A hybrid approach described by Swain (2018) outlined three phases and seven stages of thematic analysis for a single set of semi-structured interviews. Swain’s approach was flexible to allow for inductive and deductive data analysis to occur concurrently, was iterative, and was reflexive. Swain defined deductive aspects of thematic analysis as *a priori* codes and inductive aspects of the analysis as *a posteriori* codes. For the current case study research, there was potential for unique deductive thematic conclusions and inductive themes for each case; therefore, the PI adapted Swain’s version of hybrid thematic analysis to become both cyclical for case study and to include oversight by a senior researcher to ensure trustworthiness of the data and an additional source of methodological rigor. Additional details regarding methodology for data analysis can be provided upon request.

Prior to starting the study, the PI identified eight aspects of integrated collaborative care from the literature (Table C.2) that were used for *a priori* coding. These aspects were not provided to participants so as not to influence the participants’ responses. As data analysis started, “Shared workspace/Service Availability” were divided into two separate categories.

Table C.2: Aspects of Integrated Collaborative Care (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014)

Aspect of Integration	Description
Communication processes	The systems or opportunities in place to share information either in electronic, verbal, non-verbal, or written form
Integration among or between settings	The extent to which integration exists among the NICU and immediate hospital setting or between the NICU and non-acute care settings.

Leadership/ organizational structures	The extent to which administrators, managers and other leaders support the NICU through funding, promotions, and allow time for team building activities separate from patient care.
Patient and family experiences/ outcomes	The extent to which patient needs are considered separate issues by individual disciplines or in which all aspects of the patient are considered by all members of the neonatal team. Improved health is determined not just by an absence of a condition but as the overall well-being of the infant/family dyad.
Philosophy	The extent to which the hospital system and/or team emphasizes the treatment of the whole infant/family dyad in the social, environmental, and cultural context of the NICU and recognizes the potential impact of social determinants of health.
Team structures and dynamics	The structure of decision-making processes by specific or all team members, and the inclusion of health disciplines on the team and extent of multi-directional communications among team members.
Shared workspace/ service availability	The extent to which healthcare team members share workspace within the hospital facility or in which they are available for communications and to provide patient care services.

Table C.3 describes statements regarding aspects of ICC identified through thematic analysis. These statements provide insights and characterizing description of how the *a priori* and *a posteriori* coding contributed to the final themes for the current case or team of NTs. These statements and the final themes described below are presented to the participants to review for member checking. Member checking is a process through which qualitative researchers can establish trustworthiness and integrity of the data by presenting interpretations and themes to participants (Creswell & Poth, 2018). Research participants can provide feedback and/or validation of the statements and themes presented to the researcher. If there are discrepancies, the researcher can review suggestions and revise the conclusions prior to research dissemination. The statements and themes from this case will be analyzed across the remaining cases of neonatal therapists who participated in the study to draw overall conclusions. Those overall conclusions will be disseminated in a manuscript submitted for publishing and conference presentations. The individual case reports from each team will remain confidential among each team, the PI, and the PI's faculty mentors overseeing the research project.

Table C.3: Aspects of Integrated Collaborative Care in a Level III NICU in the Eastern United States

<p>COMMUNICATION PROCESSES- Strategies employed to communicate to co-workers included: Verbal communication at bedside Verbal communication away from bedside Group discussion during meetings Texts Phone calls Email Electronic health record documentation</p>	<ol style="list-style-type: none"> 1. Communication strategies used by NTs are context-driven by audience within the NICU team, discipline specific jargon, and purpose 2. Effectiveness of message delivery depends on specificity of questions, using common language or jargon, attitudes, and a respectful approach of each party 3. Frequency of communication supports critical thinking which allows for flexibility in patient care in real time 4. Verbal communication for debriefing, rounding, or to review patient information is valuable for care planning, promotes safety, and may reinforce employee motivation at the cost of productivity demands 5. Discussing patient care scenarios with certified neonatal therapists (CNTs) or those studying for certification breeds trust and respect, and supports patient care by allowing a safe space to be vulnerable among NT colleagues
<p>COVID IMPACT</p>	<p>The COVID-19 pandemic influenced ICC in direct and indirect patient care opportunities</p>
<p>CROSS-DISCIPLINE EDUCATION</p>	<ol style="list-style-type: none"> 1. Committee participation facilitates relationship building and awareness of NT knowledge and skill base 2. Teachable moments with non-NT staff at bedside facilitates meaningful conversations and relationship building which increases seeking out NTs for service availability 3. Formal presentations are infrequent but also a less preferred way to educate on NT roles and abilities
<p>INTEGRATION AMONG OR BETWEEN SETTINGS</p>	<ol style="list-style-type: none"> 1. Integration among settings is often due to service availability contracts for specialty services (e.g., radiology) 2. Integration between settings is limited by financial and/or employer restrictions (e.g., follow-up clinic)
<p>LEADERSHIP/ORGANIZATIONAL STRUCTURES</p>	<p>NT driven initiatives are often routed through multiple levels of management: rehab, nursing, and physicians</p>
<p>MANAGEMENT INTERACTIONS</p>	<ol style="list-style-type: none"> 1. NTs must advocate and justify their approach and hours in the NICU despite supportive rehab managers in a mixed population hospital due to an

	<p>intermediate understanding of the nature of neonatal therapy</p> <ol style="list-style-type: none"> Adult therapy visits are prioritized over NICU; there are no weekend coverage expectations for NICU
PATIENT AND FAMILY EXPERIENCES/OUTCOMES	<ol style="list-style-type: none"> Co-treatments among NTs supports infant stability, facilitates NT collaboration, and assists meeting NT productivity demands Bedside modeling and coaching is a preferred form of parent education Having common resources among disciplines facilitates consistent message delivery Repeated delivery of a common message is perceived to emphasize its importance to parents
PHILOSOPHY	<ol style="list-style-type: none"> NTs perceive that the NICU goal is empowering parents to be confident and independent with caregiving prior to discharge which is supported starting at infant delivery. Performance improvement in areas of patient/family-centered care is a shared priority across disciplines. NTs are ambitious and have autonomy to pursue their NICU related interests that have a patient/family-centered focus. There is a perceived need for a cultural shift that NTs play an essential role in the NICU, particularly for feeding and which can be facilitated with intentional language usage and respectful bidirectional communication.
RELATIONSHIPS	<ol style="list-style-type: none"> Relationships are built over time while being in the same place at the same time in the NICU both at and away from the bedside. Dismissive responses to NT recommendations or comments decreases the perception of being a valued member of the team. Effective communication strategies take effort depending on individual personalities and attitudes. Welcoming attitudes create a sense of safety and a learning environment. Time spent working together builds understanding of communication styles and facilitates more meaningful exchanges. Time leads to relationships of trust and reliability which leads to more equally shared decision-making.

	<p>7. Empathy for the daily patient care challenges of nurses (or other team members) can facilitate communication strategies such as approach and language choices.</p> <p>8. Spending time on the unit away from bedside allows opportunities for empathy with non-NT co-workers.</p>
<p>SHARED WORKSPACE</p>	<p>1. NICU space is open which facilitates ease and frequency of communication, and visibility of NTs for service availability.</p> <p>2. NT office is a safe landing space for planning and coordination.</p>
<p>SERVICE AVAILABILITY</p>	<p>NT service availability, or lack thereof, has both ideal and non-ideal consequences.</p> <p>Non-Ideal</p> <ul style="list-style-type: none"> • Less OT coverage than other disciplines impacts how NTs schedule visits, and the participation of OT in committees or indirect activities; however, OT coverage is less than other disciplines through whole hospital. • NT skill specialization helps justify FTEs of each discipline (rather than unit wide goal for ICC or recognition that each discipline has a unique lens to bring). • Parent education is prioritized and considered with scheduling direct visits, potentially taking away other NT intervention opportunities. <p>Ideal</p> <ul style="list-style-type: none"> • Increased time on unit facilitates relationship building with nurses and physicians, which has led to increased referrals, which then increases demand for more time in the unit.
<p>TEAM STRUCTURES AND DYNAMICS- There is evidence of shared-decision making in place and multi-directional communications among team members</p>	<p>1. NTs value intervention roles or “lanes” that were explicitly discussed and decided upon to facilitate FTE justification; OT does sensory, infant massage and ADLs with parents; PT works on positioning, strengthening, and head shaping; SLP predominantly works on feeding.</p> <p>2. When parent education is delivered with or repeated by other disciplines, the message to parent is effective but leaves NTs feeling they are perceived as unequal to nursing or physicians as an authority to deliver the message.</p> <p>3. Physicians’ acceptance of NT recommendations for shared decision making varies among</p>

	<p>providers, especially when relationships with NTs are not established.</p> <ol style="list-style-type: none"> 4. Feeding ability is a large determinant for discharge readiness, and a focus of both communication and conflict among disciplines. 5. SLPs are identified as the primary NT discipline addressing feeding, which may make them be perceived as more integrated because of the centrality of feeding to infant discharge.
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Five predominant themes emerged from the data.

Unit-wide Commitment to Ongoing Performance Improvement

The NTs who work in this NICU share a unit-wide commitment to performance improvement as evidenced by the many committees and initiatives in place. NTs have autonomy to bring new ideas for therapy-driven performance improvement initiatives, however, must present those ideas to departmental management from rehabilitation, nursing, and physicians. NTs primarily seek out committee participation that match their therapeutic roles and interests but are also asked to participate.

Family and Patient-centered Care

Committees and groups with which the NTs participate have a patient and family-centered commitment. The NTs each perceive a responsibility to adequately educate and prepare parents to care for their infant during their hospital stay and after discharge. Additionally, the NTs will reinforce teaching from other NT disciplines as needed, sharing a neonatal therapy lens. At times, the NTs advocate on behalf of parents or in cooperation with parents to maximize the parents' time and participation with their infant.

Dedicated NICU Time for Neonatal Therapists is Valuable Beyond Billable Productivity

The team of NTs who work at this Level III NICU are respectful of each other and value each other's roles and responsibilities. There is frequent opportunities to share information among the NTs for care coordination before patient care, during patient care, and between care times. The NTs share a desire for ongoing advocacy for increased availability in the NICU. The NTs also recognize the relationship between facetime with NICU staff and relationship building which translates into trust and respect. Additionally, the time spent among fellow NTs maintains positive working relationships by affording a safe space to learn from each other, express frustrations, and brainstorm and develop new ideas. NTs perceive these relationship building opportunities to be value-added time even though they are not billable productive units which is how productivity is traditionally measured by rehabilitation managers.

NTs Respect Each Other's Lanes While Sharing a Common Neonatal Lens

The NTs discretely defined their therapy discipline roles or "lanes" at a previous point in time. OT addresses sensory regulation, infant massage, and ADLs with parents; PT works on positioning, strengthening, and head shaping; SLP predominantly works on feeding. NTs value their unique roles because it helps justify their hours and presence in the NICU. However, there is also a sense of a shared neonatal lens which reflects the overlap of background knowledge required for working in this advanced setting. This neonatal lens is fostered through sharing information with each other for problem-solving, co-treatments, and participation in continuing education activities such as studying for the CNT exam. There is strong comradery among the NTs.

Relationships Make or Break Integrated Collaborative Care

Sharing space and being available in a predictable manner has helped to build trust and understanding among NTs and other NICU staff, especially nurses. However, trust and respect are

also dependent on the language and approach to communication between NTs and nurses. Empathy with nurses' experiences and work demands facilitates mutual respect and interpersonal communication. Several barriers to integrating care on the unit were mentioned by all participants. Individual attitudes or personalities of non-NT co-workers were perceived as being resistant to change, not understanding NTs' roles in the plan of care, or not trusting the recommendations or information presented by the NTs. Relationships are fostered by spending time at bedside with nurses, modeling intervention strategies or education with parents in the presence of nurses or physicians, attending performance improvement meetings, and having side conversations related or unrelated to patient care topics. In the mindset of performance improvement, NTs express willingness to put ongoing effort into developing relationships with non-NT coworkers for the sake of meeting patient and family care needs to prepare those families for a safe discharge from the hospital.

References

- Blount, A. (2003). Integrated primary care: Organizing the evidence. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 21(2), 121-133. doi: 10.1037/1091-7527.21.2.121
- Boon, H., Verhoef, M., O'Hara, D., & Findlay, B. (2004). From parallel practice to integrative health care: A conceptual framework. *BioMed Central*.(4)1.
- Boyatzis, R. E. (1998). *Transforming Qualitative Information*. Sage Publications.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>

Creswell, J. & Poth, C. (2018). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (4th Edition ed.). Sage Publications.

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92. <https://doi.org/10.1177/160940690600500107>

Heath, B., Wise Romero, P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, D.C.: SAMHSA-HRSA Center for Integrated Health Solutions. <https://www.pcpsc.org/sites/default/files/resources/SAMHSA-HRSA%202013%20Framework%20for%20Levels%20of%20Integrated%20Healthcare.pdf>

Karol, R. L. (2014). Team models in neurorehabilitation: Structure, function, and culture change. *NeuroRehabilitation*, 34(4), 655-669. <https://doi.org/10.3233/nre-141080>

Swain, J. (2018). *A hybrid approach to thematic analysis in qualitative research : using a practical example*. SAGE Publications Ltd.

Appendix D: Case Report 2

Three neonatal therapists from a Level III Neonatal Intensive Care Unit (NICU) in the Northern Midwest region of the United States participated in a research study entitled *Neonatal Therapists' Perceptions of Using Integrated Collaborative Care (ICC)*. The primary investigator (PI) was Sarah Elkington, a PhD candidate from The University of Texas at El Paso, El Paso, Texas. The participating hospital is identified as having between 20-40 NICU beds and serves a mixed population, meaning the hospital serves both adults and children and/or infants. The hospital is considered not-for-profit and is associated with a university medical residency program; however, the presence of residents in the NICU was not specifically addressed in the study. Three of the four therapists working in the NICU participated in the study. Table D.1 outlines the experience and qualifications of the neonatal team.

Table D.1: Experience and Qualifications of Neonatal Therapists in a Level III NICU in the Eastern United States

Discipline*	Full Time Equivalent (FTE)	Years Working in NICU	Total Years as a Licensed Therapist	Specialty Certifications**	Terminal Degree
SLP	0.5	3	10		MS, CCC
OT	0.75	7	9	CNT, NTMTC	MSOT
PT	0.75	6	10	NTMTC	DPT
OT	PRN	26	34	CLC, CNT	BS

*Physical Therapist (PT); Occupational Therapist (OT); Speech-Language Pathologist (SLP)

**Neonatal Touch and Massage Therapist Certification (NTMTC); Certified Lactation Consultant (CLC); Certified Neonatal Therapist (CNT)

Each of the participating neonatal therapists participated in a confidential, individual interview with the PI. Interviews were audio recorded and then transcribed. Transcriptions of individual interviews were provided to each participant to review for accuracy and offer an opportunity for revisions or to strike comments from data analysis. No revisions were requested; therefore, all therapists' comments were analyzed through thematic analysis.

The PI used a process of hybrid thematic analysis (Braun & Clarke, 2006; Swain, 2018). Hybrid approaches to thematic analysis have been previously described as a combination of deductive and inductive thematic analysis (Boyatzis, 1998; Fereday & Muir-Cochrane, 2006; Swain, 2018). A hybrid approach described by Swain (2018) outlined three phases and seven stages of thematic analysis for a single set of semi-structured interviews. Swain’s approach was flexible to allow for inductive and deductive data analysis to occur concurrently, was iterative, and was reflexive. Swain defined deductive aspects of thematic analysis as *a priori* codes and inductive aspects of the analysis as *a posteriori* codes. For the current case study research, there was potential for unique deductive thematic conclusions and inductive themes for each case; therefore, the PI adapted Swain’s version of hybrid thematic analysis to become both cyclical for case study and to include oversight by a senior researcher to ensure trustworthiness of the data and an additional source of methodological rigor. Additional details regarding methodology for data analysis can be provided upon request.

Prior to starting the study, the PI identified eight aspects of integrated collaborative care from the literature (Table D.2) that were used for *a priori* coding. These aspects were not provided to participants so as not to influence the participants’ responses. As data analysis started, “Shared workspace/Service Availability” were divided into two separate categories.

Table D.2: Aspects of Integrated Collaborative Care (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014)

Aspect of Integration	Description
Communication processes	The systems or opportunities in place to share information either in electronic, verbal, non-verbal, or written form
Integration among or between settings	The extent to which integration exists among the NICU and immediate hospital setting or between the NICU and non-acute care settings.
Leadership/organizational structures	The extent to which administrators, managers and other leaders support the NICU through funding, promotions, and allow time for team building activities separate from patient care.

Patient and family experiences/ outcomes	The extent to which patient needs are considered separate issues by individual disciplines or in which all aspects of the patient are considered by all members of the neonatal team. Improved health is determined not just by an absence of a condition but as the overall well-being of the infant/family dyad.
Philosophy	The extent to which the hospital system and/or team emphasizes the treatment of the whole infant/family dyad in the social, environmental, and cultural context of the NICU and recognizes the potential impact of social determinants of health.
Team structures and dynamics	The structure of decision-making processes by specific or all team members, and the inclusion of health disciplines on the team and extent of multi-directional communications among team members.
Shared workspace/ service availability	The extent to which healthcare team members share workspace within the hospital facility or in which they are available for communications and to provide patient care services.

Table D.3 describes statements regarding aspects of ICC identified through thematic analysis. These statements provide insights and characterizing description of how the *a priori* and *a posteriori* coding contributed to the final themes for the current case (or team of NTs). These statements and the final themes described below are presented to the participants to review for member checking. Member checking is a process through which qualitative researchers can establish trustworthiness and integrity of the data by presenting interpretations and themes to participants (Creswell & Poth, 2018). Research participants can provide feedback and/or validation of the statements and themes presented to the researcher. If there are discrepancies, the researcher can review suggestions and revise the conclusions prior to research dissemination. The statements and themes from this case will be analyzed across the remaining teams of NTs who participated in the study to draw overall conclusions. Those overall conclusions will be disseminated in a manuscript submitted for publishing and conference presentations.

Table D.3: Aspects of Integrated Collaborative Care in a Level III NICU in the Eastern United States

COMMUNICATION PROCESSES- Strategies employed to communicate to co-workers included: <ul style="list-style-type: none"> • Verbal bedside communication 	1. Intentional collaborative work with leadership when the Epic documentation system was introduced maximized Epic’s usefulness as a tool for integration; the Epic documentation system
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<ul style="list-style-type: none"> • Verbal communication away from bedside • Group discussion during meetings • Texts • Phone calls • Email • Electronic health record documentation • White boards • Bedside cards • Staff bulletin boards 	<p>aids NTs to plan, justify, track, communicate, remind, and coordinate aspects of NT services.</p> <ol style="list-style-type: none"> 2. Continuity of care both among NTs and the greater NICU team is facilitated with multiple methods of communication to address both day-to-day operations (among NTs and the greater NICU team) as well as subtle cross-discipline education. 3. There is an unspoken understanding among NTs that recommendations for education and visits will be respected among NTs
<p>COVID IMPACT</p>	<p>The COVID-19 pandemic negatively impacted integrated collaborative care efforts for both families and staff; family education was more difficult to schedule, and performance improvement efforts were stalled due to limited in-person meetings.</p>
<p>CROSS-DISCIPLINE EDUCATION</p>	<p>There is a perceived need to provide ongoing education regarding the benefits of developmental care and how NTs facilitate a developmental care approach.</p>
<p>INTEGRATION AMONG OR BETWEEN SETTINGS</p>	<p>Integration between the NICU and follow-up clinic is limited to a cursory handoff between a NICU therapist and follow-up clinic therapist.</p>
<p>LEADERSHIP/ORGANIZATIONAL STRUCTURES</p>	<p>Leadership made efforts to increase integration between NICU and the follow-up clinic through GMA training; however, due to financing barriers, the return on investment has been limited.</p>
<p>MANAGEMENT INTERACTIONS</p>	<ol style="list-style-type: none"> 1. Management wants to be, and has been supportive, but there is a perceived lack of understanding that NICU care looks different than care for adults (e.g., slower pace, preventative vs. rehabilitative, limited availability for “hands-on” time). 2. NTs perceive that adult therapy services are prioritized over NICU services and that the NTs’ efforts to gain knowledge and specialize to work in the NICU are undervalued. 3. There is a curiosity but under-awareness among non-NICU staff regarding neonatal therapy, requiring frequent explanation by NTs.
<p>NICU vs. ADULT SERVICES</p>	<ol style="list-style-type: none"> 1. The NTs share a pride regarding their efforts to educate themselves to be more knowledgeable about NTs’ role in the NICU and intervention strategies.

	<ol style="list-style-type: none"> 2. NTs perceive adult rehab services require a different mentality and pace than NICU services, which block scheduling accommodates. 3. Therapeutic relationships with nursing or families require more time investment to build trust in the NICU than working with adults. 4. NTs have an increased and ongoing role in decision-making in the NICU which contrasts with short term care and discharge planning in adult acute care. 5. SLPs have an established role and expertise in adults (e.g., determine feeding orders and recommendations) that is not as recognized or practical in NICU.
<p>PATIENT AND FAMILY EXPERIENCES/OUTCOMES</p>	<ol style="list-style-type: none"> 1. NTs emphasize the importance of providing consistent and repetitive parent education relevant to in-patient needs as well as preparing parents for discharge. 2. NTs strive to include parents in shared decision-making and advocate for their success with caregiving both during the stay and after discharge through ensuring follow-up clinic appointments are scheduled.
<p>PHILOSOPHY</p>	<p>The NICU uses a general family-centered developmental care model.</p>
<p>RELATIONSHIPS</p>	<ol style="list-style-type: none"> 1. Medical providers have been supportive and advocated for inclusion of therapists since they were first introduced to NICU. 2. Interpersonal relationships among the NTs extends beyond work hours which reinforces respect and trust in the workplace. 3. NTs share a sense of comradery and solidarity that they are building their neonatal therapy program as a cohesive team, together. 4. One NT serves as a natural conflict mediator as the NT team evolves. 5. Dependability, consistency, and predictability over time build trust between the NTs and nurses. 6. Having alternating schedules enhances the opportunities for shared problem solving with nursing staff because other NTs are not present in the moment. 7. “Reading the room” and helping with non-therapeutic tasks build rapport with nurses. 8. There is a general mutual comfort among nurses and therapists to approach each other with

	<p>information or task needs; being respectful of each other’s input builds rapport.</p> <p>9. Individual personalities or attitudes may act as barriers to NTs providing daily care, but these are exceptions rather than the norm.</p> <p>10. NTs use an indirect approach to performance improvement initiatives by bringing ideas to key nursing staff to introduce to committees because it has been more successful.</p> <p>11. 11. NTs are still working on relationships to get a true seat at the table for committee work and performance improvement initiatives.</p>
<p>SHARED WORKSPACE</p>	<p>The small square-footage space of the NICU facilitates visibility and in-person communication among staff members.</p>
<p>SERVICE AVAILABILITY</p>	<ol style="list-style-type: none"> 1. Nurses advocated for more predictable therapy presence and to not overwhelm families with visits from multiple disciplines on the same day. 2. There is no weekend coverage, but NTs are willing to be available via text as needed. 3. As NTs became more knowledgeable, they successfully advocated for more referrals and built their caseload and presence. 4. Therapy has been available since 2015 but started feeling more integrated to the team since about 2 years ago, when block scheduling started, Epic was introduced, and the NTs redefined among themselves what their roles and goals were as a group after attending the IGNITE program. 5. Block scheduling (alternating days therapy disciplines are available and dedicated to the NICU) has benefitted the NICU in multiple ways: <ul style="list-style-type: none"> • has decreased “out of sight, out of mind” phenomenon; nurses approach therapists for services more frequently with increased physical presence, which has facilitated relationship building with nurses. • affords each discipline to have a presence on the unit and represent the neonatal therapy team rather than acting as an individual discipline • prevents overwhelming the staff and families of a small bed capacity unit with multiple disciplines at each bedside on any one day.

<p>TEAM STRUCTURES AND DYNAMICS- There is evidence of shared-decision making in place and multi-directional communications among team members</p>	<ol style="list-style-type: none"> 1. Role delineations were established when all three disciplines invited to work in NICU and are still maintained; PT covers ROM, tone, orthopedic issues, and head shaping; OT covers sensory related interventions, bathing, pre-feeding strategies and covers feeding as needed; SLP covers feeding assessment and recommendations. 2. There is an interdisciplinary and supportive approach to parent education where the NTs will reinforce components from another discipline as needed. 3. There is less clarity among the nursing staff between OT and PT roles; Nursing distinguishes roles of NTs as “feeding” or “playing” 4. Bringing on a new hire with different experience has required a re-examination of roles, disciplinary boundaries, and training needs. 5. Nurses have been able to provide feedback regarding how to acclimate and incorporate differing skill sets from feeding experts of different disciplines.
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Five predominant themes emerged from the data.

Neonatal Therapy is Different from Adult Therapy and Should be Recognized as such

While there has been a gradual increase in neonatal therapy services over the years, the NTs perceive that there is a lack of thorough understanding from the rehabilitation manager regarding the practice patterns and requirements needed to effectively work in the NICU. Relationship building and maintenance with both nurses and families is elemental. Relationships with nurses are facilitated by a predictable presence on the unit. Trust and rapport with parents is developed through ongoing education with parents throughout their hospital stay. In the NICU, therapists have a collaborative voice in shared decision-making throughout an infant’s stay with both nurses and physicians. This level of shared decision-making contrasts with a perceived confirmation of discharge recommendations made by physicians for adults who have relatively short hospital stays. Being asked to cover adults during the week, or for weekend shifts, requires

a change in mental planning away from neonatal therapy that can feel draining. NTs have dedicated significant effort and time to develop their NICU expertise and for building a therapy presence in the NICU. While it is perceived that these efforts have been supported by management, NTs are still asked to cover adults to meet the departmental needs; the NTs would prefer to cover adults less.

Instrumental Scheduling and Communication

The unit in which the NTs work is small, with just over 20 beds. Nurses had previously expressed their perception that due to a low patient pool, having multiple therapies working on the unit on the same day could overwhelm patients and families. Block scheduling, which is understood to mean that therapists of each discipline have dedicated hours and days they work in the NICU, was introduced, and has had many benefits. Block scheduling affords the OT, PT and SLP to contribute their discipline's unique lens to the small NICU's culture and practice. Additionally, by having only one neonatal therapy discipline available each day, there is ample opportunity for relationship building between the nurses and each therapist. This has consequently encouraged more inquisition and problem solving among the nurses and therapists that might otherwise have been limited to only the NTs. Because the NTs do not share regular in-person time within the NICU, however, effective handoff communication regarding education for parents or patient progress is required. The use of a shared Microsoft Teams document and features of the Epic documentation system allow the therapists to communicate patient progress and upcoming patient care, or education needs to other NTs. The specificity of the information shared and consistency with which the Microsoft Teams document is updated have also contributed to a team approach to therapy. Each discipline is aware of what the other disciplines have done, what they are working toward, and reinforce those efforts as opportunities allow in the unit on their blocked

day. Thus, block scheduling and the necessity to provide an effective handoff between therapists, has led to a perceived sense of a team approach rather than a focus on individual discipline plans of care.

Change in Team Composition Challenges Established Team Dynamics

Recent hiring of a NT has challenged the status quo of how the existing NTs delineate their roles in the NICU. The NTs value the feeding expertise the new hire brings to the team. However, feeding has historically been addressed primarily by the SLP on the team. Training and acclimating the new hire to using her feeding expertise as a secondary, rather than primary, role in the NICU setting has necessitated training, re-examination of role delineations of each discipline, and some conflict resolution among the NTs. Nurses have also been involved in the process of identifying the root problems and potential solutions for welcoming and incorporating the newly hired NT to ensure a return to team harmony.

NTs are Still Seeking a Seat at the Table for Unit-wide Influence

NTs perceive significant progress toward having an established presence, or visibility, within the NICU over the past few years. Day-to-day relationships with nurses and/or physicians for direct patient care are professional and amiable. Additionally, the NTs' knowledge and expertise regarding developmental care and neonatal therapy have expanded. However, as NTs have attended committees, there is a perceived sense of irrelevance of the NTs to discussions stemming from other staff participants. NTs ideas are therefore presented to the unit predominantly indirectly, through key nursing staff who share a passion for developmental care topics. There is hope that through a position change of title and responsibilities of one of the NTs, NTs will have a more direct voice in developmental care efforts within the unit's policies and practices.

Epic Documentation System Facilitates Integrated Collaborative Care

The Epic documentation system was introduced approximately 2 years ago. There were intentional efforts to reexamine the approach to assessment, goal writing, and other record keeping on behalf of the therapists. NTs were involved in the process to restructure their documentation patterns. As a result of the restructuring, there are customized, evidence-based, and intentional components within the documentation system that serve to justify or explain interventions and/or follow-up referrals as well as document progress toward meeting a plan of care and goals. Additionally, there are features of the Epic program that facilitate communication between staff members that are not part of a patient's electronic health record. These features are convenient, HIPAA compliant, and conserve time.

References

- Blount, A. (2003). Integrated primary care: Organizing the evidence. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 21(2), 121-133. [doi: 10.1037/1091-7527.21.2.121](https://doi.org/10.1037/1091-7527.21.2.121)
- Boon, H., Verhoef, M., O'Hara, D., & Findlay, B. (2004). From parallel practice to integrative health care: A conceptual framework. *BioMed Central*.(4)1.
- Boyatzis, R. E. (1998). *Transforming Qualitative Information*. Sage Publications.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Creswell, J. & Poth, C. (2018). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (4th Edition ed.). Sage Publications.

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92 <https://doi.org/10.1177/160940690600500107>

Heath, B., Wise Romero, P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, D.C.: SAMHSA-HRSA Center for Integrated Health Solutions. <https://NA> <https://www.pcpcc.org/sites/default/files/resources/SAMHSA-HRSA%202013%20Framework%20for%20Levels%20of%20Integrated%20Healthcare.pdf>

Karol, R. L. (2014). Team models in neurorehabilitation: Structure, function, and culture change. *NeuroRehabilitation*, 34(4), 655-669. <https://doi.org/10.3233/nre-141080>

Swain, J. (2018). *A hybrid approach to thematic analysis in qualitative research : using a practical example*. SAGE Publications Ltd.

Appendix E: Case Report 3

Three neonatal therapists from a Level III Neonatal Intensive Care Unit (NICU) in the Southwestern United States participated in a research study entitled, *Neonatal Therapists' Perceptions of Using Integrated Collaborative Care*. The primary investigator (PI) was Sarah Elkington, a PhD candidate from The University of Texas at El Paso, El Paso, TX. The participating hospital is identified as having between 20-40 beds and serves a mixed population, meaning the hospital serves both adults and children and/or infants. The hospital is considered not-for-profit and is not associated with a university medical residency program. All three therapists associated with the NICU participated in the study. Recently, a fourth therapist resigned. Furthermore, one of the participating therapists had put in for resignation shortly before participating in the study. Table E.1 outlines the experience and qualifications of the neonatal team.

Table E.1: Experience and Qualifications of Neonatal Therapists in a Level III NICU in the Southwestern United States

Discipline*	Full Time Equivalent (FTE)	Years working in NICU	Total Years as a licensed therapist	Specialty Certifications**	Terminal Degree
SLP	1.0	6	10	BCSS, CNT, IBCLC, NTMTC	MS
OT	0.6	15	26	CNT	BS
PT	1.0	6	38	NTMTC	BS

*Physical Therapist (PT); Occupational Therapist (OT); Speech-language Pathologist (SLP)

** Board Certified Specialist in Swallowing Disorders (BCSS); Certified Neonatal Therapist (CNT); International Board-Certified Lactation Consultant (IBCLC); Neonatal Touch and Massage Therapist Certification (NTMTC)

Each of the participating neonatal therapists participated in a confidential, individual interview with the PI. Interviews were audio recorded and then transcribed. Transcriptions of individual interviews were provided to each participant to review for accuracy and offer an

opportunity for revisions or to strike comments from data analysis. No revisions were requested; therefore, all therapists’ comments were analyzed through thematic analysis.

The PI used a process of hybrid thematic analysis (Braun & Clarke, 2006; Swain, 2018). Hybrid approaches to thematic analysis have been previously described as a combination of deductive and inductive thematic analysis (Boyatzis, 1998; Fereday & Muir-Cochrane, 2006; Swain, 2018). A hybrid approach described by Swain (2018) outlined three phases and seven total stages of thematic analysis for a single set of semi-structured interviews. Swain’s approach was flexible to allow for inductive and deductive data analysis to occur concurrently, was iterative, and was reflexive. Swain defined deductive aspects of thematic analysis as *a priori* codes and inductive aspects of the analysis as *a posteriori* codes. For the current case study research, there was potential for unique deductive thematic conclusions and inductive themes for each case, therefore the PI adapted Swain’s version of hybrid thematic analysis to become both cyclical for case study and to include oversight by a senior researcher to ensure trustworthiness of the data and an additional source of methodological rigor. Additional details regarding methodology for data analysis can be provided upon request.

Prior to starting the study, the PI identified eight aspects of integrated collaborative care from the literature (Table E.2) that were used for *a priori* coding. These aspects were not provided to participants so as not to influence the participants’ responses. During thematic analysis, subthemes were identified under each aspect as well as some new themes.

Table E.2: Aspects of Integrated Collaborative Care (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014)

Aspect of Integration	Description
Philosophy	The extent to which the hospital system and/or team emphasizes the treatment of the whole infant/family dyad in the social, environmental, and cultural context of the NICU and recognizes the potential impact of social determinants of health.

Team structures and dynamics	The structure of decision-making processes by specific or all team members, and the inclusion of health disciplines on the team and extent of multi-directional communications among team members.
Communication processes	The systems or opportunities in place to share information either in electronic, verbal, non-verbal, or written form
Shared workspace/ service availability	The extent to which healthcare team members share workspace within the hospital facility or in which they are available for communications and to provide patient care services.
Patient and family experiences/ outcomes	The extent to which patient needs are considered separate issues by individual disciplines or in which all aspects of the patient are considered by all members of the neonatal team. Improved health is determined not just by an absence of a condition but as the overall well-being of the infant/family dyad.
Leadership/ organizational structures	The extent to which administrators, managers and other leaders support the NICU through funding, promotions, and allow time for team building activities separate from patient care.
Integration among or between settings	The extent to which integration exists among the NICU and immediate hospital setting or between the NICU and non-acute care settings.

Table E.3 describes all themes and subthemes identified through thematic analysis. These themes are presented to the participants to review for member checking. Member checking is a process through which qualitative researchers can establish trustworthiness and integrity of the data by presenting interpretations and themes to participants (Creswell & Poth, 2018). Research participants can provide feedback and/or validation of the themes presented to the researcher. If there are discrepancies, the researcher can review suggestions and revise the conclusions prior to research dissemination. The themes and subthemes from this case will be analyzed across the remaining cases of neonatal therapists who participated in the study to draw overall conclusions. Those overall conclusions will be disseminated in a manuscript submitted for publishing or conference presentations.

Table E.3: Themes and Subthemes from a Level III NICU in the Southwestern United States

<p>COMMUNICATION PROCESSES- Strategies employed to communicate to co-workers included:</p> <ul style="list-style-type: none"> • Verbal communication at bedside • Vocera messages • Post-it notes • Emails • Whiteboards • Group huddles • Routine committee meetings 	<ol style="list-style-type: none"> 1. Without intentional efforts to communicate recommendations and observations to the greater NICU team, there is a risk that NTs may be viewed as guests rather than teammates. 2. Vocera messaging receivers are helpful to communicate verbal notes among NICU staff. 3. There is frequent communication between NICU staff and NTs both at, and away from bedside using multiple strategies.
<p>COVID IMPACT</p>	<ol style="list-style-type: none"> 1. The COVID-19 pandemic required NTs to have more flexibility to provide routine infant care rather than more skilled interventions due to nursing shortages. 2. Process improvement practices were stalled during the height of the COVID pandemic. 3. Strategies to help parents engage and get support from each other decreased during COVID due to limited visitation policies. 4. Limited parent visitation policy also limited the number of interactions NTs had with parents.
<p>CROSS-DISCIPLINE EDUCATION</p>	<ol style="list-style-type: none"> 1. Since it was initiated about 2 years ago, MOD training, has been effective in training new hire nurses about developmental care facilitating NT-nurse relationships. 2. MOD trained nurses have bridged perceived knowledge gaps and acceptance gaps towards developmental care and NTs respectively; newer hires are modeling and sharing developmental care awareness to more seasoned nurses. 3. Bedside explanations and demonstration is effective in building nurses' understanding of NT interventions and critical reasoning. 4. NTs share their education experiences with each other which influences courses that the whole team eventually takes to increase shared team knowledge.
<p>FEEDING IS A TOPIC OF DISCUSSION AND CONFLICT</p>	<ol style="list-style-type: none"> 1. A feeding competency policy that allows others (e.g., nursing students) to feed infants but not the OT or PT, is perceived as limiting OT and PT practice and undermines respect and trust between NTs and nurses.

	<ol style="list-style-type: none"> The SLP is in a position to control feeding orders, recommendations and advancements in feeding progress, (e.g., setting up infant feeding orders, policies, and recommendations with medical providers) that inhibits nursing autonomy to advance feedings when the SLP is not available.
<p>EVOLUTON OF NEONATAL SERVICES</p>	<ol style="list-style-type: none"> The rehab manager prompted the first referral to the NICU which was a joint venture among the therapists with no NICU experience. Limited NT services were available since 2009. As therapists educated themselves they advocated for increased coverage in the NICU, but targeted physicians and NNPs first. There has been a history of poor acceptance of NT services from nursing staff which may or may not have contributed to NT staff turnover. OT and PTs reported to a different manager than SLPs for a time; support and progress of NT education and expertise development was leader specific and fragmented between OT and PT, and SLP services. Rehab leadership has now been consolidated however NT work habits are still adjusting. NTs who transferred from other hospital system sites found different expectations, procedures, policies, and cultures between NICUS.
<p>INTEGRATION AMONG OR BETWEEN SETTINGS</p>	<p>Post-partum nurses will request SLP/ Lactation services and welcomes those services for late preterm infants with feeding concerns who don't qualify for NICU.</p>
<p>LEADERSHIP/ORGANIZATIONAL STRUCTURES</p>	<ol style="list-style-type: none"> Rehab leadership supports NTs, but NTs perceive there is still a lack of full understanding of neonatal therapy. NTs perceive a lack of authenticity from nursing leadership regarding issues between NTs and nurses, leaving NTs with a sense of poor trust in nursing leadership to resolve concerns. NTs perceive that NICU nursing leadership does not hold nurses accountable for their contributions to issues between nurses and other NICU staff (e.g., NTs and physicians). There is a hierarchy that exists with hospital administration being at the top due to having contracted neonatal providers.
<p>PATIENT AND FAMILY EXPERIENCES/OUTCOMES</p>	<ol style="list-style-type: none"> NTs contribute to the consistency of a parents' experience by offering psychosocial support and

	<p>education to parents that either supplements or complements nursing efforts.</p> <ol style="list-style-type: none"> 2. NTs have a goal to empower parents while their infant is hospitalized and to provide education during the stay. 3. NTs don't always have opportunities to provide ongoing support to parents who have visitation barriers, so they have to concentrate teaching in a short pre-discharge time frame.
<p>PHILOSOPHY</p>	<ol style="list-style-type: none"> 1. The SLP promotes and works from a holistic philosophy that perceives an infant as being a complex being and who requires ongoing assessment and communication from multiple health profession lenses. 2. The SLP also uses a trauma-informed care approach which brings a compassionate perspective to interacting with parents. 3. The NTs all share a common goal to do what's best for the babies in the NICU. 4. The NICU uses a general family-centered developmental approach and has NIDCAP trained nurses who complete weekly assessments which are state mandated. 5. There is a perceived disconnect between the NIDCAP assessments and the use of a holistic approach among the NICU staff. 6. NTs would like to see more follow-through from nursing staff regarding developmental care recommendations. 7. Use of a unit-wide developmental care philosophy is unclear among NICU staff. 8. NTs perceive that teaching hospitals may have more emphasis or follow through on developmental care because of more access to educational resources and discussion related to developmental care topics.
<p>6.</p>	<ol style="list-style-type: none"> 1. Relationships with physicians and providers are positive and receptive. 2. Personal responsibilities and differing schedules limit socialization time among NTs. 3. There is a shared trust among the NTs that any one person can ask questions or get help from their NT counterparts. 4. There are differences in NT personalities, styles, and approaches to NT services among the NTs that are

	<p>acknowledged but don't appear to vause conflict within the team.</p> <ol style="list-style-type: none"> 5. NTs share respect and appreciation for each other's skills and knowledge. 6. Subtle intentional actions that may create opportunities for conversational interactions (e.g., attending potlucks, charting next to nurses) contribute to relationship building over time. 7. Invitations to participate in work celebrations increase feelings of inclusion and build trust and rapport between NTs, nurses, and physicians, however are not always embraced by the NTs. 8. Building rapport and trust with the nursing staff is ongoing and takes time. 9. An ongoing personality conflict among one NT and a nurse causes avoidant behaviors that impacts service provision to infants assigned to that nurse's shift. 10. NTs perceive that some nurses, especially newer hires, are more receptive and interested in learning about NT education backgrounds, roles, and interventions than others. 11. NTs must also be cognizant of their assumptions and beliefs that may prevent positive working relationships with nursing. 12. Requests and recommendations are withheld or put forward depending on the medical provider's receptiveness to both NT and nursing input.
<p>SHARED WORKSPACE</p>	<ol style="list-style-type: none"> 1. Having NICU space divided between two floors negatively impacts work efficiency 2. Charting in the NICU can be an intentional way to build NT presence even though it doesn't consistently happen.
<p>SERVICE AVAILABILITY</p>	<ol style="list-style-type: none"> 1. There is no weekend or nighttime coverage; there is little interest from current NTs to routinely cover these time frames 2. No weekend coverage leaves unclear boundaries for SLP services who may be called on the weekend for recommendations, or to limit infant feeds when there is no coverage due to heavy reliance on SLP for feeding recommendations. 3. Evening (until 7pm) coverage facilitates parent education and rapport with night shift nurses.

	<ol style="list-style-type: none"> 4. As patient census fluctuates, NT productivity also fluctuates between struggling to see infants frequently enough to adequately monitor needs and getting each discipline's visits in to meet productivity. 5. The SLP (who is also a lactation consultant) services post-partum unit for late preterm infants and lactation consulting which at times cuts into NICU service availability. 6. NTs are flexible with each other's daily schedules to accommodate part-time hours so that their caseload is seen.
<p>TEAM STRUCTURES AND DYNAMICS</p>	<ol style="list-style-type: none"> 1. There are many layers of staff approval, notification, and education needed for NTs to use new or modified interventions in the NICU. 2. NTs have poor autonomy to introduce ideas to the unit because they don't have a "seat at the leadership table." 3. Plan of care goals are similar among disciplines due to using a goal bank in the documentation system that doesn't easily allow customized goals. 4. Comfort and expertise level with various interventions and techniques rather than disciplines define NT roles; OT does kinesiotaping, splinting and movement facilitation; PT does infant massage; SLP does feeding, craniosacral and myofascial techniques. 5. Staff is also more familiar with what types of interventions NTs do with infants when at bedside rather than identifying or distinguishing disciplines of OT, PT, or SLP. 6. Nursing staff distinguish interventions as motor-related vs. feeding. 7. NTs perceive that a portion of the nursing staff doesn't understand the potential impact of developmental care practices, and/or NTs' part in developmental care practices.

Five central themes were noted.

Being “Developmental” is Still Developing

Using a family-centered developmental care lens (i.e., being “developmental”) to support and provide services to infants and families in the NICU is highly valued by the neonatal therapists.

A family-centered developmental care approach is the general approach used in the NICU and some nurses are individually trained in NIDCAP assessment and perform weekly NIDCAP assessments as per the state's regulatory requirements. However, there is a perceived disconnect between these assessments and the depth of understanding of the potential impact of developmental care on the infants and families and moreover, what the role of NTs do or could play in that care. As the therapists who work in this NICU have learned and acquired a better understanding of developmental care themselves, there were efforts to advocate and promote being "developmental" with mixed success over the years. Medical providers generally appear to be receptive to neonatal therapy services. The most recent endeavor has been MOD training for new hire nurses. Educating new hire nurses in developmental care practices and the roles of NTs on the unit has increased rapport and mutual respect with this set of nurses. Additionally, the MOD trained nurses have been instrumental in modeling to and educating established nurses to be more receptive to developmental care and neonatal therapy interventions. The NTs perceive that cross-discipline education is progressing in the right direction over time but there is still a perceived disparity among nurses who are "developmental" and those who aren't quite there yet.

Historically, the unit has had employment turnover of NTs of all disciplines. There is a perception that staff turnover is partially attributed to being poorly accepted on the unit or frustration with unit culture. Significant progress has been made but there has also been recent turnover of NT staff. NTs perceive that another barrier may be that the NICU is situated in a non-teaching hospital, so exposure to new ideas or education is less accessible. Therefore, despite being present in some capacity since 2009, the neonatal therapy presence and influence on family-centered developmental care is still evolving on several fronts.

Mixed Support from Leadership

The neonatal therapists have been managed by two different rehabilitation managers in the past but are now consolidated under one leader. The rehabilitation manager(s) have been supportive of NTs when there are conflicts with other NICU staff. However, there is a perceived lack of authenticity from NICU nursing leadership, and of willingness for NICU nursing leadership to hold nursing staff accountable for various issues with NTs and/or with medical providers. This perpetuates a poor sense of trust between NTs and nursing staff as a whole.

Skills Expertise vs. Role Delineation

The NTs value each other and respect each other's skills and strengths. Despite often taking the same continuing education courses, certain NTs either prefer or excel at some skills or intervention strategies they learned from continuing education courses. These intervention strategies are routinely implemented in the NICU and serve to define which individuals do what type of hands-on skills at the bedside. Intervention expertise defines therapists' roles more so than discipline identity such as being an OT, PT, or SLP. OT primarily does kinesiotaping, splinting, and movement facilitation; PT does infant massage; SLP does feeding, craniosacral and myofascial techniques. All disciplines do parent education but will reinforce each other's teaching. There is ambiguity among the OT and PT about how else to define each other's plan of care due to using an electronic documentation system that has a goal bank of poorly defined goals. All disciplines use similarly worded goals. The ambiguity of clearly defined roles carries over to the rest of the NICU staff who distinguish types of therapy interventions as being motor or feeding related.

Increased Inclusion Comes From Increased Intention (When Intentional Actions are Made)

There are both individual nurse-NT relationships that are positive and professional and those that serve as barriers to providing quality and timely neonatal therapy services. However,

strategies to intentionally build relationships with nursing or other NICU staff contribute to having a positive NICU presence. For example, charting in the NICU rather than the office opens opportunities to overhear and/or participate in nursing conversations and get to know the other NICU staff on a more personal level. Attending potlucks or other unit celebrations increases visibility and reinforces that NTs are a part of the team as opposed to guests on the unit. Unfortunately, these intentional opportunities are not always taken by all NTs. Finally, being mindful of nursing needs when the NICU is short-staffed and taking initiative to help with routine care such as changing linens or consoling infants who are crying also contributes to a sense of being part of an inclusive team. NTs increased awareness of the biases or attitudes they hold toward other NICU staff may also help foster better communication and collaboration.

Feeding Practices are a Common Source of Conflict

Infant feeding success is central to discharge readiness. The SLP is the primary NT who addresses feeding directly with the infant and family, though the other NTs may identify related issues that may affect feeding. Through working with the SLP, NTs have also learned several feeding strategies and principles, and assisted with feeding infants over time. At the time of the interviews, the SLP took a central role in making feeding recommendations and penning orders for feeding that are reviewed and signed by medical providers. The SLP described strategies to keep close control over feeding progress during times she was not available to work in the name of infant safety although nurses did follow feeding orders and feed infants on a daily basis. To note, the SLP provides ample leeway to make herself available for questions or concerns; however, consequently, the SLP also has unclear work-life boundaries, perceiving she is never fully able to be off-call of the NICU and feeding decision making.

In contrast, one NT also discussed what appeared to be a feeding competency that nursing students or other nursing staff needed to pass to feed infants. Despite being knowledgeable of feeding strategies and having the SLP as a close resource, feeding privileges for other NTs are restricted. This perception of gatekeeping leads to a sense of frustration, a concern for infant feeding safety, and mistrust.

References

- Blount, A. (2003). Integrated primary care: Organizing the evidence. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 21(2), 121-133. doi: 10.1037/1091-7527.21.2.121
- Boon, H., Verhoef, M., O'Hara, D., & Findlay, B. (2004). From parallel practice to integrative health care: A conceptual framework. *BioMed Central*.(4)1.
- Boyatzis, R. E. (1998). *Transforming Qualitative Information*. Sage Publications.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Creswell, J. & Poth, C. (2018). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (4th Edition ed.). Sage Publications.
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92 <https://doi.org/10.1177/160940690600500107>

Heath, B., Wise Romero, P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, D.C.: SAMHSA-HRSA Center for Integrated Health Solutions. <https://www.pcpcc.org/sites/default/files/resources/SAMHSA-HRSA%202013%20Framework%20for%20Levels%20of%20Integrated%20Healthcare.pdf>

Karol, R. L. (2014). Team models in neurorehabilitation: Structure, function, and culture change. *NeuroRehabilitation*, 34(4), 655-669. <https://doi.org/10.3233/nre-141080>

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Appendix F: Case Report 4

Six neonatal therapists from a Level III Neonatal Intensive Care Unit (NICU) in the Western United States participated in a research study entitled, *Neonatal Therapists' Perceptions of Using Integrated Collaborative Care*. The primary investigator (PI) was Sarah Elkington, a PhD candidate from The University of Texas at El Paso, El Paso, TX. The participating hospital is identified as having between 20-40 beds and serves a mixed population, meaning the hospital serves both adults and children and/or infants. The hospital is considered not-for-profit and is not associated with a university medical residency program. Table F.1 outlines the experience and qualifications of the neonatal team. Six of the seven therapists who work at the hospital participated in the study.

Table F.1: Experience and Qualifications of Neonatal Therapists in a Level III NICU in the Western United States

Discipline*	Full Time Equivalent (FTE)	Years working in NICU	Total Years as a licensed therapist	Terminal Degree	Specialty Certifications**
PT	.4	22	25	MPT	CNT, PCS, DCS, CLE, CIMI, NDTC
PT	.2	10	15	DPT	CNT, CIMI
OT	.2	10	15	OTD	CNT, CLE, CIMI
OT	.2	2	35	BSOT	CIMI
SLP	.4	10	15	MSLP	CNT, CLE, CIMI
SLP	.4	15	25	MSLP	CNT, CIMI
SLP	.2	10	15	MSLP	CIMI

*Physical Therapist (PT); Occupational Therapist (OT); Speech-language Pathologist (SLP)

**Certified Neonatal Therapist (CNT); Pediatric Certified Specialist [for PTs] (PCS); Disease Specific Care Certification (DCS); Certified Lactation Educator (CLE); Certified Infant Massage Instructor (CIMI); Neurodevelopmental Treatment Certification (NDTC)

Each of the participating neonatal therapists participated in a confidential, individual interview with the PI. Interviews were audio recorded and then transcribed. Transcriptions of individual interviews were provided to each participant to review for accuracy and offer an

opportunity for revisions or to strike comments from data analysis. No revisions were requested; therefore, all therapists’ comments were analyzed through thematic analysis.

The PI used a process of hybrid thematic analysis (Braun & Clarke, 2006; Swain, 2018). Hybrid approaches to thematic analysis have been previously described as a combination of deductive and inductive thematic analysis (Boyatzis, 1998; Fereday & Muir-Cochrane, 2006; Swain, 2018). A hybrid approach described by Swain (2018) outlined three phases and seven total stages of thematic analysis for a single set of semi-structured interviews. Swain’s approach was flexible to allow for inductive and deductive data analysis to occur concurrently, was iterative, and was reflexive. Swain defined deductive aspects of thematic analysis as *a priori* codes and inductive aspects of the analysis as *a posteriori* codes. For the current case study research, there was potential for unique deductive thematic conclusions and inductive themes for each case, therefore the PI adapted Swain’s version of hybrid thematic analysis to become both cyclical for case study and to include oversight by a senior researcher to ensure trustworthiness of the data and an additional source of methodological rigor. Additional details regarding methodology for data analysis can be provided upon request.

Prior to starting the study, the PI identified eight aspects of integrated collaborative care from the literature (Table F.2) that were used for *a priori* coding. These aspects were not provided to participants so as not to influence the participants’ responses. During thematic analysis, subthemes were identified under each aspect as well as some new themes.

Table F.2: Aspects of Integrated Collaborative Care (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014)

Aspect of Integration	Description
Philosophy	The extent to which the hospital system and/or team emphasizes the treatment of the whole infant/family dyad in the social, environmental, and cultural context of the NICU and recognizes the potential impact of social determinants of health.

Team structures and dynamics	The structure of decision-making processes by specific or all team members, and the inclusion of health disciplines on the team and extent of multi-directional communications among team members.
Communication processes	The systems or opportunities in place to share information either in electronic, verbal, non-verbal, or written form
Shared workspace/ service availability	The extent to which healthcare team members share workspace within the hospital facility or in which they are available for communications and to provide patient care services.
Patient and family experiences/ outcomes	The extent to which patient needs are considered separate issues by individual disciplines or in which all aspects of the patient are considered by all members of the neonatal team. Improved health is determined not just by an absence of a condition but as the overall well-being of the infant/family dyad.
Leadership/ organizational structures	The extent to which administrators, managers and other leaders support the NICU through funding, promotions, and allow time for team building activities separate from patient care.
Integration among or between settings	The extent to which integration exists among the NICU and immediate hospital setting or between the NICU and non-acute care settings.

Table F.3 describes all themes and subthemes identified through thematic analysis. These themes are presented to the participants to review for member checking. Member checking is a process through which qualitative researchers can establish trustworthiness and integrity of the data by presenting interpretations and themes to participants (Creswell & Poth, 2018). Research participants can provide feedback and/or validation of the themes presented to the researcher. If there are discrepancies, the researcher can review suggestions and revise the conclusions prior to research dissemination. The themes and subthemes from this case will be analyzed across the remaining cases of neonatal therapists who participated in the study to draw overall conclusions. Those overall conclusions will be disseminated in a manuscript submitted for publishing or conference presentations.

Table F.3: Themes and Subthemes from a Level III NICU in the Western United States

<p>COMMUNICATION PROCESSES- Strategies employed to communicate to co-workers included:</p> <ul style="list-style-type: none"> • Bedside verbal communication • Informal conversations on the unit 	<p>1. There is frequent communication between NICU staff and NTs both at, and away from bedside using multiple strategies.</p>
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<ul style="list-style-type: none"> • Email • Epic sticky notes • Epic chat • Rounding • Committee Discussions • Bedside whiteboards • Formal education opportunities 	<ol style="list-style-type: none"> 2. Communication is primarily respectful, using familiar written and verbal language and terms among both NTs and NICU staff. 3. Communication among NTs was perceived by NTs as less challenging and more frequent than with other NICU staff. 4. The Epic documentation system facilitates communication via chat, sticky note, and email functions as well as the scheduling feature. 5. Using Epic documentation system is versatile and a preferred method of communication.
<p>COVID IMPACT</p>	<ol style="list-style-type: none"> 1. COVID-19 restrictions dampened social interactions with other NT team members. 2. There were strong efforts to be more family oriented prior to COVID-19 that have not fully returned. 3. There has been a perceived decrease in parent presence in the unit since COVID-19 changed visitation policies.
<p>CROSS-DISCIPLINE EDUCATION</p>	<ol style="list-style-type: none"> 1. NTs have an awareness that education to NICU staff is iterative. 2. Opportunities for NTs to learn alongside the NICU staff builds an awareness of each other’s potential contributions to the team, thus contributing to mutual trust and respect. 3. Training at bedside, “in the moment” is an ideal strategy for NTs and nursing to learn from each other.
<p>EVOLUTION OF NEONATAL THERAPY SERVICES</p>	<ol style="list-style-type: none"> 1. Neonatal therapy has evolved from consultative feeding services, to using a transdisciplinary model, to having separate disciplinary plans of care but with a transdisciplinary mindset over the past 20 years. 2. As older physicians and staff have retired or resigned, new hires have started who are “pro-therapy,” which has helped shape staff acceptance and attitudes for neonatal therapy. 3. Being associated with the Vermont Oxford Network (VON) as a homeroom established a culture of accountability and stewardship for family-centered developmental care over the 7-year project. 4. NTs have worked on the unit for an extended time which has contributed to shared trust, values, and

	<p>autonomy to bring collaborative ideas and programs to the NICU.</p> <p>5. There appears to be a shared attitude that change or challenges equal opportunities for growth, not necessarily conflict.</p>
<p>INTEGRATION AMONG OR BETWEEN SETTINGS</p>	<ol style="list-style-type: none"> 1. The NTs work with post-partum units to support both feeding needs and car seat challenges for preterm infants who are not admitted to NICU. 2. NTs intentionally split their hours between the NICU and outpatient follow-up clinic to bridge services for NICU parents post-discharge. 3. Having a bridge between the NICU and OP follow-up clinic fosters collaborative discharge planning with medical providers.
<p>LEADERSHIP/ORGANIZATIONAL STRUCTURES</p>	<ol style="list-style-type: none"> 1. The NTs feel recognized and supported by their immediate supervisor and administrative leaders for their contribution to the evolution of neonatal therapy services. 2. Leaders have also supported their continuing education goals to attain NICU related certifications. 3. Leaders have reinforced a unit wide philosophy to serve the needs of infants/families, which allows NTs to focus on care and not productivity measures. 4. Committee participation is valued by leaders but not required, which allows a sense of ownership by each NT to choose to serve within their interests or expertise. 5. NTs are trusted to represent their whole team in committee work, and report back to the rest of the NT team regularly.
<p>PATIENT AND FAMILY EXPERIENCES/OUTCOMES</p>	<ol style="list-style-type: none"> 1. NTs perceive that NICU staff have a role to empower and teach the family; this is accomplished by considering how each person can contribute to meeting the needs of the family. 2. The March of Dimes parent representative brings an active family perspective to the unit; the parent representative is highly valued and respected by NTs. 3. NTs triage parent needs and communicate those needs to the appropriate health care discipline, even beyond other NT disciplines. 4. Emphasis on outpatient follow-up reinforces the idea that the family's needs do not necessarily end at discharge to home.

	<ol style="list-style-type: none"> 5. NTs advocate to support families through actions such as celebrating infant milestones, providing meals, helping parents feel like an inclusive team member rather than a guest on the unit, considering sibling reactions and needs, and providing a consistent message from all staff on the unit. 6. NTs continually assess parent learning styles, emotional support needs and listen for feedback so that they can be responsive through actions or assign staff based on staff talents or expertise.
<p>PHILOSOPHY</p>	<ol style="list-style-type: none"> 1. NTs perceive that the staff in the NICU operates as one cohesive entity; decisions are not made by any one profession in isolation. 2. There is a clear perception from the NTs that the NICU staff, including the NTs, work to support the needs of the infant and family in a holistic manner and that that service should extend post discharge to follow up clinic as needed. 3. There is a general willingness to both voice expertise respectfully and listen to what other disciplines have to contribute on behalf of any infant/family’s care. 4. NTs have departmental meetings and communicate with each other to assess their own learning needs. 5. NTs voluntarily participate in unit wide committees and feel empowered to bring up new ideas within committees and partner with other disciplines or leadership to bring ideas to fruition. 6. Those NTs who no longer participate in committees due to service availability continue to show interest in their progress but express confidence and trust that their peers are adequately representing a neonatal therapy voice. 7. A neonatologist has a vision to use family-integrated care model, which requires an even more intentional shift to supporting and involving the family in care of their infant. 8. Most, if not all, NTs are supportive of contributing to this vision and shifting to more holistic care. 9. 9There is an acknowledgement that more unit infrastructure, training and work has to preclude introducing family-integrated care to the NICU.
<p>RELATIONSHIPS</p>	<ol style="list-style-type: none"> 1. A mutual respect exists between medical providers and most other NICU staff; NTs describe having “discussions with” care providers rather than

	<p>“requesting from” or justifying their recommendations.</p> <ol style="list-style-type: none"> 2. Medical providers and other staff make themselves available for conversations related to infant care if needed. 3. NTs are invited to participate in committees versus needing to request participation. 4. NTs also invite other staff to provide input about how their recommendations are going, which reinforces that they value their peers as well. 5. NTs perceive that the rest of the NICU team understand NTs have a role on the NICU team and are available to help. 6. Good interpersonal relationships with NT peers create a positive workplace environment; Good interpersonal relationships include elements of enjoying learning together, having trust to ask questions, having confidence that colleagues will act for the team’s best interest, and feeling supported when not present on the unit. 7. Established relationships with pediatric outpatient therapists support when those outpatient therapists cross train to NICU because there is an openness to ask questions. 8. Having an awareness of other NTs’ talents, skills and personalities helps the team plan for future continuing education or training to maintain a well-rounded presence. 9. Knowing the talents, strengths, and expertise of fellow NTs helps to better triage and serve the infants and families in the NICU. 10. Relationship building takes time and is facilitated by small intentional acts such as learning personal details about each other’s lives, finding common interests, and having a predictable presence on the unit. 11. Recognizing the importance of relationship building with night shift as well as day shift nurses reflects a respect for wanting to work as a whole team and that all nurses, not just some nurses, are respected and valued. 12. Some staff, particularly nursing staff continue to put up resistance to neonatal therapy interventions or efforts; these have decreased over time but continue as they were mentioned by each participant in the study.
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	<p>13. Resistance to NT interventions or efforts may be related to the context of what is happening that day with a certain baby.</p> <p>14. In general, the NTs perceive resistance as opportunities to consider the nurse’s perspective and how they can overcome the challenge through better communication or education rather than taking personal offense</p>
<p>SHARED WORKSPACE</p>	<p>1. The NT office is a “landing space” where NTs can chart but also acts as a hub for debriefing, problem solving, planning and informal interactions among NTs.</p> <p>2. There is a common charting area in the NICU where similar debriefing, planning, and informal interactions with nurses, physicians, and other NICU staff occurs.</p>
<p>SERVICE AVAILABILITY</p>	<p>1. Individual NTs value having FTE hours on the unit to better keep track of infant progress over time versus the back and forth with the outpatient clinic.</p> <p>2. The NICU has coverage of one motor therapist (i.e., OT or PT) and one feeding therapist (i.e., SLP) M-F and on-call providers for weekends</p> <p>3. Part-time NT staffing in the NICU is intentional so that there is a carryover to outpatient follow-up services; this better supports families to have familiar and knowledgeable providers.</p> <p>4. Having similar credentialing and training (e.g., CNT certification or N-trainer training) facilitates a transdisciplinary mindset while maintaining discipline specific goals for each type of intervention.</p> <p>5. There are intentional efforts to provide some service availability to night and weekend shifts; this is as much in response to nursing feedback for coverage during these times as recognition that covering these time periods is in the best interest of the infants/families.</p> <p>6. Being part of the team means working hours that the rest of team works, including nights and weekends.</p>
<p>1. TEAM STRUCTURES AND DYNAMICS</p>	<p>1. Most of the NTs worked in this NICU for many years using a transdisciplinary model before having to distinguish each discipline for regulatory reasons; evidence of the transdisciplinary model through use of triaging infant needs and communicating observations is still evident based</p>

	<p>on each participant’s consistent description of how disciplinary roles are delegated.</p> <ol style="list-style-type: none"> 2. There is less distinction between OT and PT skills as both can assess motor quality and all disciplines have some feeding expertise to do bedside feeding assessment. 3. PT uses a more orthopedic lens and performs car seat testing; OT uses a sensory regulation and holistic lens; SLP is the only discipline who can perform swallow studies. 4. There is one central NICU developmental plan which is shared among NT disciplines; however, each discipline gets orders and creates a plan of care viewed through their professional lens. 5. One NT expressed that after differentiating roles, she feels some of her skills have diminished because she doesn’t practice them as often. 6. Feeding topics are central to infant and family care; staff continuing education, discussion, and debate regarding plans of care, parent training, and discharge planning related to feeding frequently occur among NTs and NICU staff. 7. . Service provision is infant/family centric; iterative triaging and planning of daily interventions and work distribution among NTs revolves more around infant needs and/or discharge planning with consideration for what each NT can provide based on their strengths and expertise vs. any single discipline or productivity needs.
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Four primary themes emerged from the data.

What’s Best for Baby and Family

The neonatal therapists consider themselves members of a larger NICU team who all share common values and a cultural mindset that is infant/family centric. There appears to be a unified culture that families should be central to decision-making and that the staff is present to support the family to care for their infant. While not yet formally implementing a family-integrated care model, it appears that NICU team members from many disciplines are aware of this model and that implementing this model is the unit’s long-term goal, put forth by one of the neonatologists.

While productivity and outcome measures are utilized, leadership is supportive and emphasizes meeting the needs of infants/families over these measures. Team members inherently see themselves as trusted stewards of care for infants/families.

Commitment to Process Improvement

There is a unit-wide commitment to process-improvement. Process improvement and participation in outside agency projects (e.g., VON) has reinforced the unit's accountability and efforts to provide for the needs of the baby and family to prepare for discharge. Process improvement committee participation is not required however it appears most staff participate which reflects the internalized values and dedication of the staff to the success of infants/families. Committees are highly focused on how to empower, include, or support infants and families during their NICU journeys.

The Team that Grows Together Works Well Together

The neonatal therapists share a history of learning, training, and working together in both the NICU and outpatient settings for an extended time which fosters trust in each other. Despite acting as a unified team to serve the infant and family, each therapist has autonomy to influence the team with their individual ideas and efforts. In the past, the neonatal therapy team used a transdisciplinary model. For regulatory reasons, the therapists revised their approach to service provision, adjusting goal-writing and plans of care to reflect the professional lenses of each neonatal therapy discipline. There are distinguishable areas of expertise of each discipline: PT addresses car seat positioning, OT addresses sensory regulation, and SLP does swallow studies. However, the therapists are scheduled to cover the unit more broadly to have motor and feeding expertise available, which reflects the depth of the cross-training among the team members. Furthermore, the team of neonatal therapists coordinate interventions and care appearing

concerned more with considering the team's collective skills which may include a certain individual's communication style or mental health experience to address an infant/family's need rather than with ensuring they receive any particular discipline of neonatal therapy. The team continues to grow, or build, its expertise through ongoing commitment to learning and supporting each other.

Respectful Work Relationships

The neonatal therapists have positive working relationships with the greater NICU team. The NTs recognize that relationships with staff members have evolved and developed over time but must be intentional and maintained. Although individuals may still act as barriers to neonatal therapy interventions on any particular day, these barriers are exceptions rather than routine. NTs perceive that miscommunication or being poorly received by an individual as an opportunity to self-evaluate and redirect education. NTs are responsive to feedback from the nursing staff. NTs recognize that to be an integral part of the team, they must also be available for nights and weekends, when the rest of the team also works. NTs perceive that their recommendations and input are valued by medical providers and other team members and contributes to shared decision making to create an overall plan of care for each infant/family rather than just reporting on or justifying what neonatal therapy is addressing. Furthermore, outpatient follow-up is available and intentionally staffed by the same neonatal therapists to ensure a supportive transition after discharge from the hospital, if needed. NTs' availability in outpatient follow-up clinic affords some influence on discharge planning with the greater NICU team due to the confidence of extending the continuity of care beyond of the hospital stay. There is a mutual respect between NTs and the NICU team members that has been fostered over time and reinforced by unit-wide trainings where NTs and NICU staff learn together.

References

- Blount, A. (2003). Integrated primary care: Organizing the evidence. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 21(2), 121-133. doi: 10.1037/1091-7527.21.2.121
- Boon, H., Verhoef, M., O'Hara, D., & Findlay, B. (2004). From parallel practice to integrative health care: A conceptual framework. *BioMed Central*.(4)1.
- Boyatzis, R. E. (1998). *Transforming Qualitative Information*. Sage Publications.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Creswell, J. & Poth, C. (2018). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (4th Edition ed.). Sage Publications.
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92 <https://doi.org/10.1177/160940690600500107>
- Heath, B., Wise Romero, P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, D.C.: SAMHSA-HRSA Center for Integrated Health Solutions. <https://www.pcpc.org/sites/default/files/resources/SAMHSA-HRSA%202013%20Framework%20for%20Levels%20of%20Integrated%20Healthcare.pdf>

Karol, R. L. (2014). Team models in neurorehabilitation: Structure, function, and culture change.

NeuroRehabilitation, 34(4), 655-669. <https://doi.org/10.3233/nre-141080>

Swain, J. (2018). *A hybrid approach to thematic analysis in qualitative research: Using a practical*

example. SAGE Publications Ltd.

Appendix G: Case Report 5

Six neonatal therapists from a Level IV Neonatal Intensive Care Unit (NICU) in the Midwestern United States participated in a research study entitled, *Neonatal Therapists' Perceptions of Using Integrated Collaborative Care*. The primary investigator (PI) was Sarah Elkington, a PhD candidate from The University of Texas at El Paso, El Paso, TX. The participating hospital is identified as having over 80 beds and serves only a pediatric population. The hospital is considered not-for-profit and is associated with a university medical residency program. Table G.1 outlines the experience and qualifications of the neonatal team. Six of the twenty therapists who work or were anticipated to work at the hospital participated in the study.

Table G.1: Experience and Qualifications of Neonatal Therapists in a Level IV NICU in the Midwestern United States

Occupational Therapy Full Time Equivalent (FTE)	Years in NICU	Years Total Practice	Terminal Degree	Certifications*
1	11	13	Masters	Massage, Prechtl
1	<1 year	2.5	Masters	
0.6	4	10	Masters	NTMC
1	3.5	5.5	Doctorate	NTMC, Prechtl
0.4	28	28	Bachelors	Prechtl
1	3	5	Masters	CLC, NTMC, CNT
1	3	3	Masters	
0.4	17	17	Bachelors	

Physical Therapy FTE	Years in NICU	Years Total Practice	Terminal Degree	Certifications*
1	12	12	Doctorate	Massage, Prechtl
0.4	4	7	Doctorate	Prechtl
1**	11			Prechtl
0.4**				Prechtl
0.8	3.5	5.5	Doctorate	PCS
0.6	15	32	Bachelors	CNDT, Massage
0.9	4.5	11.5	Doctorate	CLT, Prechtl

PRN	2	10.5	Doctorate	
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Speech-language Pathologist FTE	Years in NICU	Years Total Practice	Terminal Degree	Certifications*
0.8	7	8.5	Masters	Vital Stim
0.8	1	8	Masters	CLC
1	3	12	Masters	
0.8	15	15	Masters	Vital Stim

*Precht- General Motor Assessment Trained; Certified Neonatal Therapist (CNT); Certified Lactation Counselor (CLC); PCS- Pediatric Certified Specialist (Physical Therapy); CNDT- Certified in Neurodevelopmental Treatment; CLT- Certified Lymphedema Therapist

**This therapist was still interviewing at the time of the study so has missing data

Each of the participating neonatal therapists participated in a confidential, individual interview with the PI. Interviews were audio recorded and then transcribed. Transcriptions of individual interviews were provided to each participant to review for accuracy and offer an opportunity for revisions or to strike comments from data analysis. No revisions were requested; therefore, all therapists' comments were analyzed through thematic analysis.

The PI used a process of hybrid thematic analysis (Braun & Clarke, 2006; Swain, 2018). Hybrid approaches to thematic analysis have been previously described as a combination of deductive and inductive thematic analysis (Boyatzis, 1998; Fereday & Muir-Cochrane, 2006; Swain, 2018). A hybrid approach described by Swain (2018) outlined three phases and seven total stages of thematic analysis for a single set of semi-structured interviews. Swain's approach was flexible to allow for inductive and deductive data analysis to occur concurrently, was iterative, and was reflexive. Swain defined deductive aspects of thematic analysis as *a priori* codes and inductive aspects of the analysis as *a posteriori* codes. For the current case study research, there was potential for unique deductive thematic conclusions and inductive themes for each case; therefore, the PI adapted Swain's version of hybrid thematic analysis to become both cyclical for case study and to

include oversight by a senior researcher to ensure trustworthiness of the data and an additional source of methodological rigor. Additional details regarding methodology for data analysis can be provided upon request.

Prior to starting the study, the PI identified seven aspects of integrated collaborative care from the literature (Table G.2) that were used for *a priori* coding. These aspects were not provided to participants so as not to influence the participants' responses. During thematic analysis, subthemes were identified under each aspect as well as some new themes.

Table G.2: Aspects of Integrated Collaborative Care (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014)

Aspect of Integration	Description
Philosophy	The extent to which the hospital system and/or team emphasizes the treatment of the whole infant/family dyad in the social, environmental, and cultural context of the NICU and recognizes the potential impact of social determinants of health.
Team structures and dynamics	The structure of decision-making processes by specific or all team members, and the inclusion of health disciplines on the team and extent of multi-directional communications among team members.
Communication processes	The systems or opportunities in place to share information either in electronic, verbal, non-verbal, or written form
Shared workspace/ service availability	The extent to which healthcare team members share workspace within the hospital facility or in which they are available for communications and to provide patient care services.
Patient and family experiences/ outcomes	The extent to which patient needs are considered separate issues by individual disciplines or in which all aspects of the patient are considered by all members of the neonatal team. Improved health is determined not just by an absence of a condition but as the overall well-being of the infant/family dyad.
Leadership/ organizational structures	The extent to which administrators, managers and other leaders support the NICU through funding, promotions, and allow time for team building activities separate from patient care.
Integration among or between settings	The extent to which integration exists among the NICU and immediate hospital setting or between the NICU and non-acute care settings.

Table G.3 describes all themes and subthemes identified through thematic analysis. These themes are presented to the participants to review for member checking. Member checking is a process through which qualitative researchers can establish trustworthiness and integrity of the

data by presenting interpretations and themes to participants (Creswell & Poth 2018). Research participants can provide feedback and/or validation of the themes presented to the researcher. If there are discrepancies, the researcher can review suggestions and revise the conclusions prior to research dissemination. The themes and subthemes from this case will be analyzed across the remaining cases of neonatal therapists who participated in the study to draw overall conclusions. Those overall conclusions will be disseminated in a manuscript submitted for publishing or conference presentations.

Table G.3: Themes and Subthemes from a Level IV NICU in the Midwestern United States

<p>COMMUNICATION PROCESSES</p>	<ol style="list-style-type: none"> 1. Messages from NTs to NICU staff are received best when delivered with a respectful, confident, and direct approach that also considers the timing, and personality of the receiver. 2. NTs use real-time collaborative communication during co-assessment and/or co-treatment to develop and implement plans of care that are individualized to patients. 3. NTs value reciprocal bedside sharing with the nurses or medical providers regarding an infant’s condition or response to interventions which fosters mutual learning and/or action plans in the infant’s best interest. 4. The EPIC documentation system allows for HIPAA compliant communication in a variety of ways (i.e., text, chat, email, and daily documentation) between NTs and other NICU staff that facilitates real-time care coordination. 5. There are a variety of ways that the NTs are communicating both with each other and members of the greater NICU team to keep themselves updated on infant needs and plans as well as unit wide activities. These include: <ul style="list-style-type: none"> Bedside Strategies <ul style="list-style-type: none"> • Verbal • Posted feeding plans • Other notification posters • Rounding Non-Bedside Strategies
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	<ul style="list-style-type: none"> • Epic chats • Epic texts • Epic daily note documentation • Email • Cell phones <p>NT Team Meetings NICU committee meetings</p>
COVID IMPACT	<ol style="list-style-type: none"> 1. COVID-19 prevented staff from participating in multi-disciplinary meetings for process improvement; these meetings have only recently been reinitiated, so progress on new efforts continues to be stalled. 2. Most people learned to do virtual meetings during the COVID-19 pandemic but there is value in face-to-face meetings.
CROSS-DISCIPLINE EDUCATION	<ol style="list-style-type: none"> 1. There are formal and informal opportunities to provide education to NICU staff members about the roles and interventions the NTS provide and general developmental care practices. 2. The NT supervisor provides monthly in-services to new medical residents or other NICU staff. 3. NTs appreciate using a collaborative approach to care for the incidental learning opportunities the collaboration provides. 4. NTs often take the same CEU courses, to be able to provide consistent assessment and to provide a consistent approach and/or message to infants/families.
INTEGRATION AMONG OR BETWEEN SETTINGS	<p>Some NTs cross over to NICU follow-up clinics after hospital discharge which facilitates continuity for families but also helps build interpersonal relationships with medical providers who also cross over.</p>
LEADERSHIP/ORGANIZATIONAL STRUCTURES	<ol style="list-style-type: none"> 1. NICU supervisors most often participate in unit meetings and committees; however, NTs can participate if they choose. 2. NTs plan their interventions and actions for what is best for baby but feel some pressure for productivity if doing what is best means co-treating or using non-billable time for care coordination. 3. The NT supervisor plans for NT team learning/educational opportunities; sharing

	<p>learning opportunities builds team rapport and shared knowledge.</p> <ol style="list-style-type: none"> 4. NTs feels supported by the NICU NT supervisor, who acts as an advocate for neonatal therapy issues and services; NTs are less certain upper administrators understand the impact of neonatal therapy. 5. Increased industry awareness of family-centered developmental care and the roles of NTs, especially as it is reflected in national survey rankings has increased administrative support for NT hours and service availability. 6. There are many family-centered meetings or committees in which NTs can or do participate in the larger NICU; most NTs participate in at least one meeting a week. 7. Participating in unit committees adds to NTs' sense of being valued as an expert member of the team.
<p>PATIENT AND FAMILY EXPERIENCES/OUTCOMES</p>	<ol style="list-style-type: none"> 1. The NTs strive to spend enough time with families and to keep abreast of a baby/family's whole plan of care so that they can serve as advocates for families and help meet their needs while hospitalized. 2. NTs also model and facilitate families to advocate for themselves. 3. NTs perceive that each NT and NICU staff member has a unique set of expertise and knowledge that should be valued and resourced as needed; the staff should strive to be aware of everyone's expertise to know what resources are available. 4. NTs are mindful to provide parent education in a manner that considers the emotional needs of parents and ensure return demonstration of bedside training. 5. NTs strive to prepare parents for developmental needs post-discharge. 6. NTs talked about the importance of providing consistent messages to parents from any member of the NICU staff.
<p>PHILOSOPHY</p>	<ol style="list-style-type: none"> 1. It is important to be aware of everyone's role and contribution in an infant/family's care in order to either answer or correctly direct questions to the most appropriate person.

	<ol style="list-style-type: none"> 2. Each person’s contribution to the plan of care, or knowledge base is respected and valued; when there are differences in opinion, this is opportunity for discussion and learning. 3. Staff are considerate of the infant/family’s needs first and how the large team of NTs and NICU staff can act as resources and meet those needs.
<p>RELATIONSHIPS</p>	<ol style="list-style-type: none"> 1. NT partners typically have more frequent discussions and closer personal relationships than with the rest of the department NTs. 2. NT partnerships are based on flexibility and scheduling needs but remain stable over time. 3. Non-partner NTs are perceived as additional resources for problem solving, learning, and comradery. 4. NTs within the department are described as flexible, welcoming, friendly, and mentoring. 5. The NTs work in a learning culture, where respectfully asking questions and seeking new knowledge or expertise is modeled and valued. 6. Working in small teams with NICU staff with facetime builds familiarity and predictability which facilitates trustful, positive working relationships even when in a large NICU. 7. NTs have worked together for an extended time; they celebrate life milestones and professional milestones and are friendly with each other. 8. Professional roles of the NTs evolved over time and were not without conflict, which was overcome by holding onto common values and respectful professional relationships. 9. Some individuals in the NICU are more open than others; generally, the NTs feel respected and included however relationship building is perpetual. 10. Medical providers are perceived as being available for discussions and shared decision-making; NTs have frequent interactions with both medical providers and nurses. 11. NTs approach interactions with medical providers and all NICU staff as getting out what they put in; valuing their opinions leads to feeling valued; being open to different perspectives leads to increased consideration of their perspectives.

	<p>12. Moving to standing orders implies trust that NTs serve as good stewards of care and triage parent needs appropriately.</p>
SHARED WORKSPACE	<ol style="list-style-type: none"> 1. Having team assignments where NTs can work in the same space as other NICU staff helps facilitate face-to-face communication and relationship building, as well as saves time for more productive efforts rather than walking across the hospital. 2. There is a shared NT office where morning collaboration occurs or NTs from other teams may be available for problem solving or collaboration.
SERVICE AVAILABILITY	<ol style="list-style-type: none"> 1. NTs are flexible to the needs of their peers for covering days off or completing other teams' evals due to increased census. 2. PT will defer to OT or SLP for scheduling patients for feedings. 3. There is typically a large enough census or caseload of infants that there are few scheduling conflicts to get in visits. 4. The shift in recent years to working in dedicated teams with an OT/PT/ SLP partnership has been transformative to the unit; there is better continuity of care, more frequent parent interactions, and better relationship building with other NICU disciplines. 5. Shifting to having standing orders for all three disciplines has also helped to increase family/infant centered care and created a more comprehensive way to service the NICU. 6. Therapists must balance productivity expectations with participating in valuable but non-billable tasks such as care coordination, co-treatments, or meetings. 7. NICU staff have expressed a desire for NT weekend or night coverage but finding qualified staff who are willing to work those hours is challenging.
Large teaching hospitals have multiple resources and challenges	<ol style="list-style-type: none"> 1. Adopting the NICU model of subdividing into smaller teams, makes bed assignments clearer, saves time physically travelling across the hospital, allows for more facetime with patients and closer relationships with the select group of NICU staff with which each NT is assigned. 2. Streamlining rehabilitation meetings to certain subgroups of the therapy department (e.g., NICU, pediatric inpatient, oncology) saves time and

	<p>ensures each therapist receives relevant information.</p> <ol style="list-style-type: none"> 3. Educating up to 400 nurses (and numerous other disciplines) who cover just the NICU poses logistical challenges. 4. A large hospital offers vast resources for scholarship, knowledge, expertise, and research. 5. Despite having a depth of resources to address complex or rare medical conditions, large teams of experts can also lead to poor ownership of the plan, risking miscommunication with the team and/or family.
<p>TEAM STRUCTURES AND DYNAMICS- There is evidence of shared-decision making in place and multi-directional communications among team members</p>	<ol style="list-style-type: none"> 1. NTs perceive themselves to be open and welcoming to new hire team members and new ideas. 2. The difference between PT/OT is often poorly understood among the larger NICU staff and parents; however, NTs perceive this as less important than ensuring the patient/family’s needs are met. 3. Plans of care are often determined collaboratively between the NTs with co-assessment, and specific goals are generated from a goal bank in the documentation system. 4. NTs perceive significant overlap between OT and PT interventions and goals; OT is considered a “jack-of-all-trades” as they also overlap significantly with SLPs. 5. PTs address handling tolerance, massage, ROM, pre-feeding, state regulation, musculoskeletal management to aid respiration; OT addresses pre-feeding, positioning, positioning equipment, vision, environmental factors, state regulation, pre-feeding, oral motor patterns, parent education related to development and feeding experiences, and sensory regulation; SLPs address state regulation, swallowing, suck-swallow-breathing regulation and feeding strategies. 6. The team went through a period of uncertainty regarding feeding roles which led to the current model of OTs and SLPs co-managing feeding. 7. Co-evaluation among the OT and SLP on each team helps meet the infant’s feeding needs and collaboratively develop each discipline’s plan of care.

	8. Co-treatments are helpful for older or challenging infants who may need more hands-on care but at the expense of productivity.
Feeding at the center of collaborative discussions and treatment planning	<ol style="list-style-type: none"> 1. As the NT staff grew, OTs and SLPs both had feeding experience and expertise, so there was a period of uncertainty about which discipline should address feeding; ultimately, a model where feeding was co-managed was agreed upon and has been successful. 2. OTs and SLPs complete feeding evaluations together, coordinate a feeding plan, mutually decide if one discipline will take the lead or the plan is shared. 3. Feeding is such a key component of discharge readiness that plans, and patient progress are often the topics of discussion and coordination with nurses, medical providers, or other NTs; because it is discussed so frequently, it may also be a topic where staff members disagree. 4. Feeding is a key component of discharge and may be discussed more often than other developmental care topics, but the SLPS do not feel it is more important than other developmental care topics. 5. Treatments are often planned around infant feeding times; PT especially will defer treatment times to either OT or SLP if they plan to feed an infant.

Five primary themes emerged from the data.

Know Your Team, Know Your Family, Then Advocate

The NTs all expressed the importance of having an overall awareness of the roles, actions, and plans of other disciplines on their coordinating NICU teams. Having this knowledge was considered dutiful to be able to serve the infant/family by answering questions consistently with other staff, being able to direct the family’s question to the correct person or being able to listen and then advocate for the family appropriately. Many NICU committees in which the NTs participate also attempt to advance policy or best practice in family-centered developmental care. Committee work is an additional way that NTs advocate for the infant/family’s best interest. Though not required, NTs typically participate in at least one committee.

Subteams as the Foundation for Collaboration

This large hospital uses subteams to manage a large census and continue to ensure infants and families have positive experiences and build relationships. NICU staff are assigned to certain sections of the NICU and consistently work with the same medical providers as well as assigned staff of other healthcare disciplines. Within the past 2-3 years, NTs also adopted this model. OTs and PTs are assigned as partners to a NICU subteam. SLPs are also assigned to 1-2 subteams. These partnerships remain consistent based on service availability of each therapist. Benefits of working in subteams are plentiful. Infants/Families are able learn who their health care professionals are and develop relationships with those professionals for a sense of confidence and continuity of care. NTs feel that working in a defined area of the hospital helps save time traveling across the physical space of the hospital and allows them more visibility to families. Working relationships among staff are also enhanced because staff develop a familiarity and trust when working together for extended periods of time. This trust facilitates more meaningful collaborations for problem solving and shared decision-making, which is thought to benefit families. Despite being assigned to a subteam, the NTs have the benefit of also belonging to the greater NT team, which also acts as a resource for problem-solving, or service coverage as needed.

Large Teams Provide Depth of Resources but also Challenges

The NTs work in a large NICU requiring sub-teams to make patient care manageable and more efficient. However, there are also advantages to a large academic teaching hospital. Having many specialists working in the NICU offers a wide pool of potential experts from which to learn and get current research and information to tackle rare or complex cases. However, the number of staff or experts who may be involved in rare or complex may also strain care coordination when no one clear discipline accepts ownership for the case, potentially leading to miscommunication.

Co-managing Feeding Assessment and Intervention

Feeding is a topic of much discussion, collaboration and at times, debate. As the neonatal therapy team grew over time, more OTs and SLPs were hired who had feeding expertise. There was a period of poor clarity and minor conflict about which discipline should take the lead on feeding expertise. The NTs overcame this conflict by recognizing that an infant/family's needs should be prioritized and that both disciplines had valuable information to contribute to serving the infant/family. A co-management approach has been successfully implemented where both the OT and SLP will co-assess an infant and collaborate in real time to develop feeding plans. This approach fosters mutual respect of the NTs with feeding expertise both as individuals and as OT or SLP practitioners and facilitates a more holistic approach to feeding education and management.

NICU Leadership Supports a Culture of Being a Learning Environment

This large teaching hospital offers a wealth of specialists and scholarship opportunities. The NICU supervisor supports the NTs to also contribute to this wealth by planning team educational opportunities. Reserving time away from bedside to learn together also fosters team comradery and trust that each person may be a potential resource to answer questions or help with problem solving. Furthermore, by having everyone participate in educational seminars or in-services together, the idea that everyone should be knowledgeable enough to provide a consistent message to parents is supported.

References

- Blount, A. (2003). Integrated primary care: Organizing the evidence. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 21(2), 121-133. [doi: 10.1037/1091-7527.21.2.121](https://doi.org/10.1037/1091-7527.21.2.121)

- Boon, H., Verhoef, M., O'Hara, D., & Findlay, B. (2004). From parallel practice to integrative health care: A conceptual framework. *BioMed Central*.(4)1.
- Boyatzis, R. E. (1998). *Transforming Qualitative Information*. Sage Publications.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Creswell, J. & Poth, C. (2018). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (4th Edition ed.). Sage Publications.
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92 <https://doi.org/10.1177/160940690600500107>
- Heath, B., Wise Romero, P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, D.C.: SAMHSA-HRSA Center for Integrated Health Solutions. <https://www.pcpcc.org/sites/default/files/resources/SAMHSA-HRSA%202013%20Framework%20for%20Levels%20of%20Integrated%20Healthcare.pdf>
- Karol, R. L. (2014). Team models in neurorehabilitation: Structure, function, and culture change. *NeuroRehabilitation*, 34(4), 655-669. <https://doi.org/10.3233/nre-141080>
- Swain, J. (2018). *A hybrid approach to thematic analysis in qualitative research: Using a practical example*. SAGE Publications Ltd.

Appendix H: Case Report 6

Three neonatal therapists from a Level III Neonatal Intensive Care Unit (NICU) in the Western United States participated in a research study entitled, *Neonatal Therapists' Perceptions of Using Integrated Collaborative Care*. The primary investigator (PI) was Sarah Elkington, a PhD candidate from The University of Texas at El Paso, El Paso, TX. The participating hospital is identified as having less than 20 beds and serves a mixed population, meaning the hospital serves both adults and children and/or infants. The hospital is considered not-for-profit and is not associated with a university medical residency program. Three of the four therapists associated with the NICU participated in the study. Table H.1 outlines the experience and qualifications of the neonatal team.

Table H.1: Experience and Qualifications of Neonatal Therapists in a Level III NICU in the Western United States

Discipline*	Full Time Equivalent (FTE)	Years working in NICU	Total Years as a licensed therapist	Specialty Certifications**	Terminal Degree
SLP	.25	15	21	CNT, CIMI	MS, CCC
OT	0.2	21	24	CIMI	BS
PT	0.15	22	25	PCS, CNT, CLE, DCS, CPST	MS
PT	0.15	3	9	CPST	DPT

*Physical Therapist (PT); Occupational Therapist (OT); Speech-language Pathologist (SLP)

** Certified Neonatal Therapist (CNT); Certified Infant Massage Instructor (CIMI); Certified Lactation Educator (CLE); Pediatric Certified Specialist (PCS); Child Passenger Safety Technician (CPST).

Each of the participating neonatal therapists participated in a confidential, individual interview with the PI. Interviews were audio recorded and then transcribed. Transcriptions of individual interviews were provided to each participant to review for accuracy and offer an opportunity for revisions or to strike comments from data analysis. No revisions were requested; therefore, all therapists' comments were analyzed through thematic analysis.

The PI used a process of hybrid thematic analysis (Braun & Clarke, 2006; Swain, 2018). Hybrid approaches to thematic analysis have been previously described as a combination of deductive and inductive thematic analysis (Boyatzis, 1998; Fereday & Muir-Cochrane, 2006; Swain, 2018). A hybrid approach described by Swain (2018) outlined three phases and seven total stages of thematic analysis for a single set of semi-structured interviews. Swain’s approach was flexible to allow for inductive and deductive data analysis to occur concurrently, was iterative, and was reflexive. Swain defined deductive aspects of thematic analysis as *a priori* codes and inductive aspects of the analysis as *a posteriori* codes. For the current case study research, there was potential for unique deductive thematic conclusions and inductive themes for each case, therefore the PI adapted Swain’s version of hybrid thematic analysis to become both cyclical for case study and to include oversight by a senior researcher to ensure trustworthiness of the data and an additional source of methodological rigor. Additional details regarding methodology for data analysis can be provided upon request.

Prior to starting the study, the PI identified eight aspects of integrated collaborative care from the literature (Table H.2) that were used for *a priori* coding. These aspects were not provided to participants so as not to influence the participants’ responses. During thematic analysis, subthemes were identified under each aspect as well as some new themes.

Table H.2: Aspects of Integrated Collaborative Care (Blount, 2003; Boon et al., 2004; Heath et al., 2013; Karol, 2014)

Aspect of Integration	Description
Philosophy	The extent to which the hospital system and/or team emphasizes the treatment of the whole infant/family dyad in the social, environmental, and cultural context of the NICU and recognizes the potential impact of social determinants of health.
Team structures and dynamics	The structure of decision-making processes by specific or all team members, and the inclusion of health disciplines on the team and extent of multi-directional communications among team members.
Communication processes	The systems or opportunities in place to share information either in electronic, verbal, non-verbal, or written form

Shared workspace/ service availability	The extent to which healthcare team members share workspace within the hospital facility or in which they are available for communications and to provide patient care services.
Patient and family experiences/ outcomes	The extent to which patient needs are considered separate issues by individual disciplines or in which all aspects of the patient are considered by all members of the neonatal team. Improved health is determined not just by an absence of a condition but as the overall well-being of the infant/family dyad.
Leadership/ organizational structures	The extent to which administrators, managers and other leaders support the NICU through funding, promotions, and allow time for team building activities separate from patient care.
Integration among or between settings	The extent to which integration exists among the NICU and immediate hospital setting or between the NICU and non-acute care settings.

Table H.3 describes all themes and subthemes identified through thematic analysis. These themes are presented to the participants to review for member checking. Member checking is a process through which qualitative researchers can establish trustworthiness and integrity of the data by presenting interpretations and themes to participants (Creswell & Poth, 2018). Research participants can provide feedback and/or validation of the themes presented to the researcher. If there are discrepancies, the researcher can review suggestions and revise the conclusions prior to research dissemination. The themes and subthemes from this case will be analyzed across the remaining cases of neonatal therapists who participated in the study to draw overall conclusions. Those overall conclusions will be disseminated in a manuscript submitted for publishing or conference presentations.

Table H.3: Statements from a Level III NICU in the Western United States

COMMUNICATION PROCESSES	<ol style="list-style-type: none"> 1. There are few communication barriers due to the proximity and familiarity of everyone on the unit with the occasional exception of night shift nurses and traveler nurses. 2. A variety of communication methods facilitates integration of each staff member’s collaborative contribution to an infant/family’s stay including: <ul style="list-style-type: none"> • Rounding twice daily • Bedside conversations • Use of Epic documentation system • Texts
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	<ul style="list-style-type: none"> • E-mail • Informal verbal in-person discussion • Committee meeting participation • Bedside whiteboards <p>3. The Epic documentation system facilitates communication in multiple ways through charting, messages, and email.</p>
COVID IMPACT	The parent visitation policy changed during the COVID-19 pandemic which has contributed to lasting differences in parent visitation patterns.
CROSS-DISCIPLINE EDUCATION	<ol style="list-style-type: none"> 1. Cross-discipline education is primarily informal given the small size of the unit and familiarity of the staff; however, in-services are offered at times by NTs to nursing or respiratory therapists. 2. Educating and getting to know traveling nurses and night nurses is most challenging because NTs do not cover these time frames with service delivery.
INTEGRATION AMONG OR BETWEEN SETTINGS	<ol style="list-style-type: none"> 1. There is a sister hospital within the same hospital system; NTs provide coverage for each other as needed and the NT supervisor is the same for both facilities, which facilitates similar values, and common work procedures. 2. There are efforts to increase integration between the NICU stay and outpatient follow-up clinic; NTs also work in the follow-up clinic to provide continuity of care.
LEADERSHIP/ORGANIZATIONAL STRUCTURES	<ol style="list-style-type: none"> 1. NT leadership is supportive of NTs' personal continuing education goals. 2. NT leadership works to bridge the same values and principles across two hospitals within the same system through regular meetings.
PATIENT AND FAMILY EXPERIENCES/OUTCOMES	<ol style="list-style-type: none"> 1. Committees focus on strategies to better support infants/families and are inclusive of all NICU staff because everyone's presence is valued and recognized to contribute to the infant/family's success. 2. Routine presence of a chaplain on the unit emphasizes a holistic approach inclusive of spiritual components. 3. NTs also have a trauma-informed care perspective of care, which emphasizes a holistic approach to care which includes past experiences. 4. There have been efforts to improve participation in outpatient follow-up clinic which considers the infant/family's success beyond discharge.

	5. There is an emphasis to include family in decision making.
PHILOSOPHY	<ol style="list-style-type: none"> 1. All staff share a common goal to want to work together to serve the needs of infants and families. 2. Having an awareness of what everyone else's roles and responsibilities are in the big picture to serve the needs of families reinforces everyone's accountability for their piece in the infant/family's hospital journey. 3. There is a welcoming and inclusive culture for staff working on the unit that is cultivated by leadership through hiring practices, committee work, and communication.
RELATIONSHIPS	<ol style="list-style-type: none"> 1. Relationships with physicians and providers are positive and receptive. 2. Staff are honest and open with each other and have been built over time. 3. NTs perceive their professional interpersonal relationships to be as similar with nursing as they are with each other.
SHARED WORKSPACE	Sharing a small unit workspace facilitates accessibility, approachability, and empathy for the work tasks of other NICU healthcare disciplines.
SERVICE AVAILABILITY	<ol style="list-style-type: none"> 1. While all three NT disciplines are available, everyone works a portion of one FTE; there is little overlap in daily service availability. 2. Effective communication between the NTs is facilitated by sharing other workspaces in the outpatient clinic, and longevity of working together. 3. There is no weekend or night time coverage. 4. It can be a challenge to keep up with changes to infants' progress due to days long gaps in service availability by any one NT. 5. Other subspecialists are not available due to the small size of the unit, which limits the acuity or types of patients that can be accepted for care. 6. The NTs have been available in the NICU since its opening, which is perceived as contributing to successful integration. 7. The NTs transdisciplinary approach complements the shared service availability of each discipline to provide NT coverage, rather than any specific discipline for a certain specialized skill.
TEAM STRUCTURES AND DYNAMICS-	<ol style="list-style-type: none"> 1. NTs took continuing education courses asynchronously which facilitates shared knowledge and ability to educate parents consistently.

	<ol style="list-style-type: none"> 2. Nurses and NTs support interventions at the bedside with each other. 3. Staff welcomes new ideas and learning initiated by the NTs. 4. There continues to be a transdisciplinary mindset among the NTs; each discipline has their own plan of care; however, there is cross coverage of many intervention domains. 5. PT addresses positioning, handling, respiration; OT addresses respiration, positioning, sensory integration, and feeding; SLP addresses swallowing, complex feeding and language development; all disciplines can speak to others' areas with some knowledge and provide education. 6. NTs perceive there is a mutual respect and trust that each person knows their personal knowledge and expertise limitations. 7. There is little distinction between OT and PT among both the NTs and the greater NICU staff.
SMALL UNIT CHARACTERISTICS	<p>There are characteristics mentioned about being a small unit including:</p> <ul style="list-style-type: none"> • NICU staff of all disciplines are approachable and accessible. • Staff support each other for breaks, lunches, and care needs. • There is constant communication among team members. • NTs get approached for a wider range of issues than in larger units. • NTs are viewed as an equal team member rather than a resource. • Familiarity facilitates positive, open, collaborative communication with few disagreements.

Four themes emerged from the data.

Overlapping but Distinct Cultures Among Sister Hospitals

The NTs at this site share a supervisor with a sister hospital. This supervisor facilitates continuity among the teams by supporting similar values and procedures. Some of these values include placing an emphasis on continuing education, using an infant/family-centric holistic

approach that originated as a transdisciplinary approach, and having NTs cover outpatient follow-up clinic for families after discharge. While anchored at their primary facilities, the neonatal therapists occasionally cover for each other at the sister hospital sites. Regular team meetings facilitate exchange and updates between the two sister teams. However, NTs at this unit perceived that their primary worksite demonstrated closer working relationships with nurses and physicians than the sister site. Additionally, there is a sense of being requested for a wider variety of issues and questions and being more integrated during bedside routine care times; differences may be contributed to the small size of the unit and the fact that the NICU opened later than the sister site and has had NTs present from day one. Despite sharing an immediate supervisor, documentation procedures, a shared hospital system mission and values, and similar philosophical approach to neonatal therapy, the two units continue to describe unique cultures and characteristics as separate work sites.

Holistic Approach to Care Delivery

The NICU staff are in constant communication with each other by sharing work space and rounding frequently. Committee efforts are infant/family driven with a concurrent emphasis that all team members should and do bring a valuable perspective to the plan of care. The chaplain rounds daily with the rest of team members; one NT brings a trauma-informed approach that considers a family's past experiences; and nurses and NTs are often participating in routine infant care together. There is little sense of hierarchy; rather, everyone's participation and input is considered equally. While the NTs represent three unique therapy disciplines, with separate plans of care, they represent a broader neonatal therapy perspective to the team, especially because they have few overlapping shifts.

A Small Unit Facilitates Relationships

As a small NICU, there are several factors that facilitate close relationships among staff. Being near other disciplines when charting and rounding twice daily facilitates accessibility and approachability to ask questions and get immediate feedback. Additionally, because the unit is visible to all who are working that shift, it is easy to ascertain the needs of other staff members to support infant care, get supplies, or cover breaks. NTs also share in these responsibilities to support and be supported which facilitates a sense of equality with all the other staff members. Finally, the NTs share a longevity of employment on the unit, which facilitates familiarity and a history of shared opportunities to get to know each other interpersonally. As a result, the NTs report few conflicts, disagreements, or instances of misunderstandings. NTs express a positive perception of their workplace culture with some noting that it has been fostered by intentional leadership to hire staff based on values and flexibility as well as skill.

Shared Transdisciplinary Mindset and Training

Historically, the NTs have used a transdisciplinary approach to care, sharing common NT goals that fit the infant/family's needs. This model was discontinued a few years ago for regulatory and compliance issues. Now, the NTs each have their own discipline-specific goals and plans of care, but with common unit goals for the infant/family to which everyone on the NICU team is contributing. While each NT works toward their disciplinary goals, there are efforts to make sure that all the NTs can at least speak to the others' strategies or goals. This emphasis on cross-training and depth of knowledge is perceived as favorable to serving the needs of each infant/family and helps maintain mutual respect. The NTs often take the same continuing education courses, even if asynchronously, for this purpose. Additionally, because there is so much cross-training and shared knowledge among the NTs, their roles are often understood by the staff and even somewhat among

the NTs as offering either motor developmental support or feeding support. There is little emphasis on distinguishing each NT as an OT, PT, or SLP. Nonetheless, each NT seems aware of their own knowledge and skill limitations and appropriately consults other disciplines as needed.

References

- Blount, A. (2003). Integrated primary care: Organizing the evidence. *Families, Systems & Health: The Journal of Collaborative Family HealthCare*, 21(2), 121-133. doi: 10.1037/1091-7527.21.2.121
- Boon, H., Verhoef, M., O'Hara, D., & Findlay, B. (2004). From parallel practice to integrative health care: A conceptual framework. *BioMed Central*.(4)1.
- Boyatzis, R. E. (1998). *Transforming Qualitative Information*. Sage Publications.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Creswell, J. & Poth, C. (2018). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (4th Edition ed.). Sage Publications.
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92 <https://doi.org/10.1177/160940690600500107>
- Heath, B., Wise Romero, P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, D.C.: SAMHSA-HRSA Center for Integrated Health

Solutions. <https://www.pcpcc.org/sites/default/files/resources/SAMHSA-HRSA%202013%20Framework%20for%20Levels%20of%20Integrated%20Healthcare.pdf>

Karol, R. L. (2014). Team models in neurorehabilitation: Structure, function, and culture change. *NeuroRehabilitation*, 34(4), 655-669. <https://doi.org/10.3233/nre-141080>

Swain, J. (2018). *A hybrid approach to thematic analysis in qualitative research: Using a practical example*. SAGE Publications Ltd.

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Appendix J: Statement of Methodological Integrity

Various authors have described specific strategies to ensure rigor and methodological integrity of qualitative inquiries (Lincoln & Guba, 1985; Creswell & Miller, 2000, and Creswell & Poth, 2018). These strategies are best implemented when infused throughout the research process including planning, data collection, data analysis, and reporting. This PI used the following strategies throughout her research to ensure research rigor and add trustworthiness to the conclusions.

Reflexivity: Reflexivity is a validity strategy where researchers disclose their assumptions, beliefs, and biases (Creswell & Miller, 2000). Appendix A refers to the philosophical assumptions and bias statement of the PI in this study.

External Auditor: An external auditor can be helpful to “examine both the process and product of the inquiry and determine trustworthiness of the findings” (Creswell & Miller, 2000, p. 128). The coding process for hybrid thematic analysis and creation of case reports was overseen by the committee chair, Dr. Celia Pechak. Dr. Pechak is not a neonatal therapist and though considered an expert in qualitative study, was unfamiliar with neonatal terms and culture at the initiation of this doctoral research. Therefore, she was able to provide unbiased commentary and redirect the PI where bias or assumptions regarding participant statements or themes crept in, allowing increased reflexivity of the PI.

Field Notes: Field notes can be helpful to maintain organization of data and contribute to reflexivity of the research process (Creswell & Poth, 2018). The PI kept field notes to help organize coordination of potential participants before interviews, record when interviews took place, write first impressions or notes regarding interview events, keep track if participant incentives were received, and ensure member checking comments were sent and received.

Member-Checking: Member checking is a way for participants to add credibility to results, through confirming their own account of events or agreeing with the narrative put forth by the researcher (Creswell & Miller, 2000). The PI used two layers of member-checking throughout the

study. Participants were provided their individual interview transcripts for member-checking before the PI proceeded to hybrid thematic analysis which would include all interview transcripts from participants from their worksite. Following creation of the case report, participants from each team were given a week to review their case report for member-checking either individually or as a team. No participants refuted the conclusions or themes of their case report.

Triangulation: Triangulation is a way to add credibility to interpretations through multiple sources of data (Creswell & Miller, 2000; Creswell & Poth, 2018) The PI's creation of case reports could be viewed as a way to triangulate data from multiple participants on the same team to create a whole picture of how ICC was working at each site. Furthermore, the PI added a layer of trustworthiness by returning the case reports for member-checking, especially because no substantial changes or refuting occurred through the case report member-checking process.

Thick Description: Thick description is a characterizing attribute of qualitative research (Braun & Clark, 2006; Creswell & Poth, 2018). The PI used thick description in both case reports (Appendices C-H) and throughout the results reporting in both Chapters 3 and 4, with ample use of quotations to support themes.

Audit Trail: Memoing, logging research activities, and creating a "data collection chronology" are components of an audit trail that help the researcher, or a reviewer determine credibility and trustworthiness of a researcher's conclusions (Creswell & Miller, 2000, p. 128; Creswell & Poth, 2018). Throughout the hybrid thematic analysis process, the PI and committee chair used a consistent audit trail process throughout data analysis to create each case report, perform cross-case analysis, and develop the definition of ICC presented in Chapter 5. Changes to wording or themes were not deleted but struck-through so that changes could be followed. When themes were collapsed, the PI noted where comments or ideas were moved.

Finally, Levitt et al. (2018) outlined reporting standards for qualitative research to aid those reviewing research to assess quality and ensure methodological integrity. This PI has followed those guidelines when composing the manuscripts presented in Chapters 3 and 4.

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Creswell, J. & Miller, C. (2000). Determining validity in qualitative inquiry. *Theory into Practice*, 39(3), 124-130.
- Creswell, J. & Poth, C. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (4th Edition ed.). Sage Publications.
- Levitt, H., Creswell, J., Josselson, R., Bamberg, M., Frost, D., Suarez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA publications and communications board task force report. *American Psychologist*, 73(1), 26-46.
- Lincoln, Y. & Guba, E. (1985). *Naturalistic inquiry*. Sage Publications.

Vita

Sarah Jean Elkington graduated from Purdue University in 1999 with a Bachelor of Arts degree in Movement and Sport Science. She went on to get her master's degree in occupational therapy from The University of Indianapolis in 2001. As an occupational therapist, Sarah has worked in several healthcare settings including adult inpatient rehabilitation, a school system, adult acute care, pediatric acute care including pediatric intensive care and neonatal intensive care, and outpatient pediatrics. She has worked as a consultant to develop a staff training curriculum for an independent therapy clinic and as a speaker to provide professional education about neonatal therapy. Additionally, Sarah has taught as adjunct faculty at The University of Texas at El Paso's program in Occupational Therapy.

As a doctoral student, Sarah served as a graduate assistant to her doctoral chair, Dr. Celia Pechak, who at the time was the fellow of the Health Focused-Interprofessional Education Community of Practice in the College of Health Science (2019-2020). Additionally, Sarah served as a student representative to the program committee for the Interdisciplinary Health Science PhD program (2020-2021). Sarah accomplished her doctoral work while maintaining employment as an occupational therapist and certified neonatal therapist. Sarah's research line focuses on interdisciplinary teamwork between neonatal therapists and other disciplines in the neonatal intensive care unit. Her interests lie in how professionals come together in complex medical environments to coordinate care to ensure patient quality, safety and positive outcomes while also ensuring employee well-being.

Contact information: sarahelkington01@gmail.com