Getting on the Same Page: A Grounded Theory Study of Nurse and Physician Collaborative Practice Development

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GETTING ON THE SAME PAGE:
A GROUNDED THEORY STUDY OF NURSE AND PHYSICIAN COLLABORATIVE PRACTICE DEVELOPMENT

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE GRADUATE SCHOOL
IN CANDIDACY FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

PROGRAM IN NURSING

BY
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CHICAGO, IL
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ABSTRACT

The movement toward an integrated approach to healthcare professionals’ education, interprofessional education (IPE), has been advancing over the past 60 years in the United Kingdom, Canada, and more recently in the United States. Support for IPE as a mechanism to positively impact collaborative practice and patient outcomes is inspired by international and national healthcare and educational leadership agencies as well as professional medicine and nursing thought leaders. Theories have evolved and attempt to explain the linkages among IPE, collaborative practice, and positive patient outcomes. And researchers have found support for the short term positive impact of IPE on attitudes, perceptions, clarity about roles and responsibilities and knowledge acquisition. However, there is little evidence that demonstrates the link between pre-licensure IPE and professional staff or patient outcomes. In spite of the lack of evidence, many pre-licensure IPE programs continue to be developed and the number of programs is growing. Determining a clear connection between IPE and patient outcomes is unrealistic because of multiple potential intervening variables; however, there is an opportunity to assess the impact of IPE on collaborative practice.

This grounded theory study was conducted to conceptualize the social process that explains nurse and physician collaborative practice development process as described by those who have experienced formal IPE. A total of 21 clinicians (14 registered nurses and seven medical doctors) who graduated from three university IPE programs participated in interviews and shared their experience from their first months in professional practice to their current
experience. The resultant theory was Getting on the Same Page. The theory explains that for nurses and physicians that received formal interprofessional education, the basic social process through the educational, early practice and later practice experience is grounded in Getting on the Same Page. Ten categories explain the development over time and include *Understanding Others’ Roles; Learning to Work Together during the educational experience; Being Nervous, Intimidated, and Frustrated; Recognizing Important Information; Relating to One Another during early practice; Coming Together; Knowing Each Other; Feeling More Comfortable and Confident; Going Back and Forth; and Being a Team in later practice.*

The theory of Getting on the Same Page supports and informs future design of interprofessional learning and contributes to a greater understanding of the important link between education and practice. This study will facilitate opportunities for future research as well as education and practice alignment.
CHAPTER 1
INTRODUCTION

Nurses and physicians work together every day in all types of health care delivery settings. The nature of the nurse and physician working relationship is variable based on the setting and the degree of interaction. At one end of the spectrum, there are high-intensity clinical specialty areas, such as, the Intensive Care Unit (ICU) or the Emergency Department (ED) in which nurses and physicians provide care together 24 hours a day, seven days a week. At the other end of the spectrum, there are settings such as home health care, in which nurses and physicians have defined roles: they work together with less daily interaction but guided by an explicit and coordinated plan of care for the patient. The middle of the spectrum is where the majority of patient care is delivered; the ambulatory and the medical surgical nursing unit setting. Nurse and physician interaction in these settings is a bit more challenging because unlike the ICU, physicians and nurses are not in the same location all of the time and unlike the ambulatory setting, the patient care plan is evolving and the plan of care may not be completely defined yet. Approaches to communication in these settings may be less routine and more sporadic therefore nurse and physician collaboration requires an intentional approach. Regardless of the complexities associated with the care delivery setting, collaboration, communication, and teamwork across disciplines is necessary to develop and implement a well-orchestrated plan of care for the patient. Tools such as guidelines, protocols, and checklists have been used to support each profession in care delivery and formalized structures such as daily rounding provide the forum for interprofessional
interaction and problem-solving. However, in addition to tools and structures, nurses and physicians need interpersonal and interprofessional skills and capabilities for successful collaborative practice. How do nurses and physicians develop collaborative practice? What are the critical interprofessional competencies and skills that ensure nurses and physicians work together in the best way to deliver optimal patient care?

Interprofessional collaborative practice was originally described as the interaction between nurse and physician that enables the knowledge and skills of each individual to synergistically influence the patient care provided (Weiss & Davis, 1985). Since that time, the contemporary definition has been modified only slightly as a situation that occurs “when multiple health workers from different professional backgrounds provide comprehensive services by working together with patients, families, care givers, and communities to deliver the highest quality of care” (WHO, 2010, p.13). Collaborative practice was initially conceptualized as nurses and physicians engaging in planning, open communication, shared decision-making, cooperation, and coordination (Baggs, 1994). Today these concepts have evolved as core competencies for IPE and interprofessional collaborative practice. Core competencies have been outlined in four areas; values and ethics, roles and responsibilities, interprofessional communication and teams and teamwork (IPEC, 2011, 2016). Notably, these concepts have remained consistent for the past 30 years but it has only been within the past 7 years that there is agreement and support for a universal language for IPE competencies. Now that contemporary definitions and competencies are being adopted, opportunities exist to evaluate how these competencies are demonstrated in practice once they have been learned.

In addition to the development of supported definitions and competencies, over the past three decades, there has been growing endorsement from national and international government
and leadership organizations for interprofessional education (IPE) as the mechanism to achieve the intermediate outcome of collaborative practice and the ultimate goal of improved patient outcomes (Institute of Medicine [IOM], 2001, 2003, 2011, 2012, 2015; Interprofessional Education Collaborative [IPEC], 2002, 2011; World Health Organization [WHO], 2010). The ongoing desire for high quality care, cost effective patient-centered care (the Triple Aim) as outlined by Berwick, Nolan, & Wittington (2008) calls attention to the need for competent and collaborative health care teams. Interprofessional education programs are increasing in number. Development of IPE programming requires commitment by physician and nursing education leaders, investment in time dedicated to curricular redesign, faculty education, approaches to competency assessment, and mechanisms for evaluation. What do we really know about the implementation of IPE and its impact on the individual student, professional practice or the patient’s care and outcomes?

Patients, providers, and government officials are continually demanding higher levels of quality and safety in health care, and interprofessional collaborative practice is seen as one way to meet that demand, but there are many unanswered questions. As IPE increasingly becomes a standard of clinician education and endorsement of IPE programs grows, it is imperative to develop a better understanding of the how the evolution of IPE has shaped the current state of interprofessional collaborative practice in the United States. And most important is how IPE supports and the process of nurse and physician collaborative practice development.

**Historical Perspective on Interprofessional Education**

IPE has been a topic of interest internationally since the early 1960s. Although researchers and practitioners in the United States only began to focus on IPE in the past three decades,
the United Kingdom and Canada have been advancing the knowledge base on this topic for over sixty years.

**Interprofessional Education Experience in the United Kingdom**

In the United Kingdom, the IPE movement grew from the desire to overcome ignorance and prejudice among healthcare and social care professionals (Barr & Ross, 2006). Shared learning for nursing and social services was established in the early 1960s, and soon after, an integrated curriculum was developed for all allied medical professionals. In 2001, the United Kingdom’s National Health Service (NHS) reaffirmed its commitment to common learning programs for all health professionals, setting the expectation that universities prioritize the development of IPE programs and that all healthcare professional education include common learning with other professionals at every stage of education (Barr, 2005). Today, standards for graduating students in the United Kingdom require demonstration of competencies, such as the ability to develop goals and plans with others, act cooperatively, negotiate differences in professional boundaries, develop effective relationships and partnerships, and work within a framework of multiple levels of accountability (Holt et al., 2010). The overarching goal of IPE in the United Kingdom is to drive education and practice standards and continually improve patient care (Barr & Ross, 2006).

**Interprofessional Education Experience in Canada**

The Canadian healthcare system, which is also at the forefront of IPE, has developed an operating framework for IPE programs. The key drivers of this evolution are a governmental directive and a defined accreditation process. There is a mandate for Canadian university systems to integrate IPE into the curriculum of all professional healthcare education programs (Accreditation for Interprofessional Health Education [AIPHE], 2008). Canadian IPE programs have
evolved with the support of senior administrators and faculty champions who challenge traditional boundaries. Programs include pre-clinical learner programs focused on teamwork, compulsory and elective IPE coursework, projects, and case- and community-based group experiences. The Canadian AIPHE initiative produced a guide for the incorporation of explicit interprofessional language into the accreditation process, and eight accreditation organizations covering six professions—medicine, nursing, pharmacy, physical therapy, occupational therapy, and social work—have partnered to create standards for IPE (AIPHE, 2011). The guide provides IPE standards as well as examples of evidence to document compliance for assessment purposes. Competency domains include interprofessional communication, patient- and family-centered care, role clarification, team functioning, collaborative leadership, and interprofessional conflict resolution.

**Interprofessional Education Experience in the United States**

The United States has also had significant growth and development of IPE programs in the past thirty years. The recent U.S. advancement of IPE follows as a result of a growing body of work, demand from key national leadership organizations, and the development of competencies and accreditation standards. Over the past decade, the IOM has developed a series of reports, each putting a finer point on the need for IPE and the requirements of IPE. In the first IOM report, *Crossing the Quality Chasm* (IOM, 2001), the authors called for a complete overhaul of the healthcare system and outlined key principles necessary for the restructuring of healthcare professional education with a focus on interprofessional practice. In a second report, *Health Professions Education: A Bridge to Quality Report* (IOM, 2003), the authors emphasized the need to redesign the educational processes in the academic and practice settings with a focus on development of knowledge and attitudes for effective collaboration in a multidisciplinary environment.
In parallel to the development and release of the aforementioned IOM reports, another group, the Interprofessional Education Collaborative (IPEC), was also building a body of knowledge on this topic. The Interprofessional Education Collaborative, formed in 1994 by the Institute for Healthcare Improvement (IHI), in Boston, Massachusetts, focused on creating an interdisciplinary teaching and learning environment in which future health professionals could work together to improve health care delivery. To establish a baseline of understanding regarding the landscape of IPE, IPEC (2002) conducted a national survey regarding the types and composition of IPE programs. Responses from 495 of 1,887 (26%) letters of inquiry provided insight into the state of IPE program development. At that time, IPE programs were equally divided between graduate and undergraduate programs. The extent of the IPE offering was typically one or two courses (44%). Most programs (55%) were housed in an independent department and 61% indicated that the courses offered were part of the regular curriculum. Core competencies identified were collaboration, communication, teamwork, group process skills, family and community orientation, ethics, outcomes evaluation, and leadership.

The IOM and IPEC, early supporters of IPE, have continued the drumbeat and demand for IPE and interprofessional collaborative practice and other agencies have joined as well. The IOM report entitled *Retooling for an Aging America: Building the Health Care Workforce*, released in 2011, described the need to develop new care delivery models, explore ways to broaden the duties and responsibilities of healthcare workers, and provide the necessary training so that healthcare workers will be successful in meeting the needs of the aging population (IOM, 2011). Simultaneously, in 2011, core competencies for interprofessional collaborative practice were formalized and endorsed by six clinical professional educational leadership groups (IPEC, 2011).
The core competencies for interprofessional collaborative practice have since been refined and detailed. Each of the four competencies has specific sub competencies that provide guidance for education and practice (IPEC 2016). Values and ethics centers on a climate of mutual respect, roles and responsibilities describes how the use of one’s role and the understanding of others roles support patient care delivery and health outcomes promotion, interprofessional communication details responsive and responsible communication and teams and teamwork focuses on relationship building to perform efficiently and effectively together. These core competencies provide the foundation for curriculum development and set a baseline for pre-professional education performance expectations.

In addition to core competencies for IPE, accreditation standards needed to drive consistency in the evaluation of IPE processes and outcomes have been developed. Zorek and Raehl (2012) conducted a comparative analysis of accreditation standards in the United States and found that student competency statements common to all health professions’ accreditation agencies included interprofessional communication, team practice and coordination, team leadership, and team roles and responsibilities. In October 2013, accreditors representing six professions met for the first time to exchange information and begin to discuss their respective standards for IPE. In December 2014, the Health Professions Accreditors Collaborative (HPAC) was founded and has grown to include 24 accrediting agencies (http://healthprofessionsaccreditors.org).

The urgent need for high functioning teams to ensure secure patient handoffs throughout the continuum of care and reduce the risk of inadvertent patient harm was outlined in a report released in 2012, entitled Core Principles and Values of Effective Team Based Care (IOM, 2012). This report explicitly outlines requirements for high performing healthcare teams, including val-
ues such as honesty, discipline, creativity, humility, and curiosity as well as the principles of team-based care, such as clear roles, mutual trust, effective communication, shared goals, and measureable processes and outcomes. Finally, the IOM (2015) produced its most recent report entitled *Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes*. In this report, the authors acknowledge the current IPE efforts and ongoing challenges to evaluation. By contrast with other reports, however, this one compels change; the authors make a call to action for better education, improved practice alignment, and increased urgency around the widespread adoption of a conceptual framework to support future state operating models.

Today, IPEC represents 20 national education associations of health professions schools and promotes and encourages efforts to advance substantive interprofessional learning experiences and help prepare future health professionals for enhanced team-based care of patients and improved population health outcomes (IPEC 2016). Importantly, IPEC provides a national forum for ongoing conversations with key clinical leaders about IPE and collaboration. Other organizing forums and coalitions such as The National Center for Interprofessional Practice and Education (NEXUS, https://nexusipe.org) and the National Collaborative for Improving the Clinical Learning Environment (NCICLE, https://www.ncicle.org) provide opportunities for both educators and practitioners to connect, engage and advance the interprofessional education and interdisciplinary collaborative practice agenda.

**Interprofessional Education in Evolution**

The United States has experienced incredible progress in the models and approaches to IPE. There has been growth in number of programs, curricular content, and the modes of delivery. There is growing agreement on the IPE curriculum guided by the core competencies. Medi-
cal and nursing school administrators and deans agree that subject areas for IPE should include bio-medical sciences, ethics, professionalism, evidence-based practice, communication skills, and informatics; however, there is concern about including interprofessional coursework into an already overloaded curriculum (Rafter et al., 2006). Bennet et al. (2011) found that faculty felt positively about IPE but identified opportunities—including commitment from educational leaders, disparity in accreditation and regulation requirements, and the need for more evidence to support future state educational models and curriculum components. As programs have developed in the past several years so too have the experiences of student and the perceptions of faculty. The evolution of IPE provides a basis of understanding for the best approaches going forward.

One of the most well-known and earliest IPE efforts in the United States is the Clarion Interprofessional Case Competition (Johnson et al., 2006). The program was designed as an elective opportunity for teams to work together to solve a clinical problem. This program is viewed as a solid attempt toward IPE; however, it did not set a baseline or standard for IPE models because most students did not take advantage of this elective offering and competency achievement was not assessed.

In 2010, seven university leaders, selected from a pool of 77 medical and nursing schools, described their IPE journeys focusing on integration, systems improvement, and professionalism (Macy Foundation, 2010). These early leaders in IPE provided various learning opportunities. Offerings included interactive learning modules for medical and nursing students, simulation experiences, joint classes for prevention and wellness, social and ethical issues and chronic conditions, and team-based learning for disaster preparedness and care of terminally ill patients. Each of the seven programs was at a different point of adoption but all had plans to continue to develop program offerings. Two programs that were furthest along in their development in 2010 were
the University of Colorado and the University of Minnesota (Macy Foundation, 2010). The University of Colorado has implemented a competency-based curriculum focused on teamwork, collaborative care, and quality and safety. All health professions students learn problem-solving skills through a longitudinal team-based mentor program focused on chronic care. The University of Minnesota replaced the previously noted Clarion program with a three-phase program. This program begins at orientation with a communication and interprofessional collaboration course and continues focusing on collaborative competency educations and then practice in the clinical setting.

More recently, Bridges, Davidson, Odegard, Maki, & Tomkowiak (2011) identified three best practice models for interprofessional education. Although the curriculum at each was different, a common theme emerged as a key contributor to a successful learner experience. All three interprofessional models included helping students to understand their own professional identity while gaining an understanding of other professional's roles on the health care team.

Herath et al. (2017) evaluated 65 studies and compared IPE programs in 25 developed countries and 20 underdeveloped countries. Not surprisingly, IPE was most prevalent in developed countries. Most of the programs were offered at the undergraduate level and were university-based programs; courses were typically short; and the curricula included interprofessional knowledge, skills, and values. Didactic and interactive teaching methods varied even in the most frequently utilized academic setting. The authors of this study conclude that universities are best positioned to lead the coordination and expansion of IPE programs.

Loversidge and Demb (2016) reported that faculty felt that IPE that was authentic and occurred in environments that valued quality and safety over hierarchy were optimal. Highly valued facets of the learning models included interdepartmental development and execution, op-
opportunities for students to process their experiences in context with one another, and the opportunity for students to witness faculty interprofessional role modeling. While the sample is small (N=32) and only three universities’ faculty members are represented, the study points to key areas for intentional focus and growth in perceived value and willingness to iterate models.

Summary

Interprofessional education has been developing globally over the past sixty years. Researchers, scholars, and practitioners in the United Kingdom and Canada were frontrunners, helping evolve educational and accreditation standards. In the United States, national leadership groups like the IOM and IPEC have more recently been driving a force for IPE as a means to achieve collaborative practice and positive patient outcomes. Group such as NEXUS and NCI CLE provide forums for like-minded leaders to share experiences and advance the IPE agenda. And two important steps, accreditation standards and competencies, have provided necessary framing for IPE programming. In addition to national leadership, there are a growing number of IPE programs in the United States, and there is movement and urgency toward conceptual frameworks to support all dimensions of IPE and achieve greater alignment with practice.

National and international leadership organizations articulate the value and importance of IPE. Concept clarity and universal language for IPE including the definitions and a competency framework for IPE has evolved. The recent competency update (IPEC, 2011, 2016) and sub-competency detail for interprofessional collaborative practice provides guidance on curriculum development and set a baseline program evaluation. In addition, the National League for Nursing (2016) recently developed a Guide to Effective Interprofessional Education Experiences in Nursing Education for program development. IPE has been promoted as a model to prepare profes-
ionals to achieve greater levels of interprofessional collaboration, communication, and teamwork.

Interprofessional pre-professional education is seen as critical to developing a foundation for independent professional development as well as an understanding of the individual’s role and other’s roles inside of team-based care. Many schools have developed or are in the process of developing IPE programs. The drive toward IPE program development has been guided largely by consensus from national leadership groups and only more recently by the articulation of competencies and standards.

The spectrum of curricular approaches ranges from student-run voluntary programs to fully integrated competency-based programs with required coursework and practice-based learning. Sixteen years after the original IPEC (2002) study that evaluated the state of IPE programs, a common approach to program development is still lacking and most of the programs are in early stages of development. Fortunately, groups like IOM and IPEC continue to forge the IPE and collaborative practice agenda and NEXUS and NCICLE provide the forums for leaders to continue the dialogue about IPE and collaborative practice.

In spite of all of the international and national support for IPE and interprofessional collaborative practice there is limited evidence that warrants this level of unconditional level of endorsement (Reeves, Perrier, Goldman, Freeth, & Zwarenstein, 2013). Now more than ever, it is essential to understand the impact of IPE. This study aims to enrich our understanding, inform theoretical models, and provide guidance on the learning continuum by explain the current nurse and physician collaborative practice development experience from the perspective of clinicians, who participated in IPE. In chapter 2, I will explore current theoretical models that support IPE
and the evidence supporting IPE learning, collaborative practice and patient outcomes and the
gaps in the knowledge base and evidence.
CHAPTER 2
LITERATURE REVIEW

The development of IPE programs has been surprisingly swift with consensus, emerging theoretical models and newly defined competencies as the guide. However, evaluation of the impact of IPE on collaborative practice and patient outcomes is still in the early stages. In this chapter, the IPE theoretical body of knowledge and research will be examined to provide an in-depth understanding of pre-professional nurse and physician IPE. Interprofessional learning and education and its impact on practice and patient and health system outcomes will be reviewed and the gaps in the literature will be discussed.

The literature review was conducted using the Ovid Medline and Cumulative Index to Nursing and Allied Health (CINHAL) databases, searching the key words “interprofessional education” and “collaboration,” and then filtering for research studies. The literature review was further narrowed to focus on pre-professional IPE involving nurses and physicians. There is a growing body of literature on this topic. Articles, papers, and reports were reviewed to develop a comprehensive understanding of the phenomenon. For the purpose of this evaluation, the term “pre-professional” refers to the time period prior to receiving a professional license to practice independently (Oandasan & Reeves, 2005).

Definition of Terms: Interprofessional Education

The terms multidisciplinary, interdisciplinary, and interprofessional are often used interchangeably. However, the terms interdisciplinary and interprofessional describe collaborative
education and practice whereas multidisciplinary describes side-by-side learning that is an additive rather than an integrated approach (Page et al., 2009). The most widely utilized definition of interprofessional education, developed by the Center for the Advancement of Interprofessional Education (CAIPE) and adopted by IPEC, is the occasions when two or more professional learn with from and about each other to improve collaborative practice and quality of care (CAIPE, 2002). The World Health Organization (WHO) (2010) goes further to emphasize that the outcome of shared knowledge is comprehensive and collaborative patient care. In IPE, the goals are for learners to gain knowledge and clarity about other professionals’ defined roles and to develop the skills needed to work with other professional groups as a team (Finch, 2000). Interprofessional education (the process) and interprofessional learning (the result) can be accomplished in a variety of ways so long as multiple pre-professional groups are experiencing the educational process at the same time (Barr, Koppel, Reeves, Hammick, & Freeth, 2006b). And today with the benefit of endorsed competencies, most IPE curricula should be inclusive of the interprofessional collaborative core competencies including values and ethics, roles and responsibilities, interprofessional communication and teams and teamwork (IPEC, 2011, 2016). Concepts of respect, appreciation of others’ contributions, communication, conflict resolution, and group dynamics that result in high levels of interaction should be woven through the experience (Barnett, 1999). Competencies associated with IPE and collaborative practice concepts should be considered as important as clinical competency. A synthesized definition, building upon the CAIPE definition, was constructed and will be utilized for this study: **Interprofessional education is the process in which healthcare professionals learn together and from one another to develop the knowledge, attitudes, and skills needed for interdisciplinary and collaborative practice directed toward a unified goal of delivering optimal patient care.**
Definition of Terms: Interprofessional Collaborative Practice

Collaborative practice is the combination of two words: collaborative and practice. Collaborative practice does not appear as one term in any dictionary. The word collaborative is derived from the word collaborate, which is defined as working jointly with others in an intellectual endeavor or to cooperate with an agency or instrumentality with which one is not immediately connected (collaborate. 2018. In Merriam-Webster.com. Retrieved from Merriam-Webster Dictionary, https://www.merriam-webster.com/dictionary/collaborate) and practice is defined as an actual performance or an action, a repeated and customary action, the usual way, form or manner of doing something or the continuous exercise of a profession (practice. 2018. In Merriam-Webster.com. Retrieved from Merriam-Webster Dictionary, https://www.merriam-webster.com/dictionary/practice). Weiss and Davis (1985) explicitly define collaborative practice as “the interactions between nurse and physician that enable the knowledge and skills of each individual to synergistically influence the patient care provided” (p. 299). Henneman, Lee, & Cohen (1995) describe collaboration as laboring together, shared communication and decision making, and willing cooperation with a foundation of shared power and authority. The most contemporary definition of interprofessional collaborative practice is from the WHO (2010) and described as a situation that occurs “when multiple health workers from different professional backgrounds work together with patients, families, care givers, and communities to deliver the highest quality of care.” In addition to the definition, Baggs (1994) identified six attributes of collaborative practice: planning, open communication, sharing professional perspectives, shared decision-making, cooperation, and coordination.

The difference between collaboration and collaborative practice is in the term practice; not just alongside one another but having a shared mental model of the way to do things. Collab-
oration in and of itself does not adequately describe the intricacies and level of interaction between physician and nurse articulated by the WHO, (2010). Interestingly, from the first conceptualization of collaborative practice, Weiss & Davis (1985) articulate the differences; more than collaboration, collaborative practice is the interaction that enables transference of information that synergistically influences patient care and ultimately drives to patient goal attainment and positive patient outcomes. Furthermore, IPEC (2011, 2016) has defined and refined key competencies for collaborative practice. Despite these distinctions, the terms are often used interchangeably.

In the clinical setting, collaborative practice does not mean the physician and the nurse must do everything together, but it recognizes the value and contribution of both professions; namely, the separate and combined domains of responsibility. The framing of the concept of collaborative practice guides understanding of the experience but there also needs to be consideration to its impact. Collaborative practice is proposed to lead to positive patient, population health and organizational system outcomes. This will be discussed later in this chapter.

**Theoretical Frameworks Underlying Interprofessional Education**

There are several theoretical frameworks that have been applied to support the various facets of IPE. Theoretical models that are most often used in IPE research to support the rationale for IPE include social theory (Tajfel & Turner, 1986) and role theory (Biddle, 1986). These theories explain the importance of developing and understanding independent personal identity and professional roles. Contact theories (Pettigrew, 1998; Allport, 1979) explain the importance of regular and ongoing professional interaction to support relationship development and interprofessional collaborative practice. Educational theories (Curran, Sharpe, Flynn, & Button, 2010) provide the foundation for learning modalities and other theories that describe the explicit
outcomes associated with IPE (Freeth, Hammick, Koppel, Reeves, and Barr, 2002; WHO, 2010; IOM, 2015). These theoretical models provide guidance on the key concepts that are critical and underlying IPE program development across the learning continuum.

Social Identity Theory

Social identity theory provides the rationale for IPE and is the basis either implicitly or explicitly for many interprofessional attitude and perception studies. Identity is derived from membership in social groups and a positive identity is preferred (Tajfel & Turner, 1986). Social identity theory explains that prejudice and ignorance about a social group may inhibit collaborative practice (Freeth, Hammick, Koppel, Reeves, and Barr, 2002). For example, rivalry between professions can be fueled by the lack of valuing the differences in one another’s knowledge and skills contribution. It is thought that a deeper understanding of the role and contribution of other professions has the potential to provide a bridge to better communication and collaboration. Pecukonis (2014) suggests that individual professional cultures “define the means for distributing power in the practice environment” (p. 62). Decision making, communication, and conflict resolution are all impacted by perceptions of power. To achieve interprofessionalism and reduce perceived power gradients, healthcare professionals need to develop individual skills and comfort as a valuable member of the healthcare team and capability to interface with colleagues. IPE has the potential to support students as they begin to develop confidence about their own individual social identity, understand and accept the social identity of others and learn how to interact together as a team supporting the patient in their care.

Role Theory

Role theory explains that individuals behave in ways that are different and predictable depending on their particular social identity and the situation (Biddle, 1986). This theory de-
scribes patterned and characteristic behaviors as well as assumed identities and expectations for behaviors that are understood and adhered to by members of a respective group. Role socialization during the formal educational process indoctrinates individuals to their professional role. The impact of indoctrination can be both positive and negative. On the positive side, indoctrination clarifies the specific body of knowledge, work, and performance expectations for that professional group. On the negative side, indoctrination can lead to intergroup prejudice. IPE has the potential to deepen mutual knowledge and understanding of roles and the relationship between physician and nurses. Role socialization, knowing the responsibilities of an individual role is important to being able to fulfill that role. Knowing about other’s roles provides an understanding of how to value and optimize the talents and skills of each role.

**Contact Theory**

Contact theories support the importance of common values, attitudes, and beliefs so that individuals develop a shared experience. The Intergroup Contact Theory (Pettigrew, 1998) is an adaptation of Allport’s (1979) hypothesis of intergroup contact. Allport (1979) proposed that contact (learning together) was not enough to reduce intergroup prejudice. Instead, four conditions were required for optimal intergroup contact: equal group status, common goals, intergroup cooperation, and support from authority (Allport, 1979). Pettigrew (1998) went on to suggest there is an emotional response to the contact which fosters future emotions. In addition, prior attitudes and experiences influence whether people seek or avoid intergroup contact. IPE is thought to provide a mechanism for intergroup contact to foster skills for future interaction. Interprofessional interactions imprint future interactions and the cumulative effect of repeated and optimal situations alter the attitudes of rival groups. With extended contact, a common group
identity will develop and individuals will think of themselves as part of the larger group. Close, long-term relationships are important for a dramatic shift in attitudes.

**Learning Modality Theory**

In addition to theories supporting the rationale for IPE, there is also a foundational educational theory that explains IPE learning modalities. The underpinning educational theory supporting IPE is social constructivism (Curran, Sharpe, Flynn, & Button, 2010). Social constructivism is a pedagogy in which an individual's learning takes place because of their interactions in a group. Learners apply and expand their understanding of concepts previously experienced in cognitive learning modalities. Approaches to IPE include exchange-based learning, action-based learning, practice-based learning, and problem-based learning. In spite of many educational approaches that provide the framework for IPE, newly developed IPE competencies (IPEC, 2011, 2016) provide a framework and requirements for what needs to be taught and learned in the educational process.

**Summary of Social, Role, Contact, and Learning Theories**

Social, role, and contact theories support the rationale for IPE. Social, role, and contact theories demonstrate the importance of individual knowledge and understanding of one’s professional identity and how meaningful interactions between healthcare team members and a shared experience results from frequent contact. In order to be an effective professional, one needs a strong role identity first. It is also thought that common values, attitudes, and beliefs derived from a shared experience and reinforced through training and education contribute to improved staff and patient outcomes (Horsburgh, Perkins, Coyle, & Degeling, 2006).

Social, role, contact, and education theories, together with learning theory, frame the rationale and the experience of IPE on learner, patient, and organizational outcomes. In addition to
these theories that provide a rationale for IPE, other theories describe the impact of IPE on the individual experiencing IPE as well as the downstream impact, not on just the practicing clinicians but also on the patient.

**Theories Explaining the Impact of IPE on Outcomes**

Theories that describe the impact of IPE on student learning, patient outcomes, population health, and organization and system outcomes have been developing over the past 20 years. However, in the past decade there has been acceleration in theoretical model development to provide a foundation for the future of IPE.

**Chain of Action Interprofessional Education Model**

Freeth, Hammick, Koppel, Reeves, and Barr (2002) adapted a categorization model originally developed by Kirkpatrick (1967) to provide greater specificity about the types of potential outcomes related to IPE. Kirkpatrick’s model, developed for industry education, focused on reaction of the student (what they thought and felt about the training), learning (the resulting increase in knowledge), behavior (the extent of behavior/capability improvement), and results (the effect on the business or environment as a result of the trainee’s performance). Freeth et al. (2002), expanded the learning outcomes to distinguish between attitudinal changes and acquisition of knowledge and skills and added outcomes to distinguish between change in organizational practice and benefits to the patients. This model, described below, provides a pragmatic approach to categorizing IPE outcomes.

1. **Reaction**: The learners’ views on the learning experience and its interprofessional nature.

2. a. **Modification of attitudes/perceptions**: Changes in reciprocal attitudes or perceptions between participant groups.
b. **Acquisition of knowledge and skills**: New knowledge or skills linked to interprofessional collaboration.

3. **Behavioral change**: Individual’s transfer of interprofessional learning to their practice setting and changes in professional practice.

4. a. **Change in organizational practice**: Change in the organization and delivery of care.

b. **Benefits to patients/clients**: Improvement in the health or well-being of patients.

In addition to specific outcomes associated with IPE, Barr, Freeth, Hammick, Koppel, and Reeves (2006a) developed a chain of action (see Figure 1) to explain the connections between the education, the professional, and the patient. The chain of action begins with the promotion of professional partnerships and culminates with improvement in patient care. The chain of action includes effective IPE to create positive interprofessional interactions, engender mutual trust and support, encourage collaboration, and lead to stress reduction. Stress reduction enhances job satisfaction and therefore improves recruitment and retention as well as positively impacts workers and therefore patient care. Stress reduction is important to both the individual and the system to achieve the desired end result. This model mainly focused on the learners experience and impact of IPE on the person. The chain of action is linear and logical, however, with numerous links, many intervening variables, and patient care outcomes that are distal to the intervention, the model it is complex, fragile, and difficult to test. Rather than test the entire mode, researchers have however focused on studying the individual components of the model.
**Interprofessional Education and Collaborative Practice Model**

The WHO (2010) separated Barr et al.'s (2006a) chain of action theoretical model into two separate but linked models: one model describes the relationship between IPE and interprofessional collaborative practice and the second model describes the relationship between interprofessional collaboration and patient outcomes (see Figure 2). In the WHO Interprofessional Education and Collaborative Practice Model (WHO, 2010), the central goal of IPE is to produce a healthcare workforce that is prepared to collaborate in different ways to yield positive results.
for the individual, their community, and the broader healthcare system. The model indicates that the link and mechanism between IPE and patient outcomes is collaborative practice. Again, this model is challenging to evaluate because the multitude of potential confounding and intervening variables are not really considered in the model.

The Interprofessional Learning Continuum

In 2015, an expert panel was assembled by the IOM to examine the evidence linking IPE patient and health system outcomes (IOM, 2015). The panelists had three key messages: (a) research linking IPE and collaboration has fallen short to date, (b) efforts to reform education and redesign practice need to be better aligned, and (c) widespread adoption of IPE across the learning continuum is urgently needed. The IOM (2015) proposed Interprofessional Learning Continuum (IPLC, see Figure 3) model which centers on alignment and interrelationship of learning
outcomes and health system outcomes stressing the importance of each individual component and the interrelationship of the two. The model emerges from the need to ensure that interprofessional learning occurring in the educational setting is connected and reinforced in the practice setting. The model demonstrates that learning is an ongoing activity, from undergraduate study through graduate study and into professional practice. All too often, students who move into the professional practice setting do not have the opportunity to continue to utilize and practice what they have learned because the care delivery environment does not support and demonstrate the practices learned. An example of this is the use of structured communication such as situation, background, assessment, recommendation (SBAR); which is often taught in pre-professional education. However this knowledge, if learned but not reinforced in the practice setting, will be abandoned. The IPLC model addresses the importance of alignment between education and practice.
Interprofessional Education Theory Summary

Each IPE theoretical model attempts to explain the impact of IPE on the learner as an individual. The chain of action model (Barr et al., 2006a) describes the impact of IPE on the individual care provider to reduce stress and ultimately promote partnerships for health while the Interprofessional Education and Collaborative Practice model (WHO, 2010) focuses on the development of a collaborative practice-ready workforce with the intention of improving patient outcomes. The WHO theoretical model, developed in 2010, focuses not only the individual learner but also the learner as they participate with others, the patient or the system. Finally, the most contemporary model developed, the IPLC, (IOM, 2015) takes into consideration the importance of alignment between education and practice and that education is ongoing and both formal and
informal. These are all critical considerations when individuals with diverse values, beliefs, and backgrounds work together to drive better outcomes for patient.

With a greater demand for high quality, cost effective, and patient-centered care, as defined by the Triple Aim (Berwick et al., 2008) nurses and physicians need the skills and capability to practice together, collaboratively, in order to deliver the best patient outcomes. With theoretical frameworks, competencies and increasing numbers of programs, it is more important than ever to explore the basic social process of nurse and physician collaborative practice development and collaborative practice that emerges from participating in formal IPE.

**Evidence Base to Support Interprofessional Education**

The outcomes categorization model for IPE developed by Freeth et al., (2002) provides an excellent framework to effectively evaluate the body of pre-professional IPE research. The majority of the pre-professional nurse and physician IPE studies focus on outcomes in category 1 (reaction), category 2 (modification of attitudes/perceptions, acquisition of knowledge/skills) and category 3 (behavior change) but seemingly no studies address the impact of pre-professional education on category 4 outcomes (change in organizational practice and benefits to patients such as improvement in health and well-being).

**Studies Related to Reactions, Perceptions, and Attitudes**

There are many studies that describe reactions to IPE and changes in perceptions and attitudes as a result of IPE. These studies highlight the importance of addressing preconceptions about individual health professionals’ roles early in the educational process. The goal of IPE is to develop a collaborative practice ready workforce; however, adoption of collaborative practice attitudes and skills may be hampered by preconceptions that individuals have regarding other healthcare professionals (Carpenter, 1995).
**Perceptions and stereotyping.** Carpenter (1995) evaluated attitudes and stereotypes as part of an IPE program focused on communication between doctors and nurses. In total, 39 participants (23 fourth-year medical and 16 final-year undergraduate nursing students) completed two pre- and post-intervention questionnaires, an 8-item characteristics survey, and a 7-point Likert-type scale survey to rate auto-stereotypes (their professions’ perception of themselves) and hetero-stereotypes (perceptions of professions as seen by others). Pre intervention results indicated that both medical and nursing students demonstrated strong positive and negative stereotypes. Prior to any IPE experience, both nurses and medical students reported that nurses were caring, dedicated and good communicators. Both groups reported that medical students were seen as also dedicated and were confident. It is worth noting that these stereotypes were already strong despite neither group having at the time commenced their professional careers. Both groups respect each other’s competence; however, each group scored their respective profession higher than the other.

Hetero-stereotypes are stereotypes held by one group about another. There was a significant difference in perceived hetero-stereotypes between the groups in 4 of the 8 characteristics. Nurses applied these characteristics to physicians more frequently than physicians did for themselves; arrogant ($p < 0.05$) and detached ($p < 0.05$). Physicians applied these characteristics to nurses more frequently than nurses did for themselves: caring ($p < 0.01$) and good communicator ($p < 0.01$). In spite of a small sample size, the variables assessed demonstrated statistically significant differences between groups with a large to moderate effect. There were positive changes in stereotypes post IPE intervention however none were statistically significant. The researchers conclude that both professions held both positive and negative stereotypes prior to this educational experience and that IPE may have a positive impact on changing perceptions. However,
the authors also assessed that the IPE intervention was short, less than one week so it might not have been substantial enough to demonstrate an impact and the evaluation of the outcomes was not followed up into the practice setting.

In another study of perceptions, Rudland and Mires (2005) found that preconceptions not only develop early but also are reinforced during the educational process. Medical students were surveyed using the previously noted tool developed by Carpenter (1995) during the first week of class in four consecutive years (n=126, 161, 152, 162 for each consecutive year). Upon entry into medical school, medical students reported that nurses were inferior to physicians in status in society ($p < 0.001$), competence ($p < 0.001$), and academic ability ($p < 0.001$). First year medical students also reported doctors were more confident ($p < 0.001$), arrogant ($p < 0.001$), and detached ($p < 0.001$), and nurses were more caring ($p < 0.0001$), more dithering ($p < 0.001$), and more of a do-gooder ($p < 0.001$) than doctors. Medical student perceptions of nurses and physicians were generally positive, becoming more negative in the first year and growing increasingly more negative as medical students continue through their education. Responses to open ended questions revealed that medical students feared that shared learning could reduce relevant content associated with their individual professional education. However, medical students also saw shared learning as an opportunity to develop a better understanding of professional roles and to improve teamwork and patient care. Improving communication between medical students and nurses and improving attitudes of professions about one another were opportunities for IPE. This study was a large, longitudinal study. Unfortunately, the effect size was not reported and the data presented does not permit calculating the magnitude of the effect.

Ateah et al. (2011) attempted a more ambitious study using an experimental design to evaluate impact of IPE on perceptions and attitudes. Participants, medical and nursing students,
were enrolled in one of three groups; a control group (n=16), an education group (n=16) and an immersion group (n=18). Participants in the education group experienced a two and a half day educational program and participants in the immersion group experienced the education intervention and were also placed in an interprofessional practice setting. Overall perceptions of health professionals (medicine, nursing, dentistry, dental hygiene, physical therapy, and occupational therapy) were more positive regardless of the type of IPE. Notably, of the nine traits examined on the Student Stereotypes Ranking Questionnaire (Barber et al., 2000); professional competence, leadership, independence, team player, practical, confidence, academic ability, interpersonal skills, and decision making, none of the scores went down post intervention regardless of the intervention. The significant change in perceptions occurred following the education intervention and did not increase following the immersion intervention. At baseline, lowest scores were found on independence for nurses and being a team player for physicians; both scores significantly improved post educational intervention. Baseline perceptions of nurses were high however all professions rated nurses highly after the immersion experience on leadership, independence, academic abilities, and decision making. This finding alone is of interest and potentially instructive to educational approaches. With a small sample size overall and in each individual professional cohort, the findings are informative but not generalizable. The research design proved difficult and intergroup comparisons were statistically underpowered but there were some interesting findings related to perceptions of nurses and the impact of IPE education alone on perceptions.

Reactions and attitudes toward interprofessional education. Morrison, Boohan, Moutray, and Jenkins (2004) conducted an exploratory study to evaluate student reactions and attitudes toward IPE for the purpose of informing program development. A convenience sample
of 20 medical students and 10 nursing students completed a modified version of the Readiness for Interprofessional Learning Scale (RIPLS) and responded to several open-ended questions. The RIPLS was developed by Parsell and Bligh (1999) to measure student attitudes toward interprofessional learning. The RIPLS consists of 19 statements arranged in three subscales: teamwork and collaboration (Cronbach’s alpha .88), professional identity (Cronbach’s alpha .63), and roles and responsibilities (Cronbach’s alpha .32). Respondents answered questions on a five-point Likert scale. Both nursing and medical student groups identified the importance of learning about other healthcare professional roles and the relationship of shared learning and teamwork. Study results were reported as descriptive statistics only. Responses to questions on teamwork by both nursing and medical students indicate high agreement (75%-100% agreed or strongly agreed) that there are advantages to shared education and that participation in IPE would result in higher levels of teamwork. Qualitative analysis of open-ended survey questions revealed positive but divergent perceptions of IPE by nursing and medical students. Nurses’ responses to questions regarding shared learning and professional identity were positive but contrary to medical students’ perceptions of shared learning and professional identity. Nursing students felt IPE would lead to improved collaborative practice, communication, and clarification of patient problems. Medical students articulated the importance of understanding and respect for other healthcare professionals but did not identify IPE as a mechanism to improve communication with patients and colleagues. Both groups expressed concern that IPE would be disadvantageous if it impeded their own professional learning. This study describes the value of IPE and highlights the importance of continued uni-professional education in conjunction with IPE. However, the study sample was too small to conduct inferential statistics and draw meaningful conclusions.
Park, Hawkins, Hamlin, & Hawkins (2014) examined the attitudes of three pairs of collaborators (nurse/physician, physician/social worker, and social worker/nurse) following completion of an IPE course on aging and geriatrics. The Jefferson School of Attitudes Toward Physician and Nurse Collaboration instrument (Hojat & Herman, 1985, Hojat et al, 1999) with subscales of shared and collaborative relationships, caring and curing, nurses’ autonomy, physicians’ authority, was used to measure attitudes and perceptions pre and post intervention. The curriculum was framed by the IPEC (2011, 2016) core competencies and included educational sessions; lectures, small discussion groups, and role play. In addition all participants worked together to deliver team based geriatric care on 3 occasions over 3 months. These teams also received support and guidance from an experienced mentor. Among the 190 students that started the program 156, (84%) completed both pre and post-test surveys. All three pairs of participants experienced a significant change in attitudes toward collaboration after completing the outlined IPE programs (physician- nurse collaboration ($p = 0.001$), physician- social worker ($p = 0.011$), collaboration, nurse-social worker collaboration ($p = 0.012$). Medical students reported the most positive change pre and post intervention and they also had the highest mean scores after participating in the IPE programming. Unexpectedly and contrary to other studies, nurses and social workers mean scores post intervention decreased. Nurses had the highest scores pre-test and the lowest scores post-test. The authors discussed that nurses participating in the study may have had more experience than their counter-part 1st year medical students. Also the timing of the post-test for the social work and nursing students coincided with term end finals, which may have played a role in their response. The study demonstrated an impressive positive impact associated with medical students. The authors suggest that a longer more intensive intervention may be needed; however this intervention was well designed as compared with other studies. The results of this
study give guidance on the importance of timing and readiness for participation in IPE program-
ning.

Delunas and Rouse (2014) examined physician and nursing student attitudes specifically
related to communication and collaboration following a healthcare team intervention experience.
Students were assigned to a patient care team in long term care to work together with a patient
for three semesters; nurses focused on patient cognition and physicians focused on pharmacology
and pathophysiology. Communication and collaboration were measured using the Jefferson
School of Attitudes Toward Physician and Nurse Collaboration instrument (Hojat & Herman,
1985, Hojat et al, 1999) and the Collaboration and Satisfaction about Care Decision. Compared
with nursing students (n=38), medical students (n=34) began their careers with less positive atti-
tudes toward interprofessional communication and collaboration and, despite the three-semester
intervention, these differences persisted; physician scores on both instruments were statistically
significantly worse. The authors note that the interprofessional intervention did not frame expec-
tations for the experience. The faculty thought that putting the students together would have an
impact. Based on the results, faculty are redesigning the educational experience to include a for-
mal explanation of roles in clinical care; the opportunity to practice working together in a struc-
tured way using team training models and also including opportunities for faculty student consul-
tation. This study is extremely instructive to IPE program development because the intervention
did not have the expected impact and guided the researchers to look closer at the factors that
might have influenced the result; specifically expectations and support around the IPE experi-
ence.

Factors influencing the interprofessional education experience. Many researchers
have explored factors that influence perceptions and attitudes related to IPE. Early introduction
of IPE has been identified as potentially beneficial to perceptions and attitudes about others roles
and responsibilities (Rudland & Mires, 2005; Cooper Spencer-Dawe & McClean 2005). In a
large study of students’ perceptions of IPE in the fields of medicine (n=1950), nursing (n=762),
pharmacy (n=113), and social work (n=109), researchers identified three attributes as related to
more positive attitudes toward interprofessional teamwork: gender (being female, \( p < 0.0001, \) eta
squared=0.01), year of study (1st or 2nd year in the program, \( p < 0.0001, \) eta squared=0.01), and
prior experience (one or more experiences, \( p < 0.001, \) eta squared=0.1)) (Curran, Sharpe, For-
rirstall, & Flynn, 2008).

Anderson and Thorpe (2008) evaluated student age as a factor influencing interprofes-
sional interactions. Students (n=898) from 10 different pre-professional groups participated in a
survey and uni-professional focus groups (within 4-10 weeks post-course) following an introduct-
tory IPE workshop delivered in the first three months of clinical training. Instruments used to
evaluate the impact of the workshop included the RIPLS and a pre and post course questionnaire
related to learning objectives. Mature students (> 24 years old) valued IPE but preferred to inter-
act with students of a similar age. Overall, younger students (18-24 years old) had significant
improvement in all learning outcomes (\( p < 0.0001 \)) and were more positive about the interprofes-
sional learning than mature students. Students across professions indicated positive attitudes to-
ward interprofessional teamwork and education. A major concern regarding the findings from
this study is the proximity of the post-test evaluation. The post-test was conducted immediately
after the intervention. Without additional follow-up measurement, it is unclear if the intervention
had any long-term effect. Although statistically significant findings are reported, an effect size is
not available and could not be calculated from the data reported.
Another factor identified as important to perceptions and attitudes about IPE is student leadership: participation in design and delivery of IPE, curriculum modification, participation in student-led organizations, and participation in research (Hoffman, Rosenfield, Gilbert, & Oan-dasan, 2008). Responses from the National Health Science Students’ Association, a student network represented by 20 university and college-based chapters in Canada, were utilized as data sources along with survey data from 37 student leaders. Student leaders reported statistically significant positive responses to the benefits and effectiveness of student involvement of IPE when compared with the average response. The research findings are confounded by the study sample that includes a convenience sample from the National Health Science Students’ Association and a potentially biased sample of current student leaders. The survey was developed specifically for this study and was not tested to determine if the questions represented the factors of interest. Though the findings from this study should be interpreted cautiously, student leadership is an interesting factor and worthy of additional investigation. Student leadership or at the very least having student involved in providing ongoing support for IPE programming provides the mechanism for timely input and program modification if needed.

Summary of studies related to reactions, perceptions and attitudes. There is a body of evidence that demonstrates support and value of IPE for the purpose of improving perceptions and attitudes as well as increasing understanding of each other’s roles and responsibilities in the clinical setting and there are studies that suggest the impact of IPE on perception is limited. Factors that influence perceptions and attitudes about IPE, such as preconceptions/stereotypes, gender (being female), age (being more mature), and timing of IPE (early in the educational experience), are all important considerations for program development. Preconceived stereotypes have the potential to influence future working relationships. Acknowledgement that hetero-stereotypes
exist prior to professional education suggests a need for early IPE or consideration of student’s pre-disposition to stereotypes in admissions consideration. Students that participate in organized team based experiences such as orchestra or sports have experience working with others to achieve a goal and that experience might be considered as part of the process of evaluation. It is important to ensure independent professional education is not diluted but rather enhanced by IPE. In addition, student leadership and involvement in curriculum development as a mechanism to influence attitudes and perceptions of IPE are factors that merit further investigation. Finally, the model of IPE is important. It is not sufficient to pair nurses and physicians in a clinical practice setting without role context. A positive impact on perceptions and attitudes of other professions requires a structured experience.

**Studies Related to Acquisition of Knowledge and Behavior Change**

There are many studies that have been conducted related to the impact of IPE on behavior and practice; however, many are single site with small sample size, which confounds the generalizability of the findings. Despite their shortcomings, these studies attempt to identify an increase in knowledge and behavioral change related to IPE. The studies noted here are representative of the types of studies conducted to date related to knowledge and behavioral changes.

This first study was selected because it is one of the earliest assessments of the impact of IPE and the need for programmatic development of IPE rather than a short course. Leaviss (2000) explored the effect of undergraduate IPE on the work practices of newly graduated healthcare professionals. Students in their final undergraduate year participated in a two-day interprofessional course specifically designed to increase knowledge and understanding of roles and attitudes of other professions. Fifteen students (three doctors, two nurses, three radio therapists, two dentists, two occupational therapists, two physical-therapists, and one podiatrist) participated in
semi-structured interviews one year post-intervention. The findings regarding the course included increased perceptions of greater role knowledge related to other professions and increased confidence in approaching the other professionals. A key and contrary finding was that, once in the work force, attitudes generally were less negative; however, some worsened specifically doctors’ perceptions of nurses. Interviews were conducted one year after the intervention (students were in professional practice) and relied upon recollection of the course content and perceived long and short term outcomes associated with the course. The results illuminate the need for curricula commitment to IPE, because a two day course was not sufficient to support the goals of collaborative practice beyond pre-professional education. Although the study was intended to evaluate knowledge and behavior change there was no evidence that IPE had an impact on those outcomes, only that participants saw some value in the experience and provide insight into future models of IPE.

Cooper, Spencer-Dawe, and McLean (2005), conducted a mixed-method quasi-experimental study to inform the design and implementation of an IPE intervention. First year medicine, nursing physical therapy, and occupational therapy students were invited to participate in an IPE intervention study (n=442, medicine n=285, nursing n=50, physical therapy n=52, occupational therapy n=55). The experimental group (n=237), was exposed to e-learning materials and team working skill building workshops while the control group (n=205), was formed from those who did not agree to participate and received the routine curricula. Both student groups completed the RIPLS (Parsell & Bligh, 1999) at the beginning and end of each semester. In addition, the experimental group completed an open-ended questionnaire about whether the intervention met the learning objectives and reflections of the intervention. Quantitative results demonstrated that students who received IPE were more likely to understand the need for positive rela-
tionships between professions ($p < 0.01, r = .141$), rejected learning only within their own discipline ($p < 0.001, r = 0.234$), and were ready to share expertise with other students about team-based care ($p < 0.01, r = 0.135$). An increase in students’ confidence in their own professional identity and a greater appreciation for the contribution of others was also reported. This study was conducted using a large sample and a stable research design and provided a comparison arm to evaluate outcomes. Unfortunately the findings, although statistically significant, have a very small effect size. In addition, the control group was comprised of those who did not agree to participate in the intervention and so there is potential for selection bias; randomization would have made the findings from this study more robust. This study also does not provide evidence of knowledge acquisition or behavior change but is more instructive to models and then need for embedded IPE into curriculum rather than individual and isolated experiences.

Bradley, Cooper, and Duncan (2009) conducted a mixed methods (pre- and post- intervention) study to identify the effect of interprofessional resuscitation skills development on leadership and teamwork. Year 2 medical (n=170) and year 2 nursing students (n=45) were invited to participate in the study. Seventy-one students were randomized to a uni-professional (control) or an IPE (experimental) group. Both groups received advanced life support training, were introduced to leadership and teamwork in emergencies, and participated in simulated training. Performance outcomes were measured using two tools. The Leadership Behaviour Description Questionnaire (LBDQ) measured two factors of leadership skills: consideration and initiating structure. Reliability and inter-observer agreement ratings were measured with Cohen’s kappa at greater than 71%. The second instrument used to assess teamwork skills was the Emergency Team Dynamics (ETD) scale (Cronbach’s alpha .89). When comparing uni-professional and IPE groups, there were no significant differences in leadership, team dynamics, or resuscitation skills.
performance. Qualitative analysis of focus group data revealed three themes: IPE opportunities, tribal affiliations and pre-conceptions, and curriculum issues. Both professional groups felt IPE enhanced professional interaction by developing teamwork and communication skills. Regarding curriculum, interprofessional lectures did not satisfy expectations; role clarification through experiential learning was found to be more important for teamwork and collaborative practice outcomes. Participants thought IPE should begin early in the educational process and include topics such as the bio-medical and social sciences, ethics, and communication. The IPE participants were generally more positive in their responses. Medical students in the uni-professional group were positive but guarded, and the nursing students in the uni-professional group expressed the most concern about relationships and professional boundaries. Limitations of this study include potential contamination of the study groups since IPE was conducted at the site where both nursing and medical students’ education took place and uni-professional education was taught at the site where only medical education took place. Again this study does not provide evidence that knowledge, leadership, or team-work were impacted by IPE. This one-day intervention with no immediate positive experiential impact suggests that a more intensive intervention or reinforcement is needed to sustain the effect or that the instruments used did not adequately measure the outcomes.

Baker and Durham (2013) examined students’ collaborative competencies after participating in an IPE course; Team Strategies and Tools to Enhance Performance and Patient Safety (Department of Defense, 2006). This program highlights the importance of a shared mental model by using the situation al briefing model otherwise known as SBAR. Thirty-three nursing, pharmacy, and medical students completed the IPE course. The Interprofessional Collaborative Competency Attainment Survey (ICAAS) is a 20 question survey which aligns with the core
competencies and focuses on interprofessional teamwork and communication and was administered pre and post-intervention. Only 52% (n=17) of students completed the survey. All collaborative competencies were found to be significantly different ($p < 0.001$). Statistically significant changes in pre-test scores ($M=4.0, SD=1.17$) and post-test scores ($M=6.35, SD=0.61, t(16) =2.70, p < 0.001$) suggest that taking the course had a positive effect on collaborative competency. Group differences were not reported; presumably they were either not explored because of low sample cell size or not significant. Again the sample is extremely small, data are self-reported, and there is a risk of selective or exaggerated memory may bias the result. Nonetheless this study found that the IPE had some impact on students’ interprofessional competency development.

Turrentine et al. (2016) conducted a mixed methods study to evaluate nurse and physician competency development in nine nursing students and six medical students who participated in a pilot IPE intervention. Participants took part in several interprofessional clinical and interactive education experiences. Students participated in an initial faculty led, competency based educational session, then viewed a pre-operative geriatric patient assessment video that role modelled collaborative practice on a standardized patient, a two hour clinical skills laboratory offered student pairs the opportunity to work on assessment skills with mentors. Students then selected a patient, conducted the assessment in pairs and presented their recommendations. Pre and post-test assessments using a 5-point Likert scale on eight questions directly related to key competencies of interprofessional practice were conducted. Students also completed a 10-question pre and post-test on geriatric knowledge. In addition, a study team observed participants and evaluated shared problem solving, conflict management, shared decision-making, knowledge of professional role, communication, recognition of patient needs, and interprofessional learning. Post-test
scores related to geriatric knowledge were significantly higher than pre-test; overall the mean change was 18.0 points, \( p < .001 \); nurses had a mean improvement of 22.0 points and medical students improved by 11.7 points. Regarding the pre and post-test evaluation of interprofessional competency evaluation, prior to the educational intervention the highest rated question was learning with other professionals was valuable and following the evaluation the highest rated question was the group facilitator sought input from all participants. There was no difference in nurses and physicians pre and post-evaluation scores for each of eight individual questions. However, there was a significant difference in one question this learning activity increased my knowledge of other professions, between the group that worked in pairs (\( M=4.75, SD=0.46 \)) versus the group that worked individually (\( M=3.57, SD=1.13, t (13) =2.70, p =0.02 \)). Analysis of observational notes provided supporting evidence of key competency development for the paired group. The educational intervention was robust however the small sample size is very small and limits the power of the study; nonetheless, the study reinforces that IPE impacts knowledge and underscores the need to continue to deepen our understanding of the impact of interprofessional experiential learning models.

Veerapen and Pukis (2014) conducted a hermeneutic phenomenology study which focused on the discovery of meaning and construction of identity. Registered nurses and medical residents within three years of graduation were recruited to participate in this study. Eleven nurses and eleven residents participated. Physicians reported that transition to professional practice was challenging, they were overwhelmed by the work and the demands and they found it difficult to communicate with nurses. They had to learn to be a team but they found that the impact of undergraduate IPE on teamwork in the professional practice setting was diluted by internal contradictions and overshadowed by demands and contingencies in the workplace that are unac-
counted for in the educational setting. Nurses experienced a power gradient and that senior physicians were difficult to deal with. Nurses felt they needed to construct their identity. Nurses and residents had similar experiences in transition from student to practitioner including feeling unprepared, and overwhelmed by workload, and responsibility. The trajectory for nurses in the first two years was different for the residents. Nurses felt emboldened in their role as patient advocate and understood their role in spite of feeling marginalized by residents who did not perceive them as equal. For residents, rotations and the need to see patients in multiple units was destabilizing and led to feelings of isolation. They experienced communication barriers, misunderstandings, and conflict that led to delay and acting alone. However, both nurses and physicians identified “getting the job done” and “doing the best for the patient” as priorities. The times when everyone acted together, as a team, were organic in nature and associated with emergencies or problem resolution, but that was not the norm so team members felt jaded by the short-lived experience.

The authors report environmental issues like workflow, proximity, and demand as factors that debilitated collaboration. Although this study was conducted in the United Kingdom and Canada, it is relevant to note and consider the implications for interprofessional efforts in the United States. The study is well designed and the findings are important to the body of knowledge. This is an important study and one of first to describe the relationship between the experiences of learning and how behavior is impacted in the transition from education to practice. Just as there is intention in the educational setting to foster and facilitate collaboration and teamwork, the same must be in place in the practice setting.

The studies that were reviewed were conducted with the intention of evaluating the impact of IPE on knowledge acquisition and behavior change. Educational intervention evaluation is a complicated process, with contextual influences and competing interpretations of reality.
making it difficult to generalize findings (Reeves, 2001). The results demonstrate some improvement in understanding of roles but fall short of demonstrating improvement in team dynamics as a result of the IPE intervention. Studies conducted more recently provide some evidence that IPE positively impacts knowledge acquisition and behavior change (Baker & Durham, 2013; Turrentine et al; 2016: Veerapen & Purkis, 2014). More importantly, these studies demonstrate that a more comprehensive IPE program with embedded competencies through the program and experiential learning is required to satisfactorily impact the learner and the desired outcomes.

 Studies Related to Organizational Change and Benefits to the Patient

The final category of interprofessional outcomes is focused on change in organizational practice or a demonstration of benefit to the patient including health and well-being. The literature review did not reveal any substantive studies demonstrating the broader impact of preprofessional IPE on these outcomes such as mortality, patient safety, or patient centeredness. Given the many intervening variables, the IOM (2015) expert panel on *Measuring the Impact of Interprofessional Education* questioned the ability to evaluate the impact of IPE on health of individuals, populations, and health systems. Factors such as social determinants of health, local or organizational culture, and local infrastructure to support alternative care delivery all confound the ability to measure patient outcomes.

 Summary of the Current State of Knowledge of IPE

There is increasing demand from patients, providers, and the government for greater levels of interprofessional collaboration, and IPE has also been identified as a critical mechanism to increase healthcare professionals’ knowledge and needed skills (Berwick et al., 2008). The United States has strong national endorsement for IPE and many schools are in the process of devel-
oping IPE curriculum. However, the evidence to support the impact of IPE is limited, and many obstacles to implementation exist.

Physician and nurse stereotyping is a real phenomenon (Carpenter, 1995; Rudland & Mires, 2005). Beliefs, attitudes, and stereotypes about other professions are established early, often prior to training, and are reinforced in the educational process (Carpenter, 1995; Bradley, Cooper, & Duncan, 2009; Leaviss, 2000; Rudland & Mires, 2005). IPE has been associated with a negative professional identity specifically with physicians (Morison et al., 2004; Park, Hawkins, Hamlin, & Hawkins, 2014), mainly with fear about the potential loss of professional identity and blurring of roles (Morison et al., 2004; Rudland & Mires, 2005). The question is how best to overcome preconceptions in the early educational experience. Societal attitudes regarding health professionals influence the attitudes of students prior to choosing a career path. Altering these stereotypes is both necessary and challenging.

There is on-going debate about when to introduce IPE into the curriculum. One position is that IPE should be introduced early, prior to the development of stereotypes (Bradley, Cooper, & Duncan, 2009; Carpenter, 1995; Leaviss, 2000). The opposing position is that IPE should be introduced after students have developed an understanding of their professional role (Horsburgh, 2001; Rudland & Mires, 2005). If preconceived (prior to undergraduate education) stereotypes have the potential to prevent collaborative interaction, then perhaps assessment of attitudes and perceptions of other interprofessional groups, teamwork, and collaboration should be considered as part of the evaluation process for program admission. Communication, collaboration, and teamwork experiences could possibly be assessed and evaluated through the individuals experience and participation in team sports, or band/orchestra or other group activities such as the debate team.
Gender (being female), age (being more mature), and year of study (earlier) are factors that may positively influence attitudes toward IPE and therefore need to be considered in the development of interprofessional curriculum, educational modalities, and delivery (Curran et al., 2008; Anderson & Thorpe, 2008). Student leadership has also been identified as a potential factor for successful IPE program development but requires further investigation (Hoffman, Rosenfield, Gilbert, & Oandasan, 2008; Johnson et al., 2006).

Nursing and medical students valued and recognized IPE as a mechanism to improve collaborative practice and teamwork (Leaviss, 2000; Morison et al., 2004; Rudland & Mires, 2005; Curran et al., 2008). Pre-licensure nursing and medical students had positive attitudes and appreciation toward shared learning (Horsburgh, 2001; Leaviss, 2000). There was fear that IPE would impact individual professional learning (Rudland & Mires, 2005, Anderson & Thorpe, 2008) Following IPE interventions, students also reported increased awareness of other healthcare professionals’ roles and improved communication (Hoffman & Harnish, 2007; Morison et al., 2004; Rudland & Mires, 2005).

The findings from the literature review demonstrated that the models of IPE education have been highly variable. However, there are some themes. There is agreement on the need for shared learning in the bio-medical sciences (Bradley, Cooper, & Duncan, 2009; Finch, 2000; Rafter et al., 2006; Ross & Southgate, 2000) and some agreement that communication, teamwork, collaboration, and leadership are core competencies that require explicitly defined coursework (Rafter et al., 2006). Paige et al. (2007) suggests that learning occurs when the learner has the chance to objectively examine and determine the appropriateness of their own behaviors. If this is the case, classroom-based learning is not enough. Combining other modalities such as classroom and practice-based learning has the potential to enhance the learner’s experience.
(Baker & Dunham, 2013, Turrentine et al., 2016). Experiential practice-based learning is seen by participants as more valuable than didactic educational modalities alone (Bradley, Cooper, & Duncan, 2009; Morison, Boohan, Jenkins, & Moutray, 2003). The findings from several studies demonstrated that a one-time IPE event does not result in sustained positive changes in attitude or appreciation for each other’s role (Anderson & Thorpe, 2008; Carpenter, 1995; Delunas & Rouse, 2014; Leaviss, 2000). Learning about interprofessionalism in the context of the student’s current and future role provides relevance, but the impact of incidental IPE is short-lived, suggesting that ongoing IPE is needed to sustain the effect. Defining mechanisms to tailor IPE curricula learning goals and students’ needs is important and warrants further exploration (Anderson & Thorpe, 2008; Ateah, 2011; Leaviss, 2000).

Regardless of the educational modality, successful programs will need committed and flexible leaders who are willing to work across traditional educational boundaries (Rafter et al., 2006). Appreciation of values and ethics, others’ roles and responsibilities, effective communication and teams and teamwork, endorsed as core competencies for collaborative practice (IPEC, 2011, 2016). Developing curricula to meet these competencies remains challenging. Faculty development and time for course development is needed for competency translation into curricula and to enable work across traditional education boundaries.

There is some evidence to support the benefits of IPE related to the outcomes of categories 1 and 2 (reaction and perceptions and modification of attitudes/perceptions). Evidence regarding category 3 outcomes (acquisition of knowledge/skills and behavior change) is emerging; however, there are many confounding variables within each study that limit the ability to draw confident and generalizable conclusions. Substantive studies that measure category 4 outcomes (change in organizational practice and benefits to the patient) are not found. Most of these types
of studies attempted to evaluate the impact of explicit patient care interventions such as emergency team coordination and resuscitation training, but we do not have clarity on the impact of clinical practice outcomes such as mortality, morbidity, patient experience/meeting expectations, or patient safety.

Although the IPE literature and the number of research studies is growing exponentially as evidenced by the number of journal articles published in the last four years, the majority of studies to date have a number of methodological weaknesses. Overarching study limitations include self-reported data, small sample sizes, variable approaches to learning modalities, lack of comprehensive program description, a short term rather than long term focus, and inconsistent use of validated instruments.

Unanswered and important questions include, but are not limited to: Have changes in practice or service delivery occurred as a result of IPE? What forms of interaction and decision-making can be observed between professionals as they participate in interprofessional learning? Does IPE have a positive impact on interprofessional collaborative practice? Most importantly, how does collaborative practice development occur and what are the social processes that support it? The following section will focus on the evidence base for collaborative practice and frame the concept for the purpose of this study.

**Evidence Base to Support Collaborative Practice**

Physicians and nurses share the goal of maximizing health and comfort for their patients, and many agree, in principle, on the value of collaborative practice. The timeline and focus on collaborative practice aligns with development of IPE. Notably, over 30 years ago, the American Nurses Association (1980) described the need for greater levels of physician and nurse collaboration and articulated four components of collaboration: (a) partnership with mutual valuing, (b)
recognition of separate and combined domains of responsibility, (c) mutual safeguards for the explicit and legitimate interest of each party, and (d) recognition of shared goals (1980). National and international agencies and theories support IPE as the mechanism to support collaborative practice. The terms collaborative practice and collaboration are often used interchangeably; however, the concept of collaboration has been described more frequently in the literature. The following literature review captures relevant studies for both collaborative practice and collaboration. To date, only a few randomized controlled studies linking collaboration to positive patient outcomes at the micro-system level exist. Single studies have demonstrated increased physician and nurse collaboration, specifically in the intensive care unit (ICU), as a result of reframing the roles and relationships of the physician and nurse leadership, implementing multidisciplinary rounds, and using evidence-based practice guidelines or protocols.

The following studies demonstrate the importance of high levels of nurse and physician interaction and the impact on patient outcomes. Knaus, Draper, Wagner, & Zimmerman (1986) found that poor coordination between physicians and nurses was associated with higher than expected mortality rates. The researchers concluded that coordination, or lack thereof, was the critical factor that accounted for differences in patient outcomes. Coordination has been identified as one of the six defined attributes of collaborative practice (Baggs, 1994). Shortell, Gillies, Duffy, Devers, & Rousseas (1994) evaluated “care giver interaction” (another attribute of collaborative practice) in 42 ICUs. While unable to replicate the findings of Knaus et al. (1986), Shortell et al. (1994) found a positive association between higher care giver interaction and shorter risk adjusted length of stay. Collaborative practice between healthcare professionals has been found to create a positive work environment, decrease costs, improve job satisfaction among nurses, improve patient care (Schmalenberg et al., 2005), and decrease patient morbidity and mortality (Aiken,
Also, nurses who worked in environments that foster collaboration among health professionals experience improved job satisfaction which thereby improved recruitment and retention rates when compared to non-collaborative environments (Aiken et al., 2002). Boyle (2004) found when collaboration with physicians was reported to be present, patient outcomes such as falls, infections, and failures to rescue were all improved. Kaissi, Johnson, & Kircshbaum (2003) found that fewer patient errors were associated with reported high levels of nurse and physician collaboration.

Zwarenstein and Reeves (2006) suggest that there is growing evidence that failures of collaboration between professionals have a negative effect on health care outcomes. O’Leary et al. (2010) reported discrepant views of the quality of communication (another attribute of collaborative practice) between nurses and physicians, but of greatest concern was that patients reported a limited understanding of their plan of care. Evanoff (2006) interviewed physicians and nurses caring for 437 hospitalized patients as to their priorities for each patient and found full agreement on patient priorities between the physician and registered nurses in 17% of cases, partial agreement in 53% of cases, and no agreement in 30% of cases. In addition to differences in patient care priorities, the researchers also found that verbal communication between team members was inconsistent. In a concept analysis conducted by Fewster-Thuente and Velsor-Freidrich (2008) barriers to collaboration such as patriarchal relationships, time, gender, culture, and lack of role clarification were identified. Enablers as well as barriers provide helpful guidance to ensuring the collaborative practice experience is optimal.

Researchers have attempted to describe the determinants of collaboration San Martin-Rodriguez, Beaulieu, D’Armour, & Ferrada-Videla (2005) identified interactional determinants of collaboration that included interpersonal trust, respect, and open communication. In a collabo-
rative communication intervention using simulation and didactic training modules, Boyle and Kochinda (2004) found that specific training related to core skills for communication, guiding conflict resolution, and helping others adapt to change positively impacted collaborative communication and was sustained over six months. McCauley and Irwin (2006) described structural and process changes implemented to increase communication, enhance collaboration, and achieve patient-focused care. Key changes included establishing nurse managers and medical directors of ICUs as peers, each equally accountable for the performance of the professional teams and the clinical outcomes of the patients, the use of intensivists to oversee care for all ICU patients to ensure continuity, engagement of all disciplines in evaluating and expanding the use of evidence based practice guidelines, management of patient throughput, and the use of scorecards for monitoring ongoing progress.

Other researchers have described features of collaboration. Keroack et al. (2007) found one of the key organizational characteristics associated with successful overall performance in top performing academic medical centers, as measured by patient outcomes was collaboration, specifically physician and nurse collaboration. Nurse and physician collaboration was exhibited as sharing recognition for accomplishments and deference to expertise and situational knowledge when problem solving rather than rank or position. Fagin (1992) reported that when solid and strong working physician nurse relationships are present, nurses are confident about their role and their contribution to positive patient outcomes. They are affirmed by their physician colleagues and recognized as integral in caring for patients. Gardner (2005) described that while collaboration is a journey and develops over time, each successive collaborative effort builds on the previous effort.
Many factors play a role and present challenges in the daily work of caring for patients. Committing to a shared purpose, goals, and decision-making requires a shared mental model of collaborative practice, a shared set of operating principles for conducting the work, and clear expectations to minimize interpretation and variation in practice. It doesn’t just happen. Collaborative practice evolves through partnership in which the contribution of each party is valued by the other and where there is recognition and acceptance of the separate and combined spheres of activity and responsibility (Boyle & Kochinda, 2004; McCauley & Irwin, 2006). The balance of autonomy is critical to success and requires mutual respect and appreciation of skills and talents. Collaborative practice cannot be forced; the conditions need to be established so that it can grow (Gardner, 2005). Other associated concepts that emerge in the literature include trust, respect, role clarity, deference to point in time knowledge, confidence, appreciation, and affirmation (Keroack et al., 2007; Fagin, 1992). Although the explicit causal mechanisms to ensure nurse and physician collaborative practice are unclear, potential determinants of collaborative practice include high levels of communication, structured communication models, the ability to negotiate and address conflict, medical and nursing leadership role modeling, or structures that support collaborative practice such as multidisciplinary rounds (Baggs et al., 1999). So how do nurses and physicians develop the necessary skills that lead to collaborative practice? IPE has been identified as the most viable approach to the development of critical competencies that ultimately lead to collaborative practice, but this relationship is as yet untested.

**Summary**

Core values of being a healthcare professional include altruism, accountability, excellence, duty and advocacy, service, honor, integrity, respect for others, and ethical and moral standards (McNair, 2005). Individual professional identity and a strong sense of independent
professional knowledge are important, but it is also essential to understand the roles of others in order to engage in the level of collaborative practice needed to optimize patient outcomes (Collins, 2005). National and international agencies support both IPE as the mechanism to support collaborative practice however collaborative practice will not occur and flourish on its own. The American Nurses Association (1980) described four components of collaboration: (a) partnership with mutual valuing, (b) recognition of separate and combined domains of responsibility, (c) mutual safeguards for the explicit and legitimate interest of each party, and (d) recognition of shared goals. Barriers to collaborative practice have been identified as stereotypes, power, arrogance, conflicts of interest, and greed and IPE is seen as necessary to overcome these barriers (Whitehead, 2007).

The United Kingdom and Canada have led the way in adopting IPE and continuing to iterate models. The United States also continues its journey to adopt more integrated and well-developed IPE models. IPE has evolved over the past decade to support programming to modify negative attitudes, increase knowledge of roles and responsibilities, and improve interaction between professions. IPE has the potential to transcend stereotypes and preconceptions and to eliminate the dysfunction in healthcare teams brought about by these preconceptions.

Published educational competencies provide direction for curriculum and the advancement of efficacious educational models. In spite of theoretical models that explain the importance of IPE to develop a collaborative practice-ready workforce we do not have enough information about the experience of the IPE participants? What is the process of collaborative practice development in physicians and nurses who have experienced formal interprofessional education? Well-designed studies are necessary to refine the body of knowledge regarding this topic. It is essential to continue to evaluate the effectiveness of IPE and the linkages between IPE
and staff outcomes such as collaborative practice. The dynamic and interactive nature of this phenomenon requires study design and methods that will allow for a deeper understanding of the individual experience of members of each profession and the emergence of the factors that account for the behavior of physicians and nurses as they work together to provide high quality patient care. Coordination among educators, health system leaders, and policy makers is prerequisite to creating an optimal learning environment and effective healthcare workforce (Cox and Naylor, 2013). Clarity about the basic social processes that define collaborative practice development would be an important contribution and would provide insight to support or modify existing theoretical models and the development of future IPE programs.
CHAPTER 3

METHODOLOGY

As demonstrated in the literature review, there is little evidence about nurse and physician collaborative practice development in those who have experienced formal pre-professional interprofessional education (IPE). Existing models such as the Chain of Action Interprofessional Education Model (Barr et al., 2006a), the World Health Organization (WHO) Interprofessional Education and Collaborative Practice Model (2010), and the Interprofessional Learning Continuum Model (2015) have been developed through expert consensus and provide the foundation for IPE today. These theoretical models indicate that IPE will lead to multiple endpoints including positive nurse and physician collaborative practice (Barr, Freeth, Hammick, Koppel, & Reeves, 2006b; WHO, 2010; IOM, 2015); however, each of the models is complex and there is no evidence to support the complete end-to-end explanation of these models.

With complex theoretical consensus-based models for IPE and collaboration, recently developed competencies, and limited evidence to support all of the links of IPE to learner and patient outcomes, significant gap in knowledge exists. Grounded theory was selected as the ideal methodology to conduct this study because there is little empiric evidence to support current consensus based theoretical models levels and endorsement for IPE. There is an opportunity to develop a deeper understanding the process of nurse and physician collaborative practice development following a formal pre-professional IPE program.
**Purpose and Research Question**

The purpose of this study is to discover the patterns of behavior and basic social processes of nurse and physician collaborative practice development in those that have experienced formal IPE. The research question is: What is the process of collaborative practice development in physicians and nurses who have experienced formal interprofessional education?

**Research Method**

The study was undertaken using a naturalistic approach, specifically grounded theory qualitative research methodology. Grounded theory is ideal because it provides a rigorous method to conceptualize the phenomenon of collaborative practice development beyond what is known from the current literature and existing consensus-based theories. It allows for the exploration of the sequence and meaning of events (Lincoln & Guba, 1985) that provides a rich and deep understanding of the physician and nurse collaborative practice development process in those who have completed a formal IPE program. Grounded theory will allow the context and the basic social processes of collaborative practice development to be exposed through the day-to-day lived experiences of nurses and physicians. Conceptualization of these perceptions, social interactions, and patterns of behavior provide the body of evidence for the development of a contemporary evidence-based theory (Glaser, 1978; Glaser & Strauss, 1967) of nurse and physician collaborative practice development.

**Setting**

Two universities that have nursing and medical schools that offer IPE were initially identified as sites for this research. One site was located in the southeast and the other in the mountain states. Both sites were selected because of their long-standing history of providing nurse and physician undergraduate/pre-professional IPE. Both offered IPE programming that addresses in-
terprofessional collaborative practice competencies in four domains: values/ethics, roles/responsibilities, interprofessional communication, teams and teamwork (IPEC, 2016). These competencies and sub-competencies were identified as key concepts necessary to support nurses’ and physicians’ interprofessional collaborative practice. Study participant inclusion criteria required that participants experienced a formalized, comprehensive interprofessional curriculum at some point during their pre-professional education. Recruitment was challenging and, as the research progressed, participation in the study was expanded to target the hospitals associated with the initially selected nursing and medical school university’s and then further expanded to include other sites where formalized interprofessional/pre-professional education was provided. The final sample included physicians and nurses who graduated from one of seven university nursing or medical schools that included formalized IPE.

Sample

Participants and Inclusion Criteria

A purposive sampling method was employed. Registered nurses and physicians who experienced IPE in their pre-professional nursing and medical education, were currently employed in a professional practice setting, and had been in practice for at least nine months were targeted for participation in this study. The inclusion criteria ensured that the specified basic social process of nurse and physicians collaborative practice development could be exposed.

The first requirement for inclusion was that participants graduated from a nursing or medical school that included formalized IPE. Secondarily, participants had to be in practice for at least nine months; this criterion was arbitrarily determined, however, ensured that participants had completed professional orientation including practicing basic skills, were knowledgeable about organizational protocols and policies, and had adequate time in the professional practice
setting to have started to develop their own practice and practice relationships. Non-English-speaking clinicians were excluded from the study. The sample size was estimated to be 10 nurses and 10 physicians; however, the final sample size was determined when category saturation was achieved and no new codes emerged (Glaser, 1978; Glaser & Strauss, 1967).

**Recruitment**

Participants were initially recruited from the targeted universities’ alumni Facebook website. This approach was chosen because it provided a direct line of communication with individuals who graduated from the targeted universities with IPE programs. A study outline (see Appendix A) and web content (see Appendix B) was provided to the directors of both alumni associations who then posted a study flyer (see Appendix C) on the alumni Facebook webpage on three separate occasions. There was no response to these postings.

A second approach included a direct request to leaders in the hospitals associated with the targeted university medical and nursing schools. The directors of quality improvement, directors of nursing education, and directors of the hospitalist program were approached and asked to encourage eligible physicians and nurses to participate. The study outline (see Appendix A) and study flyer (see Appendix C) were distributed to all physicians and nurses in the hospitals via the email system. This approach, different from the first recruitment strategy, included all physicians and nurses working at the targeted hospitals and did not specifically limit the email to those who attended the affiliated university for their education. Response to this approach included many who were interested in participating in the study; however, most were not eligible because they did not have formalized IPE. Each person who contacted the researcher had to be specifically qualified with the first inclusion criteria (formalized IPE). There was an assumption that nurses
and physicians working in these hospitals would have attended the affiliated university for their education. This was not the case.

Other recruitment approaches included communicating directly with individual nurses and physicians who graduated from the targeted universities and other university’s with IPE and posting recruitment materials on interprofessional networking websites such as the Nexus website (https://nexusipe.org). A “snowball method” was also employed whereby participants in the study were provided the recruitment materials (study outline and flyer) and asked to identify other eligible participants and direct them to the researcher. This proved to be a very effective method to identify eligible participants.

For those who were screened as eligible to participate, a convenient time to interview was scheduled. Recruitment continued until interviews did not yield any new information, indicating category saturation (Glaser, 1978; Glaser & Strauss, 1967). A total of 21 individuals were interviewed for the study: 14 nurses and seven physicians.

**Protection of Human Subjects**

Institutional Review Board (IRB) approval was obtained from Loyola University (see Letter of Approval, Appendix D). The study was deemed to have minimal risk and qualified for expedited review. Recruitment began with attention to protection of the human subjects. An informed consent procedure was explicitly followed, as were data security procedures, which are described in detail under data collection. The researcher reviewed the information on the consent form (see Appendix E), including the purpose of the study, the measures to ensure privacy, and the rights of the participants. Each participant was informed that they had the right to choose not to answer questions, request that the audio recording be turned off, or to cease participation at any time during the interview. Participants were encouraged to speak freely as data from this
study would not be attributed to individuals. Verbal consent to participate was audio recorded. The risks associated with participation in this study were minimal; however, the study had the potential to invoke sensitive topics or experiences and study participants were reminded that the interview would terminate at their request. There was no direct benefit to the participant associated with the study; however, as a token of appreciation for participation, participants were given a $20 Starbucks gift card.

**Data Collection**

Data collection took place through audio-recorded phone interviews, each lasting between 25-40 minutes. Participants lived in 3 states in the United States, and phone interviews provided flexibility and convenience for eligible nurses and physicians to participate. At the beginning of each interview the purpose and nature of the study was reviewed. Participants were reminded that their participation was voluntary and were informed of their right to decline to answer any question, end the interview, or withdraw from the study. Participants were asked to confirm their understanding of the study and acknowledge their willingness to participate by offering verbal consent, which was audio recorded.

Participants were then asked a series of demographic questions followed by a set of semi-structured interview questions used to engage the participant in conversation (see Appendix F). The interview process focused on “opening the locks” with the intention of using questions to open the participants’ thinking so that information would easily come forward (Rubin & Rubin, 2005, p. 144). Participants were asked questions related to their collaborative practice development followed by clarifying questions asking for examples and probing for additional meaning.

It became apparent after several interviews that the interview questions required some modification (see Appendix G) in order to glean information on the process of nurse and physi-
cian collaborative practice development over the time periods that included their educational ex-
perience, early practice, and later practice. The refined question set provided more thoughtful
and detailed information about the progression of collaborative practice development over time
and more latitude for introspection on the part of the participant. As the process of data collec-
tion progressed, questions probed on emerging codes and categories. Participants were articulate
about their initial experiences in practice and working with clinical colleagues and were also able
to easily describe current practice.

Theoretical sampling and constant comparison provided guidance to determine probes to
elicit information, detail, and explanation about factors that influenced their collaborative prac-
tice development and progression. Data collection continued until there was no evidence of new
data and the categories were saturated.

Data Management

Each participant was assigned an identification number known only to the researcher. The
participant number was recorded on an interview compilation spreadsheet and the number
was also recorded to the transcribed interview data. Digital voice recordings were stored on a
secured website. Each recording was transcribed verbatim, reviewed for accuracy, and correc-
tions made as necessary. In some cases interviews were emailed via a secured transmission to a
professional transcriptionist. The transcriptionist signed a confidentiality agreement. All names
and individual identifiers were redacted from transcribed interviews and field notes. Electronic
files of interviews, hand written memos, field notes, and demographic data were kept on a pass-
word-protected laptop computer hard drive. Printed materials such as the interview compilation
spreadsheet and interviews were stored in a locked drawer in the researcher’s home office. The
list of participants, identification numbers, and audio recordings were destroyed at the comple-
tion of this dissertation. Transcriptions will be retained for further analysis or study with appropriate security measures in place.

Data Analysis

Grounded theory was the qualitative, inductive, iterative research methodology that was utilized for this research study. Grounded theory is “a sophisticated and careful method for manufacturing ideas” (Glaser, 1978, p. 7). In grounded theory, analysis occurs simultaneously with data collection and coding. The tools of grounded theory—constant comparison, theoretical sampling, notes, and theoretical memos captured throughout the interviews—helped the researcher understand what was significant as well as the important details about the basic social process of nurse and physician collaborative practice development. Data analysis began immediately after the first interview was transcribed and, using constant comparison, each subsequent transcript was compared to the previous. Similarities and differences in the words, codes, categories, and concepts were compared as they emerged from the data (Glaser & Strauss, 1967). The process of theoretical sampling and constant comparison including: data collection, coding, and analysis informed the need to modify questions; probe and dive more deeply, redirect the inquiry, and collect additional data (Glaser, 1978).

Theoretical sampling determined the direction and emphasis of the inquiry as the data collection progressed, which resulted in the interview question modifications. After several interviews were conducted the original question set was modified to gather more in-depth information, the sequence and maturation process of nurses’ and physicians’ collaborative practice development. Open coding was initially used, taking words, phrases, and lines to generate as many codes as possible. Axial coding was then undertaken to link codes into conceptual families and identify relationships. Theoretical memos and notes captured emerging insights and support-
ed further inquiry on aspects of collaborative practice development (Lincoln & Guba, 2000). Ideas generated were verified by the data and categories subsequently refitted as new data were gathered. Codes were grouped and regrouped into clusters and potential categories. Finally, selective coding was used to formalize the core category and the associated sub-categories that define the core category into a theoretical framework (Guba & Lincoln, 1985). Data collection continued until the category was saturated and the core category and theoretical model became evident.

The principles of rigorous qualitative research, including credibility, confirmability, dependability, and transferability, were applied to ensure the trustworthiness of the theory of collaborative practice development. Application of the principles of qualitative research will be described in detail in chapter four. In addition, the dissertation committee members provided methodologic subject matter experience and guidance through the entire process.

Summary

Grounded theory was selected as the best and most appropriate methodology for this study because little empiric evidence exists about the nurse and physician collaborative practice development experience. Grounded theory provided the framework for establishing the sample, data collection, and simultaneous data analysis using constant comparison and theoretical sampling. Individual codes resulted in the emergence of the core category: Getting on the Same Page. The rigorous application of the grounded theory methodology led to a deeper understanding of the experience and the ability to articulate basic social process and a new theory of collaborative practice development between physicians and nurses who have competed formal pre-professional IPE.
CHAPTER 4

RESULTS

Grounded theory qualitative research methodology (Glaser, 1978; Glaser and Strauss, 1967) was used to discover the process of nurse and physician collaborative practice development based on the experiences of practicing physicians and nurses who also experienced formal pre-professional IPE. The theoretical model of collaborative practice development with the core category of Getting on the Same Page integrates 10 sub-categories in a process that represents three different and sequential periods of time: education experience, early practice experience (within first three months of practice), and later practice experience (after the first three months of practice). The researcher was committed to the grounded theory methodology (Glaser, 1978) and complied with all basic qualitative research principles and standard criteria for evaluating qualitative research (Lincoln & Guba, 2000) to ensure the integrity of the research and the trustworthiness of the results.

Sample

The sample for this study included 21 individuals: 14 nurses and seven physicians who attended one of seven university medical or nursing schools. The original intention was to recruit graduates from two university nursing and medical schools; however, the reach was expanded to include additional schools to achieve category saturation. Each participant was qualified for the study using the first criteria for inclusion: that they had formalized IPE as part of their curriculum. Of the 21 participants, 16 were female and five were male. Of the 14 nurses, 13 were
female and one was male; of the seven physicians, three were female and four were male. Participants ranged in age from 23-38 years: nurses ranged in age from 23-34 years while physicians ranged in age from 28-38. The length of time in practice was between 12 months and 12 years; however, 15 of the participants were in practice less than two years and five of the participants were in practice between 3-8 years and one was in practice for 12 years. Of the 14 nurse participants, four reported having a previous degree. Physicians all had degrees prior to medical school; one physician reported a short career as an engineer. Current clinical practice environments were predominantly inpatient (n=19). Nurse practice settings were variable: operating room (n=2), intensive care unit (n=3), progressive care (n=1), pediatrics (n=1), oncology (n=1), medical and surgical (n=4), rehab (n=1), and ambulatory clinic (n=1). Physician roles were also variable: resident (n=3), hospitalist (n=2), and attending (n=2).

Recruitment

Multiple strategies were required to identify qualified participants and to achieve category saturation, including the expansion of the recruitment beyond the targeted two universities. Recruitment approaches included: (a) a broad-based approach targeting the graduates from the two university nursing and medical schools that included formalized IPE, (b) solicitation of nurses and physicians on staff at the hospitals associated with the targeted university medical and nursing school. (c) direct solicitation of graduates from the universities that included IPE, (d) posting study outline and flyer to social media sites, and (e) a snowball method.

The initial recruitment strategy targeted graduates from the two university nursing and medical schools through their respective university’s alumni Facebook website. Although this approach provided a direct line of communication with individuals who graduated from the targeted universities, it did not yield any participant interest. This was unfortunate because this was
the most direct approach to capture individuals with formal IPE from the targeted universities. This strategy, though specifically targeted to the subjects of interest was impersonal and potentially biased by age or those that used Facebook. It was also unclear how often graduates would frequent this website.

A second approach included direct requests to leaders at the hospitals associated with the targeted university medical and nursing schools. The directors of quality improvement, directors of nursing education, and directors of the hospitalist program were contacted and provided with the study materials and encouraged to contact eligible physicians and nurses and invite them to participate. In spite of the fact that the flyer expressly indicated eligibility was based on participation in a formal undergraduate IPE program, many confused this criterion with IPE occurring in the practice setting. Each person who contacted the researcher had to be specifically qualified for his or her understanding of formalized pre-professional IPE. Response to this approach yielded 35 individuals who were interested in participating. Of the 35 contacts, 22 were determined to be ineligible: 19 were deemed ineligible because of lack of formalized IPE and three never scheduled an interview despite repeated contacts. The remaining 13 were qualified to participate. Of the 13 that were determined to be eligible for participation, six were educated at programs other than the targeted universities. As a result Loyola Institutional Review Board (IRB) approval was obtained to include study participants who attended other formal IPE programs.

Other recruitment approaches included direct solicitation of graduates from the IPE programs. This approach yielded four participants, three of whom were physicians as well as one nurse. Another approach was posting recruitment materials on interprofessional networking websites such as the Nexus website, which did not yield any response. Finally, a “snowball method” was also employed whereby eligible study participants were provided the recruitment materials
(study outline and flyer) and asked to identify other eligible participants and to direct them to the researcher. This approach yielded four participants: two nurses and two physicians. Recruitment continued until interviews did not yield any new information indicating category saturation (Glaser, 1978; Glaser & Strauss, 1967). A total of 21 nurses and physicians were interviewed for this study.

Despite intensive efforts to recruit participants through the targeted universities’ respective alumni associations, a wider and broader approach to recruitment including recruitment through the hospital medical, nursing, and quality leadership; direct communication with graduates from the target universities; and a snowball methodology was necessary to facilitate participation, data collection, and category saturation. The approaches that were most successful were direct recruitment through the hospital leadership, direct mail to targeted graduates, and the snowball method. Broad-based notification approaches through the universities’ Facebook alumni websites and social media sites like Nexus were entirely ineffective.

**Data Collection and Data Analysis**

Grounded theory methodology provided the framework for data collection and data analysis. Constant comparison and theoretical sampling were utilized to determine areas that needed further probing for explanation or details. Data analysis occurred in conjunction with data collection.

Eligible participants were invited to share their experience through phone interviews, each lasting between 25-40 minutes. Phone interviews provided flexibility and convenience for participants that lived in various part of the United States. For each interview, the researcher reviewed the purpose and nature of the study and participants were reminded that their participation was voluntary and were informed of their right to decline to answer any question, end the
interview, or withdraw from the study. Participants were asked to confirm their willingness to participate by offering verbal consent, which was audio recorded. Each interview was transcribed verbatim and all identifiers were redacted to ensure privacy and maintain confidentiality.

A semi-structured interview guide (see Appendix F and Appendix G) was used and demographic data was collected at the beginning of the interview. The interview process sought to “open the locks” with the intention of using questions to open the participants thinking so that information would easily come forward (Rubin & Rubin, 2005, p. 144). The interviewer asked open-ended questions related to participants’ collaborative practice development and followed up with clarifying questions asking for examples and probing for additional meaning. Initially participants were asked to describe their day-to-day practice working with other professionals and identify what was positive or negative about those experiences. Participants were also asked to describe what influenced the way they practiced to try to elicit information about how they developed skills to work with other clinicians. Once several interviews had been conducted and put through the process of constant comparison and theoretical sampling, it was clear the basic process of collaborative practice development was missing. In spite of the interviewer’s probing, the information elicited was describing current practice; factors influencing the collaborative practice development process were not present in the data. Therefore, the questions were modified to specifically obtain information on participants’ experience and collaborative practice development over time. New questions were added to inquire about the participants’ recollection of their early days of practice and their interactions with clinical colleagues before asking them to describe their current practice and how their practice has evolved over time. Participants were asked to describe their experience over time and what is different and what is the same and ultimately asked to describe what they thought prepared them for working with other colleagues.
The refined questions provided more thoughtful and detailed information about the progression of collaborative practice development over time and allowed more latitude for introspection on the part of the participant. Fourteen participants (eight nurses and six physicians) were interviewed with the refined question set and were used to develop the model. The original seven interviews that utilized the initial set of questions were used to substantiate the model.

As part of the grounded theory process, the researcher transcribed the interviews immediately. The verbatim interview transcripts were reviewed by the researcher and codes were highlighted and noted in the margins. Key passages were also highlighted so they could be easily identified. The codes were then cut apart phrase by phrase and line by line. The interviews yielded a large number of codes. With each new interview, the codes were compared to previous codes and the experience associated with that code was compared with previous incidents of that code. Many codes, not relevant to physician and nurse collaborative practice development, were noted as miscellaneous. In addition the researcher kept a notebook of emerging questions and thoughts about the experiences being described.

As data collection progressed, new opportunities emerged for probing and deeper questioning about codes and categories. Participants articulated their experiences in early practice working with clinical colleagues; they were also able to easily describe current practice and their experience during their education that supported collaborative practice development. Theoretical sampling and constant comparison provided guidance and assisted in determining probes to elicit new or additional information as well as detail and explanation about the participants’ experience with collaborative practice development and progression. Individual codes were clustered and associated with participants’ entire collaborative practice development experience from their ed-
ucation to their practice today. Theoretical memos and theoretical sampling were utilized to fa-
cilitate axial coding where codes were grouped into categories.

At the point categories were saturated the theory of nurse and physician collaborative practice development emerged. Getting on the Same Page is the contemporary theoretical model of nurse and physician collaborative practice development. Getting on the Same Page depicts the basic social process including the education experience, the early practice experience, and the later practice experience. The participants described the relationship of the components of the process that led to their current practice experience today. Interviews were reviewed to ensure the fit of the model and the seven originally coded interviews were also reviewed to ensure sup-
port of the model. The core category, Getting on the Same Page captured all of the processes associated with each of the phases. The core category captures the basic social processes of nurse and physician practice development from nurses and physician who were educated in seven dif-
ferent universities currently practice in a variety of settings, and have been in practice for be-
tween 2-8 years. The theoretical model integrates 10 sub-categories into a comprehensive model that reflects the experience of nurse and physician collaborative practice development. The core category answers the research question: What is the collaborative practice development process of physicians and nurses who have experienced formal interprofessional education?

**Findings**

The process nurses and physicians use to develop their practice as they deliver care to-
gether is represented by a model (see Figure 4) with a core category of Getting on the Same Page and includes ten sub-categories: *Understanding Others’ Roles; Learning to Work Together; Be-
ing Nervous, Intimidated and Frustrated, and Recognizing Important Information; Relating to Each Other; Coming Together; Knowing Each Other; Feeling More Comfortable and Confident;*
Going Back and Forth; and Being a Team. In the presentation of these study findings the core category is capitalized and categories are capitalized and italicized. Quotations from participants illustrate the findings and exemplars are represented as indented passages. Participant numbers and the transcript page number at the end of the quote identify the locations of the quotation. Short phrases or single words in quotation marks represent codes used by multiple participants and are not assigned to an individual interviewee.

The Process and the Model

The data provided by the participants described their day-to-day experiences, from formal educational experience to early practice and then on through later practice. All of the experiences collectively and individually describe the basic social process of Getting on the Same Page. The model of Getting on the Same Page reflects major categories in each phase of nurses’ and physicians’ collaborative practice experience as well as the cumulative experience of all phases in Figure 4.

The nurse and physician collaborative practice development process begins with Getting on the Same Page during the educational experience by Understanding Others’ Roles and learning about each other’s role and how we each bring something different and unique so that then we can begin to learn how to work together (Learning to Work Together). The phases of Understanding Others’ Roles and Learning to Work Together are related; knowing others’ roles and responsibilities creates an understanding that leads to the ability to learn how to work together. Understanding Others’ Role is necessary to begin Learning to Work Together.

Getting on the Same Page continues into the early practice experience where Being Nervous, Intimidated, and Frustrated is common for new practicing professionals in unfamiliar environments who want to contribute in spite of workflow demands and interruptions. Being Nervous,
Intimidated and Frustrated is a precursor to Recognizing Important Information that the individual may have and may be able to share or give or that others may have that an individual might need. Recognizing the value of important information and having and giving information allays feelings of Being Nervous, Intimidated and Frustrated. Having and giving information is a critical component that leads to acknowledging a symbiotic relationship that leads to Relating to Each Other, where trust and personal relationship are beginning to develop.

Accumulated understanding from education and early practice supports the continuation of the process of Getting on the Same Page later in practice. Nurses and physicians come together (Coming Together) through face-to-face and in-person interactions that advance Knowing Each Other and lead to the individual experience and the team experience of Feeling More Comfortable and Confident. Feeling More Comfortable and Confident is the lever that enables nurses and physicians to communicate fluidly, efficiently, and effectively by listening, recommending, suggesting, offering ideas, and discussing. The acts of Going Back and Forth leading to Being a Team.
The model of Getting on the Same Page is developed directly from the participants’ words and their descriptions of their behavior and experiences. Four hundred forty five codes, generated during the interviews, were used to develop the sub-categories and the core category. Theoretical memos and sampling were used throughout the data collection process and provided the opportunities for additional data collection and data analysis on emerging codes and categories. Open coding was initially used, and then axial coding was utilized to group and regroup codes based on relationships and linkages. Getting on the Same Page represents the entire experience of nurse and physician collaborative practice development. The model depicts sub-categories in each phase of nurse and physician collaborative practice development and how each sub-category builds on one another to encompass the entire experience from education through later practice.

Getting on the Same Page accounts for the experiences and behaviors that nurses and physicians described in their educational, early practice, and later practice experience. Through-
out the phases of the process there is recognition by both nurses and physicians that the level of interaction grows and changes through each phase of the process. Ultimately, nurses and physicians are Getting on the Same Page over time by developing an understanding of what their role is, what they do individually and as they work together, and how they contribute individually and collectively to patient care.

**Getting on the Same Page: Education Experience**

The process of Getting on the Same Page with *Understanding Roles* and *Learning to Work Together*; Nurses and physicians described the importance of learning “about each other’s roles” how to “figure things out together” and “how I could do something differently next time.”

**Understanding Others’ Roles**

*Understanding Others’ Roles* reflects the physicians’ and nurses’ learning experience in their formalized educational program. It is defined as understanding what each other’s domain knowledge and expertise is; in other words, what do each know and do. The attributes of *Understanding Others’ Roles* include knowing what is important to the other’s job, becoming comfortable with each other’s roles, understanding how each unique role brings something different, and seeing how each contributes to the success of the other. These attributes were relevant to *Learning to Work Together* and become relevant in early and later practice.

Participants in the study described this phase as “needing to learn about each other’s roles” and “having a full understanding of each other’s role.” Others described it as “standing in each other’s shoes” or “seeing the other side.” One physician said, “we need to know what’s important to each other’s job and how the other people can help support them” (MD5.4). One nurse succinctly described why it is important to *Understand Others’ Roles.*
We definitely needed to learn about the roles for each person so you can effectively carry out whatever needs to be accomplished; the purpose of each, the importance of each and how each should function to have a team that is collaborating well. (RN8.8)

There was recognition that “physicians and nurses are educated differently” and a sense that being educated differently can create challenges in communication but “working side by side teaches communication skills” (MD7.10) in the formative stage of professional development and helps each person to Understand Others’ Roles. IPE provided the opportunities for learning together in addition to individual professional education. One nurse described how “here” [in the IPE experience] “everyone comes together and you’re not segregated based on your role” (RN8.1). Participants were very clear that “open communication and collaboration is not hard” (MD10.12) but in order to be successful it required a framework for Understanding Others’ Roles. Both nurses and physicians described how they came to understand each other’s role through their educational experience.

You work in this tiny clinic setting usually an old school and you provide just like basic healthcare needs and teaching, education, public health for the community. Working with doctors and residents and we had nursing students and nurses and we had pharmacists, dental students, it was fascinating. We all worked together in the clinic and I really feel like that was the best preparation for me because we were so heavily involved and relied so much on each other. It really was fundamental how I got more comfortable around doctors and I understood what does a pharmacist really do and respect that. (RN13.11)

We definitely needed to learn about the roles for each person so you can effectively carry out whatever needs to be accomplished, the purpose of each, the importance of each and how each should function to have a team that is collaborating well. My community health practicum offered the most exposure to how physicians and nurses work together. I was with the same physicians throughout the clinical and they already knew me so our communication was already established. (RN8.8)

Participants described the different ways they learned about each other’s roles and about interprofessional communication. According to one participant, “We did the simulations with the different members of the team and we learned how to communicate effectively” (MD6.11). The
foundation of these activities continued to foster a deeper understanding of roles. For one participant, “it helped me have a better understanding of what spheres of knowledge people in medicine, have, like social workers versus a nurse versus a medical student, like what kind of knowledge bases people have” (MD4.13).

Participants also described learning activities that led to Understanding Others’ Roles so they could be comfortable with one another, come to know the other person’s role, and acknowledge and depend on each other because “we each bring something different.”

**Learning to Work Together**

Physicians and nurses were explicit in describing the importance of having opportunities in the educational setting to learn about Learning to Work Together. The format for Learning to Work Together was inclusive of case reviews, simulation, and clinical practicum. Learning to Work Together during the educational experience is defined as “working side by side” or “working alongside” with intention to learn and understand the individual’s role and its relationship to me. Understanding Others’ Roles and Learning to Work Together often happened in parallel. It was common to hear participants describe these two major categories in one sentence.

There was also a high degree of interaction between Understanding Others’ Roles and Learning to Work Together. The experience of Understanding Others’ Roles and Learning to Work Together was also connected to how physicians or nurses learn to do a better job in their role and a better job communicating with colleagues. One nurse described “opportunities to work with other clinicians where we do a mock code or a septic shock patient scenario and then a nurse, a pharmacist and a physician would be all work together” (RN10.6). The participant added, “It was really good to do that scenario with them and then afterwards, talk about it, and get their feedback” (RN10.6). One participant described that following these experiences they had a
“better appreciation for what kind of issues they have” and learned “how to communicate better and about working in teams” (MD2.7). Nurses and physicians echoed these thoughts and described their experience.

It’s just fascinating and really builds your teamwork skills because you really figure things out together and you also see these people professionally of course but they’re just like you and to know them personally. I just think it’s a very impactful experience. (RN13.12)

I believe I was on surgery and during the eight-week surgery rotation these sessions where, for a couple of hours in the afternoon, they would pull med students and then they would pull I believe 3rd year nursing students, and then we would go over cases together of things that commonly happened in the hospital. So, I think, the example was like, you know, you’re on call and it’s 2 am, and you’re getting hammered paged by a nurse about somebody with a headache or something. And then, what other things are going on …you know it was basically trying to put each other in the other’s shoes and have the nurses know what the physician was dealing with in the middle of the night. And have the physician know what the nurses have to deal with in the middle of the night. And that we’re both just trying to take care of the patients that we have, you know. So, it was actually helpful to dialogue and work in groups that were mixed, you know, nursing and medical students to kind of do that. (MD2.7)

Educational formats that allowed listening to one another as part of thinking through a problem were also helpful. According to one participant, “We also did case reviews with other clinicians like nurses and pharmacists. That allowed us to listen to what each other was interested in related to the case; what was important” (MD3.7). Participants described their experience in clinical practicum where they learn about each other and with each other.

Generally participants reported it was important to “learn about interdisciplinary communication.” The majority of nurse participants described receiving training in structured communication methods such as Situation, Background, Assessment, Recommendation (SBAR). There was a sense that this training was helpful because “the structured process of communicating helps the nurse organize her thoughts” (RN13.13). When physicians were probed on this they
indicated they were not taught structure communication but they recognized nurses had been taught about this communication model.

*Learning to Work Together* occurred through a variety of learning modalities including classroom learning about roles, case reviews, immersion experiences, simulations, and clinical practicum. The modality was not necessarily important; what was most important was that the attributes of *Learning to Work Together* included working “side-by-side” or “working alongside” with intention to learn and understand the individual’s role and its relationship to another person and his or her role.

Getting on the Same Page in the educational experience phase includes *Understanding Others’ Roles* and *Learning to Work Together*. *Understanding Others’ Roles* is focused on understanding each other’s domain knowledge and expertise and coming to know each other’s role to depend on each other because “we each bring something different.” *Learning to Work Together* in the educational phase can take many learning modalities such as classroom learning about roles, case reviews, immersion experiences, simulations, and clinical practicum but beneath the format is the experience. *Learning to Work Together* includes working side by side or working alongside with intention to learn and understand the individual’s role and its relationship to me.

**Getting on the Same Page: Early Practice Experience**

Participants shared their experiences in the first weeks of practice, which included *Being Nervous, Intimidated, and Frustrated*; how they came to recognize that they had important information and that others needed or valued important information (*Recognizing Important Information*); and how they began *Relating to Each Other*. 
Being Nervous, Intimidated, and Frustrated

Participants were asked to describe their first weeks and months in professional practice. Many described *Being Nervous, Intimidated, and Frustrated*. This major category was described in association with saying the wrong thing, not being able to communicate in an organized way, or not having the correct information. One nurse indicated

“What I remember was feeling nervous, that I would say something wrong and if they asked me a question, I would not know the answer then I would have to go back, look it up, and come back. I felt like I had to listen more than talk. I was nervous. I tried to pay close attention to what the other doctors and nurses were saying to one another” (RN10.1).

Nurses indicated that they were taught to escalate situations of concern but they also acknowledged that it is challenging in early practice. According to one nurse, “if we needed to contact the physician that we should not be—be nervous about it” and “if we were concerned about something for our patient, it’s all about patients first and patient safety, but we were first starting out and we can be more timid and more reluctant” (RN14.10).

Intimidation was described in conjunction with trying to perform well and being able to contribute to the team: “I was really intimidated by the team, and talking to the team” (RN15.18). Another nurse said, “I’ve never done this and they are all so smart and intimidating” (RN10.6). Physician used other words to describe their nervousness or intimidations: “feeling overwhelmed” or “not knowing enough.” One participant said he “didn’t know as much as the nurses.” Nervousness and intimidation and feeling flustered were often reported together. One nurse summarized her experience; describing nervousness, intimidation and feeling flustered.

I was very nervous, I could say I guess for those first couple of shifts as a new nurse I was pretty intimidated. It wasn’t because I thought, you know, our culture on our floor is very open and we have a pretty great patient safety and collaborative culture but it’s just very different from talking to a nurse to a doctor. I felt flustered, I would just say stuff
and I wasn’t to the point. I think I was flustered because I didn’t really know maybe what they wanted or hear all the details they needed or not. (RN13.1)

Frustration was usually reported in conjunction with being busy, feeling environmental demands, workflow challenges, and trying to keep up. Frustration occurred with physicians as they tried to learn to manage their caseload and all of the interactions that come with that. Physician frustration is connected to how nurses feel nervous or intimidated. Several physicians mentioned frustration with “being paged about orders” or “questioning orders.” There was a feeling that individual questions interrupt another task that was taking place and interferes with their workflow. One physician said, “It’s tough, it’s really hard. There are many—many competing aspects for your time. And so if you can reduce the amount of perceived interruptions, arguably there’d be better patient care” (MD3.3). Another said, “we were still trying to write orders and make phone calls, admit patients, and discharge patients so it was kind of a frustrating encounter with the, you know, interruption at work flow, things like that” (MD5.13). Nurses feel the frustration of physicians in early practice and their individual frustrations feed one another. The experiences are described in the quotes below.

I could tell the residents, they’re on a tight schedule. There were so many pages and so many interactions with nurses all day I think that they kind of felt like, alright, another conversation or another thing, so I almost felt like they were frustrated a little bit or they had other things to do or why can’t you just page me and why does this have to be in person—those kinds of interactions I guess so that made me flustered. (RN13.2)

There were definite days where nurses would definitely save you time when they would alert you of patient needs and also clinical signs that needed to be intervened on sooner rather than later. And there were times when you would get paged about an order that you placed and they would ask you know whether or not it needs to be done and so you'd kind of get frustrated with a lot with questioning of orders and then the time it took to return the page. (MD3.1)

Nurses and physicians described Being Nervous, Intimidated, and Frustrated for different reasons. Attributes of Being Nervous, Intimidated, and Frustrated include being nervous about a
new professional role and having information to contribute; being intimidated comes because others have more experience and know more; and frustration comes from questioning and interruptions in workflow. These three emotions were highly connected to one another. Nurses were nervous about being prepared, organizing their thoughts, and making sure they had relevant information to contribute. This was often reported as “knowing one thing.” For nurses, feelings of nervousness often led to the feeling of intimidation. Physicians reported the feeling of nervousness associated with intimidation as it related to their sense that practicing nurses knew so much more than them. Physicians experienced frustration because they are learning to manage workflow and trying to figure out how to deal with or perhaps reduce interruption. These three emotions interact with each other and as nurses and physicians interact with each other and individually experience these feelings, they play a role in both positive and potential negative interactions.

**Recognizing Important Information**

In early practice, the feelings of *Being Nervous, Intimidated, and Frustrated* get quickly translated into an individual and internal growing awareness and realization of the need to give and get important information (*Recognizing Important Information*). This is a part of an active process to mitigate *Being Nervous, Intimidated, and Frustrated*. In early practice nurses were learning to contribute and provide input and physicians relied on nurses for their input. Physicians know that having information or lacking information affected the workflow of the day and at this point in their developing practice they were learning how to make their day run efficiently “because they have issues with workflow and they have issues with interruption and they recognize that, if they have that conversation, it changes the course of the day” (RN16.18).
Early in practice nurses understood they needed to pay attention to important information and to listen. One nurse stated, “I learned what the doctors were thinking about in terms of patient care and what kind of information they needed from me in terms of patient care. So I intentionally listened in the beginning without asking a lot of questions or talking to them.” (RN9.2). Nurses wanted to be able to share important information they believed the team would find valuable. They were learning what was important for physicians and physicians wanted important information from nurses. One nurse indicated, “I had the necessary information and what I was calling them about was important” (RN14.3). Others noted, “I also learned kind of things are important to address quickly and what we can work on over a few days” (RN10.2) and “they want to know that you are aware of what’s important to them” (RN9.10). Another nurse said, “She (the attending) wants to know the facts. She wants to know more background information. And that's really important” (RN15.13). Nurses and physicians shared details about how important information shaped their interaction with each other.

I have a much better grasp of kind of what they do want to know about, what changes are significant to them and what aren’t. Then I intend to tell them something and they feel is important and valuable to the care, or sometimes they are like oh yeah we know about that and that’s fine. (RN10.6)

The nurses want to be able to have the information, give the information. What can I contribute? What’s the one thing that’s important that I need to contribute about this patient? (MD5.19)

Early in practice physicians recognized that nurses are with the patient around the clock, they know the patient well, and nurses have important information that completes their plan of care. Physicians also knew that the nurse understands the hospital operations—how things work—and that they needed to rely on them. Nurses and physicians report physicians relied on nurses for information (RN10.1) and “the attending and residents rely on me and ask me what
would you do, what do you think” (RN9.3). One physician said, “I was relying on the nurses a lot initially to kind of help me and give me cues as to what I should be doing next” and “they were very helpful kind of learning the ropes there” (MD6.3). Both nurses and physicians describe their reliance on one another and information is key.

Nurses provide valuable information that we need to discharge the patient like whether or not they have help at home or that they live in an apartment and can’t walk up the stairs; or that a patient has something else going on in their life that is affecting their care today. Things like that that really are helpful that I would never have found being on my usual encounters with patients. That’s been helpful. (MD3.4)

But they do rely on us for the patient’s baseline emotional state, physical state, and I think that’s very meaningful and I think it does kind of help the residents and that we can help put together for them to give them a better picture (RN13.3)

The need for nurses and physicians to have and give information in early practice grounds their ability to contribute. This act is purposeful and intentional as noted by one physician: “I feel that today I work hard to make sure the interactions I have with nurses get to the point for the patient and that we talk about the most important issues at that time for that day” (MD3.5). One nurse said, “my attending will be like, I need information from you. I need to be updated, but—so that tells me, yes, she does want our point of view; yes, she does want our opinion. I know I have important information that she needs” (RN15.6).

Recognizing Important Information, as part of the process of Getting on the Same Page, acknowledges that nurses and physicians are in the process of learning what is important. Physicians rely on nurses for important information and nurses know important information makes them valuable to the physician. Physicians’ and nurses’ attention to Recognizing Important Information is an action that supports reducing feelings of Being Nervous, Intimidated and Frus-
Information is powerful and having it, giving it, and getting it supports the next phase of early practice.

**Relating to Each Other**

As physicians and nurses continue to evolve in early practice they have an internal growing realization and awareness of the need to give and receive important information. Physicians and nurses are learning how to provide input and contribute to the plan of care and they are both learning about each other and trying to ensure their day goes efficiently. They are finding that efficiency and effectiveness as a clinical professional happens through *Relating to Each Other*: coming to know and trust each other. Many described “knowing names” and “knowing who to go to” as important attributes of the phase of *Relating to Each Other*. One physician reflected on the importance of knowing the nurse’s name: “as physicians, and like it’s a little weird when you’re in the room and you’re talking to the nurse and you don’t even know this person’s name, but they’re the ones who like are actually giving the patient the medicines and taking care of the patients” (MD2.4). “I think the nurses appreciate when they know which doctor is caring for the patient, like they can. They know who we are and it’s not just a random resident that they’re paging” (MD4.8). Both nurses and physicians describe the importance and value of knowing who each other is.

I have had several patients with him [the resident] and he kind of knows me and I know him well and when his attending comes to morning rounds I think he feels good about reporting how we took care of the patient. (RN9.4)

I know most of them now, so that makes a big difference. I don’t feel like awkward going up and introducing myself. It’s like, oh, hey, how are you all going? What’s up with our patient in that room, you know? And so it’s a lot more comfortable I feel like. (MD 6.8)

Building trust is also important; nurses found that “after you work with certain doctors a little bit they definitely learn to trust you” and “you can advocate for a certain thing that definite-
ly results in a positive outcome which might have possibly been negative if they didn’t trust what you thinking” (RN8.4). Nurses recognized that building trust led to Relating to Each Other. “I guess we could trust her and they started asking me questions” (RN 8.6). One physician describes how knowing someone build a level of comfort as noted in the quote below.

And making sure that you feel comfortable you know, that you at least know the nurse’s name and you feel comfortable asking them questions and that they feel comfortable expressing any needs that the patient has to you or anything they’re concerned about. (MD4.5)

Nurses and physicians both describe the importance of emerging relationships: “Just building those relationships has really helped. As far as providing better patient care, I try to make sure there are not gaps in communications. I try to get to know the physician team better” (RN10.2). “It is important to trying to understand and figure them out from the beginning rather than jumping in feet first and not really knowing how to communicate with anyone” (RN 8.9).

Physicians were also focused on Relating to Each Other and describe a specific intention about making connections with nurses. “I think I came in very focused on making good relationships with nurses and think, aware that like that a perceived power dynamic can sometimes be challenging” (MD4.3). Relating to Each Other has implications for how communication happens within the team; overcoming feelings of caution, building trust, and being direct support the positive feelings associated with Relating to Each Other as described in the quotes below.

I always try to develop a relationship with them [physicians]. I know who to go to and I also conversely know who to be cautious with. After I have worked with a physician for a while my ability to communicate improves; I have a better understanding of how to get what I need and they know when I’m serious you know. (RN7.3)

I think opening lines of communication and being very direct helps, like hey, if I’m doing something that like is annoying to you or that is messing with your work flow, please tell me, you’re not going to hurt my feelings. I’d rather make it easier for all of us. So I think just like opening the lines of communication is helpful. (MD4.9)
Relating to Each Other includes knowing, trusting, relying on one another, connecting informally or formally on a daily basis, and beginning to build a relationship. Relating to Each Other has a clear connection to Recognizing Important Information. Having and giving important information is valuable and is acknowledged by physicians and nurses as a lynchpin to Relating to Each Other. This quote demonstrated the connection.

I think too just building relationships with them, getting to know them and what they see as important information from nurses and what they want communicated to them. So it’s like that—just learning all of those kinds of habits and confidences over time, I think made a lot smoother. When nurses are clear about what is going on with the patient and what we need things go more smoothly for the patient. (RN10.4)

In early practice nurses and physicians were learning about their professional roles and how to be successful as an individual and how to make a contribution to the team. The experience of Being Nervous, Intimidated, and Frustrated was very real but is quickly displaced by Recognizing Important Information. Recognizing Important Information, the act of giving and getting information, was purposeful in defining individual’s roles and grows beyond that into understanding of how best to contribute to patient care by Relating to Each Other.

Getting on the Same Page: Later Practice Experience

Accumulated experience and understanding from education and early practice supported the continuation of the process of Getting on the Same Page later in practice. Nurses and physicians come together (Coming Together) through face-to-face and in-person interactions that advanced Knowing Each Other and led to the individual experience and the team experience of Feeling More Comfortable and Confident. Feeling More Comfortable and Confident was the lever that enables nurses and physicians to communicate fluidly, efficiently, and effectively by
listening, recommending, suggesting, and offering ideas. This ‘fluid discussion’, described as 

*Going Back and Forth* led to *Being a Team.*

**Coming Together**

*Coming Together* was about interacting with each other. It is the continuation of the experience of *Relating to Each Other.* As noted previously participants mentioned the importance of being present and the valuing of being in person to be able to relate to one another. Attributes of *Relating to Each Other* include knowing, trusting, and connecting informally or formally on a daily basis. The experience of *Relating to Each Other* allowed for the experience between nurses and physicians that is developed in later practice as *Coming Together.* Both physicians and nurses described how the opportunity to be present together provided the optimal experience for communication. It was described as “face-to-face,” “speaking in person,” “having a conversation,” and “making eye contact.” These in-person experiences allowed for greater familiarity, the opportunity to know each other, the chance for the relationship to evolve, and a way for greater engagement and conversation. It was reported by one physician as, “They know who we are and it’s not just a random resident that they’re paging. It seems like they appreciate that face-to-face interaction and it seems like they appreciate when we do ask them questions like what do you think?” (MD4.8)

So it was very helpful if they would stop by and then we could talk about the patient face-to-face, I feel like that was always the best. And then obviously, the least amount of communication through like the secure texting. (MD6.4)

I feel like if it really is important information you probably shouldn’t be texting you probably should be paging or calling them to get immediate attention and the best case it when they come to the floor and we can have a face-to-face conversation. (RN13.7)

Physician and nurses both described how face-to-face encounters improve understanding. “And if you’re worrying about something or you’re not sure about something, it’s important that
you talk to someone face-to-face, and don’t, you don't be afraid to voice your opinion”
(RN15.16). One physician described how not having a face-to-face conversation about the pa-
tient care decisions has the potential to lead to lack of full understanding and a negative conse-
quence for the patient.

I put it in the order how it’s supposed to be done, but I didn’t get a chance to talk with the
nurse face-to-face. And it got changed somehow and then it didn’t happen and the pa-
tient had to end up staying an extra day and until we got the test. So face-to-face is really
important. And I try to do that at least once or twice during the day. (MD 6.8)

Other physicians described how the lessons from training were carried forward into their
practice and also how the experience of Coming Together has led to the evolution of the experi-
ence to now include the patient.

So from the very first day of residency, I had kind of that practice built into my training
so I had daily face-to-face interactions in a formal setting where we discussed all of our
patients. In most cases, the bedside nurses were present. At all times, the charge nurse
was there kind of as a representative, if the bedside nurse couldn’t be present. So we dis-
cussed kind of the active issues with the, going on with the patient. As I progressed
through my training, sort of in my second and third years, we actually tried to bring this
multi-disciplinary model to the bedside. (MD7.3)

Coming Together is referenced as an experience of “we” or “they” rather than “I” or
“me.” Attributes of Coming Together include an increasing level of familiarity with each other
beyond Relating to Each Other, being present, in person and face-to-face, for the purpose of
having greater levels of engagement around patient care decisions.

Knowing Each Other

Knowing Each Other in later practice was different than the attribute of knowing each
other in early practice where nurses and physicians are Relating to Each Other. Knowing Each
Other in this phase of the process reflected a deeper understanding of each other; more than just
knowing a person’s name or that fact that I had seen you before and I have face recognition.
Physicians expressed in later practice that in *Knowing Each Other* was a growing level of trust and that knowing and growing levels of confidence and comfort build levels of trust and amplify the symbiotic relationship of nurse and physicians. One physician described it this way: “I rely, I think, even more heavily on, you know, nursing and have a lot more trust because of that foundation that I built and see them sort of as an extension of me” (MD7.5). *Knowing Each Other* happened both formally through the exercise of communicating about patients and rounding as well as informally. Nurses described that they knew the habits of their colleagues and what they wanted as a mechanism and that allowed them to be able to contribute something that would be valuable to the conversation. In the quote below on nurse described the importance of physicians being receptive to conversation and being interested in their opinions.

> I have a much better grasp of kind of what they do want to know about, what changes are significant to them and what aren’t, because then I intend to tell them something and they feel is important and valuable to the care. (RN10.6)

> If you have a relationship then we are able to talk to them, have them understand where I am coming from and understanding where they are coming from. (RN7.5)

Physicians in particular describe “personal rapport and camaraderie” as important and how “hanging out” and “being available” on the unit allows them the opportunity to make connections with colleagues and problem solve together.

> Like sure they can page you but it’s much better for them to come see you if you’re hanging out in the nurses’ station doing your work there then they can kind of find you and ask you a question or talk to you about something that’s going on and you usually get a little bit further in the problem solving process than if you just get a page. (MD4.6)

There was a relationship between *Coming Together* and *Knowing Each Other*. *Coming Together* inspired a deeper ability to know each other and the deeper experience of *Knowing Each Other* was made possible by *Coming Together* and working through patient care issues. *Knowing Each Other* led to increased feeling of confidence and comfort as a professional indi-
vidual contributor to care and as a member of a team. Knowing Each Other reflected a deeper understanding of each other; more than just knowing a person’s name, having experience interacting with each other and having face recognition. Attributes of Knowing Each Other included growing understanding and trust, confidence and comfort as it related to problems solving and patient care and being present and available formally in rounds or informally by “hanging out.”

**Feeling More Comfortable and Confident**

Physicians and nurses felt more confident and comfortable through their daily experiences as they engaged with others and learned how to present their point of view on the patient. One nurse said, “I think just feeling more comfortable, more confident when I am interacting, communicating with physicians. Of the experiences I’ve had and the situations that have come up that I’ve learned a lot from these interactions” (RN10.4). Another nurse said, “At first, I didn’t have a lot of confidence with interacting with the physicians, but as time went on I definitely gained a lot more confidence. So I feel very confident in advocating for patients and what I feel like they might need and making suggestions in those areas” (RN14.4). Described by one nurse; confidence comes from Knowing Each Other.

So now that I’ve been working in my unit for over two years I know like most of the physicians that I’m interacting with, whether they’re interns, residents, or attendings and you know feel really confident in approaching them if I see them on the unit, and you know discussing a patient with them and making suggestions if I have a suggestion for what’s going on or if I’m just notifying them of something, you know, just going up to them and letting them know or paging them and having a phone conversation with them about a patient. (RN 14.4)

Physicians were focused on becoming confident and comfortable in their role as a physician. In early practice they relied on nurses for important information but later in practice they recognized that they know how and where to get important information and that it was important
for their decision making. One physician said, “So I think maybe a little bit more just confident in my role as the physician and the decision maker” (MD4.7).

Nurses expressed that their comfort level is as much about being confident talking to colleagues but also about talking about patients. “I feel really comfortable talking about patients. And even if they (the doctors) ask me a question and I don’t know the answer, I tell them that I don’t know. If it’s something that I can find out, then letting them know, I can get back to them once I talk to the patient or look up whatever information” (RN14.5). Another nurse focused on confidence to be prepared to engage with physicians and contribute nursing domain knowledge to the conversation.

I feel a lot more confident. I have only been a nurse for a year so I have always room to grow. In my interactions today I feel very much more prepared and confident when I interact with a doctor or attending. I think the reason why is I’ve just had clinical experiences where I’ve been able to, you know at the bedside, do a procedure with the doctor or maybe like a wound change. Or I’ve started talking with a doctor and saying hey this patient’s vital signs are looking really critical I think they might be going septic. It’s those situations when you actually sit down with the doctor and you really start to understand how they think helped me be more prepared in my interactions with them. (RN13.3)

Nurses and physicians both described how confidence in your own domain knowledge led to a comfort level in respecting each other’s domain knowledge and having professional conversations about patient care. One nurse put it succinctly in the quote below.

Besides just the confidence which comes with time I think and just developing you know nursing clinical judgment. Those are things that just come from experience and for a year that’s really grown for me and I felt that growth because you start so novice. I would also say the biggest thing within this first year has been teamwork. I really feel that there is a key to strong communication because by respecting and knowing what the doctors/physicians like and what is the nurse scope and what can they do versus what is in my scope and what I do. (RN13.9)

*Feeling More Comfortable and Confident* is defined as growing one’s knowledge and understanding of the who the team members are and how interactions needed to take place to op-
timize patient care. Attributes of the category of Feeling More Comfortable and Confident are related to the individual as well as how the individual relates to the team. Individuals develop confidence in themselves and their role and comfort levels increase to be able to share domain knowledge and expertise and contribute to the plan of care. Knowing Each Other leads to a level of Being More Comfortable and Confident and allows nurses and physicians to go back and forth in their discussions regarding patient care.

Going Back and Forth

Going Back and Forth happens as nurses and physicians start Feeling More Comfortable and Confident with their role within the team and leads to the ability for nurses and physicians to go back and forth in their communication about patients’ care. Attributes of Going Back and Forth included “making suggestions,” “discussing,” “offering recommendations,” “bouncing ideas,” “figuring it out,” and using the knowledge skills and talents of both the nursing and medical professions to determine the best plan of care for the patient. One nurse said, “Sometimes they’ll just accept your suggestion, and then other times, you know, you’ll kind of go back and forth with what might be best for the patient based on their history” (RN15.10). Another said, “And sometimes, doctors will ask, you know, why do you think that’s a good idea?” (RN14.4). Both nurses and physician articulate the connection between being comfortable and confident and the ability to begin going back and forth.

Communication that goes back and forth is when we discuss the case and I think, I mean, in terms of trying to figure out what’s going on with the patient and what’s the right thing to do, yeah. Absolutely, I mean, there are, I think probably at least once a week there’s a situation where I’m kind of scratching my head trying to figure out what’s going on and I find myself asking a bedside nurse or the team does anybody have any insight? Like, this what I think is going on. (MD7.14)
It was really hard trying to figure out what we were going to do, like, creatively, and so we all, like, troubleshooting a bunch of ideas and we found that, like, we worked really well together trying to figure that out. (RN16.15)

Going Back and Forth changed the interaction from a transaction to a conversation. It is the process of respectful communication and conversation about patient care that recognizes each profession’s domain knowledge and expertise. It includes asking for and giving ideas, making suggestions and recommendation, asking for feedback, identifying alternatives, engaging in discussion, and figuring it out together. Nurses and physicians both describe in detail the experience of Going Back and Forth and how it works.

We round at the beginning of the day shift or night shift where you have their full attention; they are right outside the patient’s room and they will specifically ask how, is this patient doing? Is there anything you need from me? And I say yes, this is my list I need this ordered and this changed. Can we do that? And they are like, yes, we can do that, let’s do that great and then they move onto the next patient kind of thing. I think that works really well because they have your full attention, and they are right outside the patient’s room and it’s something that you think that they need to go into the room and see for themselves. (RN10.5)

I think probably at least once a week there’s a situation where I’m kind of scratching my head trying to figure out what’s going on and I find myself asking a nurse, like, do you have any insight? Like, this what I think is going on. What are thinking? You have been talking to the family more frequently than I have or you are talking to the patient. Is there anything that you have figured out that I haven’t? That happens all the time. (MD7.14)

Being a Team

Being a Team is defined as the ability to go back and forth that leads to problem solving. Attributes of Being a Team include “being proactive together,” and “getting ahead of problems.” Being a Team took advantage of the contribution of individual domain expertise and then conjoined the collective wisdom of all to define the plan of care. It is action oriented and was described by one nurse as involving many interactions during the course of the day.

Every morning we work together to kind of get ahead of any problem that could—could arise, especially ’cause we discuss labs together, and protocol, event, you know, symp-
toms, signs, everything. I told her (the physician) all the signs and symptoms that I was seeing, and what I was concerned about, and immediately she’s like, good call; let’s send him for a CT. I think that a lot of the things that we discuss helped resolve or catch early problems, early concerns. And then we sit down together, and we kind of discuss everything that’s—the—I discuss and report in what's happening with the patients. So we work together to make sure that our patients are getting the best care that they can get, and that we’re on top of, you know, any—any concerns or anything going on with that patient.” (RN15.9.10)

Structures that support collegial interaction such as rounding are helpful. Many physicians and nurses describe the value of rounds as a place where the team came together and engaged in face-to-face interactions. The experience of the physicians and nurses below described the attributes that are critical to Being a Team.

We had daily interdisciplinary rounds with our nursing staff. So from the very first day of residency, I had kind of that practice built into my training so I had daily face-to-face interactions in a formal setting where we discussed all of our patients. In most cases, the bedside nurses were present. So we discussed kind of the active issues with the, going on with the patient. (MD7.3)

I talk to them and try to them how my patient’s day is going and I know what their goals are at this point. I make recommendations and tell them my concerns and pretty much feel part of the team. My relationships are great. (RN7.4)

Physicians and nurse express that Being a Team went beyond individual professional domain knowledge; it was about feeling empowerment to contribute.

Being more of like a team and that we each bring something and that, you know, and to make sure that the nurses, that’s there almost basically shared decision-making with the care of the patient on a daily basis. (MD2.4)

It’s not just nursing, and it's not just medicine. It’s just professionalism, and how to work in teams, and how to get things done, and how to be efficient and effective. And, you know, you—you, kind of, get a sense of self, and you have to learn that. And you have to be empowered and creative and, you know, believe in yourself and what you're doing. (RN15.19)

Being a Team had an impact on the patient as well. Nurses and physicians described that when they worked together, listened to each other, and gained each other’s perspectives, the pa-
tient had a better plan of care. One nurse said, “So we—we kind of collaborate on what our plan is—plan of care is based off of what we’ve shared together” (RN15.10). One nurse and one physician described the tight connection and how working closely and regularly contributed to achieving positive patient outcomes.

And then I think also the patients feel like every single person on the healthcare team from the night nurse to the day nurse to myself to my attending nurse are all Learning to Work Together and hearing them and hearing their concerns. (MD7.8)

It is important to have a close connection with the care team and huddling regularly with whoever you are working with closely, and regularly. You should be debriefing with them regularly and you should be asking for their feedback so that you can become more rounded and understand, from both sides, what is going to best and positively impact our patients. (RN8.7)

**The Theory of Nurse and Physician Collaborative Practice Development**

The theory of nurse and physician collaborative practice development called Getting on the Same Page was generated directly from the experience of physicians and nurses from a variety of clinical settings and included professionals who were educated in multiple sites. The theory was generated from the words and experience of the 14 participants and then validated with the earlier seven interviews. The core category of Getting on the Same Page is supported by the sub-categories.

As a result of Getting on the Same Page many of the participants felt the plan of care was clear to everyone, including the patient, patient safety might be impacted and the unit may function at a higher level. One nurse thoughtfully described how important it is to consider how to directly “measure the impact of collaboration because it might actually drive home the point and show that it really does make a difference. It has to be better for patient safety because, we know for sure in the end, if we're all talking together, then everyone’s on the same page” (RN16.18). Another nurse said, “everyone as a team has to be on the same page in the patient’s room. I think
this is one of the core things we need to do in health care. When we work together I think it makes the unit higher functioning” (RN7.7).

Both nurses and physicians reflected on the importance of having the individual nursing and medicine domain knowledge and using each perspective to develop a patient’s plan of care.

The nurse can be in the room with me as we talk to the patient and assess them and then we can of come up with a plan together based on what I think is going on and what the nurse thinks is going, and then we make sure that we are all of on the same page. (MD2.4/5)

Nurses would contribute to the conversation about that case, the doctors would finish their problem list and describe any changes or new plans, and then the nurses would summarize the plan of care just to be sure that everyone's on the same page and aware of what the plan was. (RN16.10)

The following story told by a physician is an exemplar of Getting on the Same Page from the development of individual domain knowledge of each professional to learning about teamwork to the impact on the daily work routines and, most importantly, to the plan of care and the patients’ experience with the healthcare system.

At the beginning of the day we identify that there might be some challenge with a patient’s ride home [discharge] or the patient may have had some problem through the night. It’s important to work together to get on the same page and get the patient on the same page as us. Maybe they are not ready to be discharged and the night nurses identified that and let’s say there is also a change in the patient’s condition. If we know that going in and can kind of prepare a plan and have a sense of what the patient’s perspective is, that could potentially save hours’ worth of work on the back end and allow a patient to be discharged as planned. And then I think also the patient feels like every single person on the healthcare team, from the night nurse to the day nurse to me as the resident, to my attending, we are all Learning to Work Together and hearing each other and hearing the patient. (MD7.7)

If team members are all on the same page the “workflow is efficient and effective,” “delays are alleviated,” and “coordination of care is positively impacted.” According to several of the physicians, “when we’re on the same page, we can avoid interruptions and pages in the afternoon, it’s about coordinating things” (MD6.7) and “you’re just all at the bedside with the patient
and there’s a better discussion when we are together and it lets us make sure everybody’s on the same page going forward” (MD5.13). Nurses also felt Getting on the Same Page supported efficiencies. One nurse recommended the team “start the day off discussing the plan with the doctors so that we can keep everyone on the same page and when all the team members are on board things don’t fall behind or get delayed” (RN13.8/9).

The experience of Getting on the Same Page includes the process of building individual and team capability throughout the process of collaborative practice development. In later practice, *Being a Team* is the culmination of Getting on the Same Page. Participants explicitly described Getting on the Same Page, how it works, and what happens as a result of it. Physicians and nurses described Getting on the Same Page as critical to their day-to-day individual experience, team experience and the patient experience as well as having important effects on the day to day workflow and operations.

**Trustworthiness of the Study Findings**

The trustworthiness of qualitative research is measured by credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). The principles of rigorous qualitative research were applied to ensure the trustworthiness of the theory of nurse and physician collaborative practice development.

Credibility involves establishing that the theory represents the experience of the participants and that there is “truth” in the conceptualization of the theory. Credibility was established through the data collection process, theoretical sampling, and constant comparison. Codes were represented as the actual words of the participants and data were collected until categories were saturated to ensure the conceptualization of the basic social process was grounded in the data. During the recruitment and qualification process, special attention was given to ensuring that the
participants had intimate experience and knowledge of the formalized IPE and therefore could articulate their experience around the phenomenon of interest.

Confirmability refers to the degree to which the results can be confirmed or corroborated by others (Lincoln & Guba, 1985). Field notes and theoretical memos documented the analytic approach including theoretical sampling; the links between codes, categories, and concepts that point to the core category; and the major categories that provide the rationale for the selection of the core category. Faculty advisors provided guidance throughout the data collection and analysis process and reviewed coding, categories, memos, and theory development. Several times during the open coding stage of the process, interviews were coded by the researcher and by faculty. Codes were compared to ensure consistent capture of codes. Faculty also evaluated accuracy of the codes and reviewed the major categories and core categories to ensure the findings were supported by the data (Lincoln & Guba, 2000). As the primary instrument of this qualitative research, the researcher remained objective, focused on the process, and was sensitive to personal assumptions, biases, and blind spots.

Dependability is evaluated on the theory itself: whether it is sensible, relevant, and repeatable (Lincoln & Guba, 1985). The theory of Getting on the Same Page is generated directly from the experience of physicians and nurses from a variety of clinical settings and includes professionals who were educated in multiple sites. The theory was generated from the words and experience of 14 participants and then validated with the earlier seven interviews to ensure dependability. Field notes and theoretical memos document the analytic approach including theoretical sampling while the links between codes, categories, and concepts that point to the core category and the major categories provide support and rationale for the selection of the core category.
Transferability refers to the degree to which the theory can be applied or modified to other settings (Lincoln & Guba, 1985). The intentional use of a purposive sample of physicians and nurses who had formal IPE from a variety of qualified educational institutions, who are at varying points in their professional career, and who work in clinical setting supports transferability. In addition the theory supports the entire process collaborative practice development. Exemplars that provide a thick and detailed description of the participant behaviors and experiences related to the phenomenon are described in the findings. The theory is understandable to physicians and nurses as it is constructed from their experience.

Obtaining information directly from those who have experienced formalized IPE provided the mechanism to conceptualize of the basic social process of nurse and physician collaborative practice development. Findings from this study will not only add to the body of nursing and physician knowledge about nurse-physician collaborative practice development, but also inform national leaders and agencies, give guidance to educators, and provide a framework for future research.

To validate the model and ensure the fit of major categories as they relate to the core category, all transcripts from the study participants and the original seven interviews were reviewed and evaluated. The research question, “What is the process of collaborative practice development in physicians and nurses who have experienced formal interprofessional education?” is answered through the theoretical model of Getting on the Same Page. Getting on the Same Page is relevant in each phase of collaborative practice development and is illustrative as the entire process of collaborative practice development.

This chapter describes the findings generated from the qualitative research to conceptualize nurse and physician collaborative practice development in those who received pre-
professional IPE. The theory explain the basic social processes in the major categories and each phase of development and the core category of Getting on the Same Page that applies to all phases of the process. The theory will be discussed in the context of the current theories, current IPE, and interprofessional collaboration literature as well as its implications on future research.
CHAPTER 5
DISCUSSION

In this chapter, the theory of nurse and physician collaborative practice development, Getting on the Same Page will be discussed in context of current theories and existing literature. The unique findings of this study explain the basic social process and the evolution of collaborative practice between the nurses and physicians who participated in formalized pre professional IPE. The theory of nurse and physician collaborative practice development with the core category of Getting on the Same Page will be presented along with the major categories’ contribution to the core category. The implications of the theory for education, practice and management will also be discussed as well as limitations of the study and opportunities for future research.

Getting on the Same Page

This grounded theory study of nurse and physician collaborative practices development provided the articulation of the basic social process of the day to day lived experience of the participants that allowed the core category Getting on the Same Page to emerge. This core category represents the sequential experiences through education, early practice and later practice and the collective experience of each phase of nurses and physicians collaborative practice development. The basic social process of Getting on the Same Page is developed uniquely in and over time. Getting on the Same Page explains the social process and experiences of nurses and physicians as they develop an understanding of who they are, what they do, and how to contribute individually and collaboratively to patient care. The major categories in each phase are connected to one
another, whether a pre-cursor or a dependency to moving to the next category, or an interaction, or happening in tandem with other major categories. One might contemplate the process as a maturation of Getting on the Same Page. These relationships will be discussed throughout this chapter.

As previously described, the theoretical model of Getting on the Same Page (see Figure 5) identifies the phases of the social process that occurs in education, early practice and later practice and the experience associated with each phase. The categories during the educational experience include: Understanding Others’ Roles, which is centered on increasing awareness and understanding of one another as nursing and medical professionals and learning that we each bring something different and unique. Once nurses and physicians begin to know the relationship of their roles and understand other’s roles, Learning to Work Together can take place. Learning to Work Together centers on the how individual’s optimize their domain expertise and participate in scenarios and situations to build experience in working collaboratively as a team.

Getting on the Same Page continues into the early practice experience where Being Nervous, Intimidated and Frustrated, is a common feeling and related to trying to determine how to work effectively and contribute. These feelings are supplanted when the individual begins Recognizing Important Information; the awareness that they have important information, they may be able to share or give, and that others have information that the individual might need. The feelings of being a valuable contributor are important as Recognizing Important Information and leads to the beginning of acknowledging a symbiotic relationship that leads to Relating to Each Other where trust and personal relationships begin to develop.

Each category enhances the basis social process from education and early practice that supports the deepening of the collaborative relationship which continues into later practice.
These categories provide a framework for the process of Getting on the Same Page. Nurses and physicians come together (Coming Together) through face to face and in person interactions that advance Knowing Each Other and leads to the individual experience and the team experience of Feeling More Comfortable and Confident. Feeling More Comfortable and Confident is about personal growth as a professional and domain knowledge through repeated interactions and experiences. Feeling More Comfortable and Confident is the lever that enables nurses and physicians to begin Going Back and Forth and communicate fluidly, efficiently and effectively by listening, recommending, suggesting, discussing and offering ideas. Going Back and Forth occurs as a result of Coming Together, Knowing Each Other and Feeling More Comfortable and Confident. Going Back and Forth occurs with ease and leads to Being a Team where individuals work together, collaboratively, to bring their domain knowledge and expertise together with others to develop the best plan of care for the patient. Each phase of the nurse and physician collaborative practice development assumes maturation in Getting on the Same Page. Each phase builds on the previous one.
Getting on the Same Page and Existing Theories and Research

Getting on the Same Page is not only relevant to existing theories, but also supports and provides additional depth and understanding of IPE and collaborative practice development. Three IPE models were identified in the literature review. Each IPE model has evolved the concepts of the previous model. In the chain of action model, Barr, et al (2006a) describes the impact of IPE on the individual care provider to reduce stress and ultimately promote partnerships for health. The Interprofessional Education and Collaborative Practice model (WHO, 2010) is focused on the development of a collaborative practice-ready workforce with the intention of improving patient outcomes. The IPLC (IOM, 2015) which is the most contemporary model, (see Figure 6); includes components of the learning outcomes from the chain of action model and the relationship between IPE, and collaborative practice and health outcomes described in the WHO (2010) model. The IPLC takes into consideration the impact and influence of IPE across the learning continuum both formal and informally on learning outcomes such as reactions, atti-
tude/perceptions, knowledge/skills, collaborative behavior and performance in practice. Enabling factors described in the IPLC (IOM, 2015) model were not contemplated in the WHO (2010) model. Enabling factors in the practice setting such as institutional, professional culture, workforce policy and financial policy are predicted to impact health and system outcomes such as individual and population health, organizational change and system outcomes such as efficiency and cost effectiveness. In the ILPC, it is anticipated that learning outcomes impact individual’s health and system outcomes and vice versa.

Figure 3. Interprofessional Learning Continuum (IPLC). This figure explains the learning continuum, enabling factors the impact on learning and health and system outcomes. Reprinted with permission. (IOM, 2015).

The theory of Getting on the Same Page describes the nurse and physician collaborative practice development and provides support and evidence for many components of the IPLC (IOM, 2015). Getting on the Same Page also provides greater depth and understanding regarding the collaborative practice development experience as it relates to all of the major components of the IPLC; learning continuum, learning outcomes, enabling factors and health and systems out-
comes. Major categories of *Understanding Others’ Roles and Learning to Work Together*, in the educational experience relate to IPLC concepts such as reactions, attitude/perceptions, and knowledge/skills. Major categories in early practice in Getting on the Same Page are Being Nervous, Intimidated, and Frustrated; Recognizing Important Information and Relating to Each Other. These also relate to reactions, attitude/perceptions, knowledge/skills and early stages of collaborative practice development, all in the IPLC model. Finally in later practice, major categories Coming Together, Knowing Each Other, Feeling More Comfortable and Confident, Going Back and Forth, and Being a Team all relate to the learning outcomes of knowledge and skills development, collaborative practice and performance in practice in the IPLC model.

In spite of the fact that there is little evidence to support IPE’s impact on patient outcomes, nurse and physician participants in this study reported that collaborative practice development impacted patient care, patient outcomes and patient’s experience of their care, supporting the IPLC model’s linkages between learning outcomes and patient outcomes. Nurses and physicians both reported the broader impact of their collaborative practice and Being a Team on patient care. Nurses and physicians described the importance of the care team having a close connection and huddling regularly, asking each other for feedback and working together to determine the best plan of care for the patient. There was acknowledgement that it is important for patients to know and feel that every single person on the healthcare are all working together to achieve the best patient outcome and experience. Getting on the Same Page includes the experience of nurses and physicians and patients.

Nurses and physicians both described other factors that influenced the ability Get on the Same Page including culture and the role of leadership as enablers of IPE and collaborative practice. Described by participants as a culture of understanding and safety, where team members
work together and support each other, even when things don’t go perfectly. Participants also described the importance of nurse and physicians leader role modeling collaborative practice and empowering teams to do the same. These factors have been also found as an enablers in the literature (Hoffman, Rosenfield, Gilbert, & Oandasan, 2008) The IPLC addresses the importance of culture as an enabler however does not recognize the impact of leadership as an enabler to IPE and collaboration as was found in Getting on the Same Page.

There is also limited evidence of the impact of IPE and collaborative practice on patient outcomes (Reeves, Perrier, Goldman, Freeth, Zwarenstein, 2013), however the nurses and physicians participating in this study recognized the importance of measuring the impact of collaborative practice of clinical outcomes. As nurses and physicians are Getting on the Same Page they acknowledge that being a team has a positive impact on patient outcomes.

The findings from this study and the development of the theoretical model for nurse and physician collaborative practice development; Getting on the Same Page, provides support and evidence for the IPLC. It also informs the next level of detail about the learning continuum, enabling factors, and learning outcomes. The findings in this study do not provide any insight to support the impact of IPE on health outcomes. Nonetheless the findings are valuable to the explanation of the IPLC. Key findings related to each phase of practice development will be described and interpreted in relation to the existing literature.

**Educational Experience**

During the process of interviewing participants for the study of collaborative practice development nurses and physicians described their experiences with IPE. Conceptually *Understanding Others’ Role and Learning to Work Together* were critical components of their maturation during education and Getting on the Same Page. Participants described their educational ex-
periences in detail and shared the importance of role clarity and the need to learn how to work together. Learning about each other and with each other, described by Engum and Jeffries (2013) supports Getting on the Same Page in the educational experience and specifically the categories of *Understanding Others’ Role and Learning to Work Together*. Nurses and physicians reported experiential learning in clinical settings helped them learn about the individual domain knowledge and role, the importance of each and how each should function to have a team that is collaborating well as was also found by Veerapen & Purkis (2014).

The theories supporting the rationale for IPE including Role Theory (Biddle, 1986), and Social Identity Theory (Tajfel & Turner, 1986) explicitly support the major category of *Understanding Others’ Role*. Contact Theory (Allport, 1979; Pettigrew, 1998) is also explicit in support of the major category of *Learning to Work Together*. Social constructivism as the learning modality theory is recognized in the experiences reported by almost all of the participants. Conceptually there is a high degree of agreement on the implications of social, role, contact and learning theories; however the IPE experiences reported in the literature and in this study indicate gaps in understanding the most effective IPE modality. Opportunities to learn together in a practical setting were reported as highly valuable, because it provides a forum for dialogue about the experience; what worked well and what could be improved. Participants in this study indicated that talking together and having regular interactions provided that experience and needed contact as outlined by in the Contact Theory (Allport, 1979, Pettigrew, 1998).

Early IPE, meaning early on in the educational experience, was repeatedly reported as a critical element of IPE (Bradley, Cooper, & Duncan, 2009; Carpenter, 1995; Leaviss, 2000). The approaches to IPE reported by participants did not indicate an *early* experience and IPE experiences were highly variable. Participants in this study reported classroom experience learning
about other clinician’s roles, collective case study review and understanding individual clinical perspectives, through clinical care practicum working together, practice immersion in a clinic or ambulatory practice setting, simulation training for codes or other emergent situations, and problem solving sessions where clinicians worked together to address a clinical issues or concern.

There was no single approach to education that emerged from this study as was the case in all of the research studies reviewed in preparation for this study. There was a unique approach in every case of the IPE experience. In spite of learning modality inconsistency, individuals reported on the value and importance they placed on IPE. Other researchers had similar findings (Ateah et al. 2011; Baker & Durham, 2013; Moutray & Jenkins, 2004; Rudland & Mires, 2005; Turrentine et al., 2016).

The findings from this study along with other research studies indicate that the educational experience for the learner needs to have consistency and congruency throughout their program to achieve the core competencies of interprofessional collaborative practice (IPEC, 2016; IOM, 2015). The concepts of Understanding Others Roles and Learning to Work Together are foundational. These major categories not only validate the IPLC, they align with the core competencies for interprofessional collaborative practice outlined by IPEC (2016), and actually simplify and put a finer point on what is needed for successful achievement of those competencies. Regardless of the educational approach, this study conceptually supports other authors’ findings; preparing students who “know about” the roles of other professionals and enabling graduates to “work with others” (Engum & Jefferies, 2012) is critical to preparing nurses and physicians for collaborative practice.

Finally an interesting note about the importance of proximity during the educational experience: one physician noted that the physical presence of the two schools (nursing and medi-
cine) sends a really powerful message that we are multi-disciplinary, we learn together in the same place, we work together in the same place, and allows for collaboration. The opportunity for nurses and physicians to interact together in an unstructured educational setting, for example the library, provided the conditions for learning about each other. The participants reiterated the importance of *Understanding Others’ Roles* and *Learning to Work Together* irrespective of the approach to the IPE.

**Early Practice Experience**

Interestingly some of the participants in the study commented that in that nurses and physicians that receive pre professional IPE have an expectation of *Being a Team* and interprofessional collaboration. In early practice, new professionals are attempting to develop their own professional identity and are learning the organizational practices; they are nervous, intimidated and frustrated by their lack of experience and ability to manage their work. The study participants reported that they did not have knowledge of the individual’s formalized education to be able to identify where the desire to collaborate originates. Some of the study participants thought IPE was a new educational approach. Participants questioned whether older colleagues had the benefit of IPE, they expressed that they assumed many did not and as a result interprofessional interactions were negatively impacted. The fact that undergraduate that IPE has been in place for about 15 years (IPEC, 2002) and generations of clinicians have not had the benefit of pre professional IPE however for most have had some level of professional IPE. Participants also commented on the importance of continuity from the education experience into the practice setting. One nurse described that her educational experience did not translate into the practice setting. So her experience of *Understanding Others’ Roles* and *Learning to Work Together* did not translate
from the educational experience into an optimal early practice experience. The experience of *Relating to Each Other* was missing.

Well, my actions really came from an experience that I had where our team was, one of the medical teams was rounding and I saw them rounding and they, you know, have gowned up and gone in the room and so I, like, hurried and was putting my gown on and there was a resident who was outside of the room, not the resident for this patient, but a different one, and I said to him, are you guys still calling nurses to attend rounds? And he said, well, we only call nurses when we think what you have to say contributes to the plan of care. And I thought, well, how do you know if you don't ask me? (RN16.6)

This nurse was disappointed and went on to describe how she began escalating this as a practice concern to medical and nursing leaders. Practice leaders were listening and she single-handedly turned this negative situation into a unit improvement activity.

I started pretty much talking to anyone who would talk to me about it. And eventually I got lucky enough to get in front of the medical director and she said, you know, I can't believe, she was, like, I'm sorry that that happened and I told her that this is, that this was kind of a regular thing, though, that doctors aren't calling (to have nurses participate in rounds). And so she said, sounds like it would be a great quality improvement project and I think you should lead it and I would like to sponsor you. And was, like, awesome. So we sort of have been working on some interventions since then. (RN 16.7)

In early practice, new professionals are looking for markers that relate to their educational experience in *Learning to Work Together*. Not experiencing the expected level of collaboration has the potential to contribute to ongoing or amplified feelings of *Being Nervous, Intimidated and Frustrated*. Frustration was reported repeatedly stemming from lack of feeling fully capable or understanding of workflow and operations. Veerapen & Purkis (2014) has similar findings and noted that the impact of undergraduate IPE on teamwork was overshadowed by competing priorities and demands of the workplace. They also found that interest in collaborating reduced overtime. This was not the experience noted in later practice by the participants in this study. In professional practice whether early practice or later practice accountability to Getting
on the Same Page and collaborative practice behaviors is critical to growing future interprofessional collaboration.

Of note is the IPLC model (IOM, 2015) which centers on interprofessional learning as a continuum and stresses alignment and interrelationship of learning outcomes and health system outcomes. The IPLC model specifically describes the need to ensure that interprofessional learning occurring in the educational setting is connected and reinforced in the practice setting. The model asserts that learning is an ongoing activity; from undergraduate through professional practice.

**Later Practice Experience**

The findings from this study provide new and important information about the experience of nurses and physicians in later practice. There is nothing in the literature that explains the experience as a clear sequence of processes that are markers for Being a Team and Getting on the Same Page. Other studies have indicated a gap in the transition from education to professional practice and a deterioration of IPE conceptual value in this transition (Leaviss, 2000; Veerapen & Purkis, 2014). The major categories Coming Together, Knowing Each Other, Feeling More Comfortable and Confident, Going Back and Forth and Being a Team and their relevance to Getting on the Same Page are a valuable contribution to the IPE and collaborative practice knowledge base will inform nursing and physician management and practice as well as future directions for research.

**Contemplating Major Category Maturation**

Another way to consider the theoretical model of Getting on the Same Page is through major category maturation over time. Since the process of nurse and physician collaborative practice development and Getting on the Same Page culminates in Being a Team there are com-
ponents of maturation that might be considered across the phases. There may be relationships between the major categories from one phase to the next. This is not currently described in the model because the data did not guide or direct this consideration however this is another way to consider the model and may be worthy of further exploration.

Thinking about the associated maturation of collaborative practice over time, the major categories may also have a connection to each other from phase to phase. Consider that over time by Understanding Others’ Roles in the educational experience and Recognizing Important Information in early practice, nurses and physicians are Coming Together and therefore begin Knowing Each Other, and Feeling More Comfortable and Confident in later practice. These categories are more deeply developed over time and build the individuals capabilities to be a successful contributor to the care team and Getting on the Same Page.

The maturation of being a team member evolves through Learning to Work Together in the educational experience, Relating to Each Other in early practice and Going Back and Forth in later practice. The fulfillment of the major categories occurs across the individual phases and is dependent on each of the major categories being successfully fulfilled in the previous phase. Getting on the Same Page as the individual matures allows for greater capability in patient care problem-solving and Being a Team. Getting on the Same Page evolves in each phase and through each phase from learning through practice.

Challenges in Recruitment Imply Lack of Awareness of IPE

There were significant challenges in recruitment in this study that are worth noting. First was identifying the best source of potential candidates for the study. The first qualifier for participation was having participated in formalized IPE and the second qualifier was that the nurse and physicians candidates had been in professional practice for at least nine months. The target was
professionals in practice and the sources for the candidate pool were intentionally focused on those professionals who had graduated from nursing and medical schools with formalized IPE. However using a targeted approach (the alumni Facebook web sites for recruitment), proved to be ineffective. I think the website is impersonal and although targeted to alumni, it is not clear that many alumni are actually in that Facebook group or frequent the site. In future studies, this recruitment approach would not be recommended even though it seemed to have a direct relationship to the candidate pool of interest. Other social media sites also proved to be ineffective; again I think that this modality is somewhat impersonal. Unless you are part of a formed group that is having regular communication you have no relationship to the people participating.

The most successful approach was direct communication to practicing professionals through targeted hospital group email communications for nurses and physicians. In spite of the fact that the recruitment flyer was explicit about having participated in formalized IPE during nursing and medical school, many candidates that responded did not meet that criteria. In conversation with them during the qualifying process it was clear that many nurses and physicians interpreted this type of formalized IPE as occurring in the practice setting. Many tried to convince me that having received TeamSTEPPS, crew resources management training, rapid rescue training that occurred with clinical colleagues and during clinical practice met the qualification for participation. Many were completely unaware that some nurses and physicians were actually having the experience of IPE during formative nursing and medical school today. It was apparent that for those who did not have a pre-professional IPE experience they were unaware this educational format existed.

It is impressive that many professionals experience IPE in the practice setting but again raises questions about education and practice alignment. The fact that many professionals were
simply unaware of IPE as a learning modality indicates there are general opportunities to com-
municate and market this learning modality. It seems that as students are making choices about
their school of choice they should have more information about the value of a school providing
IPE versus one that doesn’t have IPE. There is an opportunity to basically inform and then con-
sider promoting these programs to potential students.

**Implications for IPE**

This study provides insight into the educational experiences of nurses and physicians in
collaborative practice development. The findings from this study support the other theoretical
IPE and interprofessional collaboration models; specifically learning outcomes and the im-
portance of IPE across the learning continuum. Getting on the Same Page reinforces that IPE is a
valuable component of nurse and physicians education and should be integrated or expanded
within current curricula. Getting on the Same Page during the educational experience happens
through *Understanding Others’ Roles* and Learning to Work Together. The IPEC (2011, 2016)
core competencies for collaborative practice include values/ethics, roles/responsibilities, inter-
professional communication, teams and teamwork. The core competencies and the detailed sub
competencies provide the objectives for the IPE experience. Clearly competencies have been a
huge step forward toward consistent language regarding the learning outcomes for IPE. The
competencies detail “what” is expected from IPE but leave the “how” to the educational institu-
tion. We know the approach to IPE is highly variable and although the competencies provide
guidance on the objective, the level of variation in education is so great it is difficult to come to
any conclusion or consensus about best approach.

This study seems to indicate that the teaching approach may not matter as long as the
endpoints or outcomes are achieved. And it may be that a consistent approach to messaging
about roles, responsibilities and working together is more important than modality. Educators should put the focus and emphasis on the end points; *Understanding Others’ Roles* and *Learning to Work Together*. Participants expressed that the most important part of their IPE experience was the opportunities to “do together” and talk with each other. Participants pointed to the most valuable part of the educational experience as being able to “do that scenario with them and then afterwards, talk about it and get their feedback and what their interaction should be.” The words “do the scenario” imply that there are many educational approaches to how the student experiences scenario. There are also opportunities to enrich IPE experience by offering clinical practicum placements that offer student the optimal experience in *Learning to Work Together*.

Regardless of the educational modality, the opportunity for *Understanding Others’ Roles* and *Learning to Work Together* requires alignment of nursing and medicine educational leaders. Setting expectations and role modeling has an impact during the educational process. Another nurse described that during mock code scenarios the nursing instructor played the role of the physician and that experience was completely ineffective for the intended outcome and experience. The nurse indicated she missed the opportunity to interact with physicians and this was not really an IPE experience. Medical and nursing educational leaders need to be aligned and support the learning process together.

Faculty time for curriculum development, teaching together and role modeling collaborative practice is important. The opportunity for students to witness the partnership of nurse and physician leaders in the educational setting helps students establish their intentions and expectations for working in partnership. One nurse noted that she was able to make a change in professional practice because she had an expectation of what practice should be and that expectation evolved in her training. It is important that educational leaders have a shared sense of purpose.
and commitment to educate students to become team players, to think positively about other professionals, to communicate well with each other to solve patient problems and to be prepared to engage in clinical dilemmas. Finally, there is also an opportunity for nursing and medicine educators to partner with practice leaders to ensure the categories in education are carried forward into early practice.

**Implications for Nursing and Physician Management**

Getting on the Same Page describes the basic social process of nurse and physicians collaborative practice development and aligns with the IPLC model (IOM, 2015). The IPLC model describes the importance of both formal and informal education from foundational education through graduate education and then ongoing professional development. In the development of the theory of Getting on the Same Page it was evident that collaborative practice learning begins in pre-professional education but continues throughout professional practice. Healthcare facilities today offer many opportunities for professionals to develop teamwork skills and competencies. This was noted by the many nurses and physicians who responded to participate in the study and had experienced professional interprofessional education but did not have pre-professional IPE. And while ongoing professional education is important; continuity of the lessons is important from training through practice. Several participants in this study shared their experience from education to practice and articulated the lack of alignment across the education and practice settings. Gaps between the educational experience and the collaborative practice experience in the practice setting disappoint and disillusion clinicians. This disconnection calls attention to the importance of alignment between education and practice. So what does alignment really mean? There are many models in the practice setting that are utilized to educate and train staff on teamwork, however just completing a program will not deliver the expected result if the culture
and infrastructure in the organization does not support the end result of Being a Team. In the practice setting, professionals come with varied pre-professional educational experiences, so setting expectations is important. Collaborative practice is a real phenomenon and not just a checklist of tasks. Similar to the implications and guidance for educators; nurse and physician executives and managers need to clarify the expectation and experience of collaborative practice.

Nurse and physician leaders (dyads) need to role model and demonstrate how they work together to solve organizational issues together as an example of positive collaborative practice. Open communication at all levels is facilitated when leaders set the tone through their actions and behaviors.

Findings from Getting on the Same Page in early and later practice provide additional insight as to opportunities to ensure a culture of collaborative practice. In early practice, staff are Being Nervous, Intimidated, and Frustrated, so it is important to identify what steps should be taken to smooth out those early feelings of uneasiness so that staff can focus on Recognizing Important Information and Relating to Each Other. Offering some type of formalized onboarding experience for nurses and physicians together can reaffirm the categories of Understanding Others’ Role and lead to the maturation of Learning to Work Together. Opportunities for new professionals (nurses and physicians) to partner at the unit level would help develop collaborative relationships more quickly, and continued efforts could help deepen and enhance these relationships.

There are also opportunities to use formalized operating structures like rounding to bring nurses and physicians together on a daily basis. This routine forum of rounding together with appropriate engagement of team members can foster the experience described in the category of Back and Forth, which is really about domain knowledge sharing, open dialogue, and problem
solving all of which has direct relationship to *Being a Team*. Establishing expectations for rounding and huddling is the first step to advancing the experience of Getting on the Same Page in professional practice, but nursing and medical leaders need to demonstrate their support and ensure the experience of *Coming Together* is fulfilled.

Designing and offering team-based development activities with the intention of building the capacity for *Being a Team* could enhance the benefits and efficiencies of collaborative practice. Expectation setting by leaders and role modeling to support collaborative practice development is critical. Participants in this study indicate that increased confidence in their individual contribution led to effective collaborative practice and to better patient outcomes. Providing opportunities to practice and enhance that collaborative practice could prove beneficial to both the healthcare team and the patients.

**Implications for Nursing and Physician Practice**

Nurses and physicians identities are built around healing and care delivery. With incredible national focus on high quality, cost effective, patient centered care (Berwick et al., 2008), Getting on the Same Page supports the IPLC, extends our understanding of collaborative practice development and frames the relationship between collaborative practice and quality care outcomes. Participants in this study indicated that professionals coming into practice have an expectation of collaboration and collaborative practice. Ongoing IPE and a culture of *Being a Team* and Getting on the Same Page should be a high priority for healthcare institutions. One way to create this culture is to have multi-disciplinary teams practice sharing and adopting different personas during practice or simulations. The goal is to let individuals experience the other persona; seeing the situation through a different lens. Also nurses and physicians as front line leaders have the opportunity to self- organize and participate together in collaborative unit-based performance
improvement projects. Nurses and physicians that experience IPE can lead colleagues in developing a shared mental model of the phases and sub categories associated with Getting on the Same Page in professional practice.

**Limitations of the Study**

Several limitations of the study have been identified. The first notable limitation is the potential selection bias associated with participant volunteers. Individuals volunteered to participate in this study primarily through direct solicitation or through personal recommendation from another participant. The participant’s reasons for self-selection for participation in the study are unknown. Participants might have chosen to participate because of their positive or negative experience with pre-professional IPE. However in assessing the data, there were balanced perspectives in the responses describing their experience.

There is also a potential risk of misinterpretation associated with linguistic ambiguities. Non-English speaking participants were excluded to limit this risk and the data were evaluated for context; however there is always a risk of misinterpretation. Another potential limitation is associated with the format of the interviews; all of the interviews were conducted by phone and their might be the potential for the researcher to miss a non-verbal cue.

Interviewing professionals about their current experience and their reflection on their past experience has inherent risks. Participants in the study had graduated from their program between 2-8 years ago, while the majority graduated within the last three years. Nonetheless, factors associated with the time lapse including recollection bias and maturation effects might impact the participant’s responses. Some of the experiences identified were not unique to an inter-professional program. In addition, the participants have matured professionally since participating in their IPE experience. Both of these situations may be viewed in a positive light however,
as the time since program completion allows for objective reflection on the impact of their education on their professional development and practice. The time lapse offered more opportunity for them to practice this self-reflection, and their experiences had more meaning to them after graduation than at the time the courses were taken.

Lastly, the purposive sample also has the potential to limit the transferability of the model to the experience of those that attended formalized IPE. In spite of these limitations, the study included participants who attended seven different university nursing and medical schools and worked in various nursing unit and medical specialties.

Despite these limitations, the findings from this study provide a missing qualitative element to the IPE and collaborative practice discussion, providing insight into the undergraduate learner’s experience and collaborative practice development and highlighting areas of focus for future research.

**Implications for Future Research**

The study provides a sound model for nurse and physician collaborative practice development for those who have experienced formalized IPE and also provides a framework for future research. The results of this investigation warrant the following recommendations for future research. First there is an opportunity to replicate this study on collaborative practice development for those who did not have IPE to understand the uniqueness of the interprofessional education experience or the differences in the experiences of the two groups. Opportunities exist to develop a deeper understanding about the major categories in early education *Understanding Others’ Role* and *Learning to Work Together* at a deeper level. What are the best approaches to ensuring these basic processes occur early and throughout the educational experience? IPEC (2016) outlined updated core competencies for collaborative practice and specifically four components val-
ues/ethics, roles/responsibilities, interprofessional communication, teams and teamwork), that fall under the single overarching domain of interprofessional collaboration. The core competencies and the detailed sub competencies provide the road map for evaluation. The competencies describe what needs to happen during the educational process, but the question remains: Is there a best approach to ensuring students have the competencies for practice or will any approach satisfy the requirements? Research on modes of education to support Getting on the Same Page would be valuable.

There is also an opportunity to study the experience and major categories of later practice. The major categories identified in this study in later practice include Coming Together, Knowing Each Other, Feeling More Comfortable and Confident, Going Back and Forth and Being a Team. Additional information should be gathered from practicing clinicians to understand how to facilitate the experience of the major category development to expedite Being a Team. Further qualitative research on the concept of Being a Team and components that expedite Being a Team would be valuable.

The findings from this study provide clarity about the importance of continuity and consistency of IPE in all phases of collaborative practice development. Nursing and physician health system administrators and faculty leaders need to work together toward alignment and continuity of IPE programming across the learning continuum. These findings also provide guidance on how to achieve the ideals of the IPLC (IOM, 2015). However there is a need for more rigorous IPE research to demonstrate evidence of the impact of IPE on patient safety and health care outcomes.

Lastly, an investigation exploring negative attitudes towards IPE should be conducted. Most of the participants of this study exhibited positive feelings toward IPE. The exploration of
negative feeling toward IPE would be valuable to understand other viewpoints and increase the understanding of IPE experiences. A better understanding of what might constitute inhibitors to successful IPE would be instructive.

Future research is important to not only help identify the gaps in the practice development process but also to inform how best to achieve the necessary levels of competency; what is the best (most efficient and effective) learning modality/approach to developing these competencies and the achievement of these major categories associated with Getting on the Same Page?

**Summary**

Over the past 30 years, U.S. health care education and practice has been undergoing a paradigm shift, from siloed to multidisciplinary teaching and learning to the integration of IPE. This transformation has been supported and encouraged through the ongoing support of national groups like the IOM and IPEC and the leadership and involvement of committed nurse and physician faculty leaders. These and others have actively responded to the ever-changing health care system demands by advancing a transformation in education to support nurses and physicians to deliver the best patient care through collaborative practice.

The theory of Getting on the Same Page has been generated directly from the experience of physicians and nurses from a variety of inpatient settings and includes professionals who were educated in many different sites. As a result of this research investigation, we now know more about the IPE experiences of nurses and physician and the process of collaborative practice development. This study also provides valuable insight into the concepts in the IPLC; a major step toward developing a consistent and sustainable model theoretical model for IPE. Given the new knowledge gained from this research, opportunities exist to ensure key concepts from Getting on the Same Page are incorporated into IPE program development, to create educational environ-
ments that ensure key endpoints (*Understanding Others’ Roles* and *Learning to Work Together*) are optimally facilitated and achieved, to amplify the need for faculty and health system leadership alignment on IPE to support *Being a Team* across the learning continuum. Findings from this study will not only add to the body of knowledge about IPE and nurse-physician collaborative practice development, but also informs national leaders and agencies, give guidance to educators, and provide a framework for future research.
Study Question: What is the collaborative practice development process of physicians and nurses who experience formal interprofessional education?

Background
There is increasing demand from patients, providers and the government for greater levels of interprofessional collaboration. Interprofessional education has been identified as a critical mechanism to increase healthcare professionals’ knowledge and develop needed skills to work together for the benefit of the patient. How do nurses and physicians develop their practice?

Contemporary consensus-based theoretical models have indicate that interprofessional education will lead to positive physician and nurse collaborative practice (Barr, Freeth, Hammick, Koppel & Reeves, 2006a; WHO, 2010) but there is no evidence to support these models. Obtaining more information directly from those that have experienced formalized interprofessional education will allow the conceptualization of the basic social process of nurse and physician practice development.

Study Approach
This is a qualitative research study using grounded theory method to explore the meaning of events to build a rich and deep understanding of the physician and nurse practice development process for those that have completed a formal interprofessional education program (Lincoln & Guba, 1985). Conceptualization of perceptions, knowledge, social interactions and patterns of behavior will provide the body of evidence leading to the development of a contemporary theory of practice development of physicians and nurses (Glaser, 1978; Glaser & Strauss, 1967).

Study Objective
The purpose of this study is to discover a theory to conceptualize the basic social processes of nurse and physician collaborative practice development in those that have experienced formal interprofessional education. This study will not only add to the body of nursing and physician knowledge about nurse-physician practice development, but also inform national leaders and agencies, give guidance to educators, and provide a framework for future research.

Eligibility
Participation in this study is open to nurses or physicians (resident, fellow or attending physicians), that have completed a formal interprofessional education program, been in practice for at least 9 months in an acute or ambulatory healthcare setting.

Participation
Participation in the study will involve a 30-45 minute audio-taped interview at a time and location that is convenient for the participant and may be conducted in person or remotely. A $20 Starbucks gift card is offered to eligible candidates that agree to be interviewed.
IRB Approval
This study has been approved by the IRB of Loyola University Medical Center.

Contact
If you are interested in participating in this study or would like to learn more, please contact Julie Cerese at 630-408-7541 or jcerese@luc.edu.
APPENDIX B

INVITATION TO PARTICIPATE IN STUDY
Invitation to Participate in Study: Web Content
Email Message for distribution to the Alumni via Facebook page.

Subject: Invitation to participate in a study of nurse and physician collaborative practice development

Web Content
Participate in a study of nurse and physician collaborative practice development and receive a $20 Starbucks gift card (place image)

Click on the links below to learn more about how you can share your experience and contribute to a better understanding of physician and nurse practice development.

Julie Cerese, a nursing PhD student at the Niehoff School of Nursing, Loyola University, is conducting a study on nurse and physician collaborative practice development in those that have experienced formal interprofessional education. The purpose of this study is to develop a deeper understanding of how nurses and physicians work together and develop the way they practice.

Participation in this study is open to:
• nurses or physicians (resident, fellow or attending physicians)
• that have completed a formal (designated university based program) interprofessional education program,
• been in practice for at least 9 months,
• are currently working in the acute care setting

Participation in the study will involve a 30-40 minute audio-taped interview with Ms. Cerese. Interviews will be scheduled at a time and location that is convenient for you and may be conducted in person or remotely.

A $20 Starbucks gift card is offered to eligible candidates that agree to be interviewed.

If you are interested in participating in this study or would like to learn more, please contact Julie Cerese at 630-408-7541 or jcerese@luc.edu.

Link #1
Study Flyer

Link #2
Informed consent
APPENDIX C

STUDY FLYER
Participate in a study of nurse and physician collaborative practice development (and receive a $20 Starbucks gift card)

In your day to day practice, what strategies support your efforts to work together to deliver the best patient care? Share your experience!

Julie Cerese, a nursing PhD student at the Niehoff School of Nursing, Loyola University, is conducting a study on nurse and physician practice development in those that have experienced formal interprofessional education.

The purpose of this study is to develop a deeper understanding of how nurses and physicians work together and develop the way they practice.

Participation is open to:
- nurses or physicians (resident, fellow or attending physicians),
- practicing for at least 9 months,
- currently working in the acute care setting

Participation in the study will involve a 30-minute audio-taped interview with Ms. Cerese. Interviews will be scheduled at a time that is convenient for you and may be conducted in person or remotely.

A $20 Starbucks gift card is offered to eligible candidates that agree to be interviewed.

If you are interested in participating in this study or would like to learn more, please contact Julie Cerese at 630-408-7541 or julie.cerese@gmail.com
APPENDIX D

IRB APPROVAL
NOTICE OF FULL APPROVAL OF A RESEARCH PROJECT

Institution: Virginia Commonwealth University

Title: A qualitative study to evaluate the preceptor developmental process of physician assistants and nurses who experienced four preceptor rotations

Type of Project: Research

Aims of the Study: The primary aim of this study is to evaluate the preceptor developmental process of physician assistants and nurses who experienced four preceptor rotations. The study seeks to understand how preceptors navigate their role, develop their skills, and influence the educational experience of the learners. The secondary aim is to identify strategies and resources that preceptors can use to support their professional growth and development.

Methodology: The study will employ a qualitative research design, utilizing in-depth interviews and focus groups. Data collection will include preceptor diaries, reflective writing, and observations in the clinical setting. The data will be analyzed using thematic analysis to identify patterns and themes that emerge from the participants' experiences.

Participants: The study will include 30 preceptors who have completed at least four rotations in the past year. The preceptors will be recruited from various clinical settings across the state.

Research Questions:
1. How do preceptors describe their experiences and challenges during the preceptor developmental process?
2. What strategies and resources do preceptors use to support their professional growth and development?
3. What are the perceived benefits and barriers to the preceptor developmental process?

Date of Approval: 01/01/2023

Informed Consent Document Number: IRB-23-001

Aim 1: To evaluate the preceptor developmental process

Objectives:
1. To explore the preceptor's perception of the preceptor developmental process
2. To identify strategies and resources that preceptors use to support their professional growth and development
3. To assess the perceived benefits and barriers to the preceptor developmental process

Informed Consent Procedures:
1. Participants will be provided with an Informed Consent document that outlines the purpose, procedures, and potential risks of the study.
2. Participants will be informed that they are free to withdraw from the study at any time without affecting their future care.
3. Participants will be assured that their identity will remain confidential and that all data will be de-identified for analysis.

Date of Review: 12/25/2022

I. INTRODUCTION

The primary aim of this study is to evaluate the preceptor developmental process of physician assistants and nurses who experienced four preceptor rotations. The study seeks to understand how preceptors navigate their role, develop their skills, and influence the educational experience of the learners. The secondary aim is to identify strategies and resources that preceptors can use to support their professional growth and development.

II. METHODS

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Informed Consent Procedures:
Project Title: A Study of Nurse and Physician Practice Development
Researchers: Julie Cerese, RN, MSN & Dr. Fran Vlasses, RN, PhD

PARTICIPANT INFORMATION

PRINCIPLES CONCERNING RESEARCH
You are being asked to take part in a research project. It is important that you read and understand the principles that apply to all individuals who agree to participate in the research project described below:

1. Taking part in the research is entirely voluntary.
2. You will not benefit from taking part in the research but the knowledge obtained may help others.
3. You may withdraw from the study at any time without anyone objecting and without penalty.

The purpose of the research, how the research will be conducted and what your participation means is described below. Also described are the risks, inconveniences, discomforts and other important information to assist in determining whether or not you wish to participate. You are urged to discuss any questions you have about this research with the staff members.

PURPOSE
The purpose of this study is to learn about the processes of nurse and physician practice development from nurses and physicians that have experienced formal interprofessional education.

DESCRIPTION OF PROCEDURES
If you agree to participate in this study, you will participate in a recorder interview with Julie Cerese, one of the co-investigators for this study. You will be asked to answer questions about the day to day processes of the work and the interactions you experience and participate in with other nurses or physicians as you develop practice.

The interview will take between 45 and 60 minutes. You may refuse to answer any question asked, ask to have the recording shut off at any time, take a break during the interview, or end the interview at any time. After the interview is completed, the recording will be transcribed verbatim. Any names or identifying information disclosed during the interview will be deleted from the transcription. Recordings will be destroyed upon completion of the study. The information obtained during your interview will be combined with information obtained in the other interviews conducted in the course of the study.
RISKS/BENEFITS
There are no foreseeable risks to you associated with participation in this study beyond those experienced in daily life. You will not individually benefit from participating in this research. It is hoped the information collected in this study will not only add to the body of nursing and physician knowledge about nurse-physician practice development, but also inform national leaders and agencies, give guidance to educators, and provide a framework for future research.

ALTERNATIVES
You may choose not to participate in this research.

FINANCIAL INFORMATION
You will not be paid or receive compensation for participation in this study. You will receive a token of gratitude for your time in the form of a $20.00 Starbucks gift card.

CONFIDENTIALITY
Any identifying information disclosed during the interview will be deleted from the transcribed record of the interview. The consent forms, audiotapes and transcribed interviews will be kept in locked file cabinets. Your records from this study will be considered confidential to the extent permitted by law. Authorized Loyola University Chicago employees may review the research records from this study and must follow the same rules of confidentiality. The results of this study will be submitted for publication and may be presented at professional conferences. Quotations from selected interviews may be used as examples in publications or presentations, but no identifying information will be presented with those quotations.

VOLUNTARY PARTICIPATION
Participation in this study is voluntary. If you decide to participate, you may withdraw at any time without penalty, or refuse to answer any question asked during the interview. If you have questions regarding your participation in this study at any time, you may contact Julie Cerese, jcerese@luc.edu or (630)408-7541 or Dr. Fran Vlasses, fvlasses@luc.edu or (708/216-3547), co-investigators for the study. If you feel that you have been injured by participating in this study or if you have any questions concerning your rights as a research participant, you may contact Dr. Kenneth Micetich, Chairman, Institutional Review Board for the Protection of Human Subjects-Medical Center (708-216-4608).

CONSENT
This consent form will be reviewed with you and if you choose to participate a verbal consent will be recorded. It is also requested that you acknowledge consent via email. “I have read the consent form for the and agree to participate in “A Study of Nurse and Physician Practice Development” being conducted by Julie Cerese, RN, MSN & Dr. Fran Vlasses, RN, PhD.” You have been fully informed of the above described research program with its possible benefits and risks. You do not give up any of your legal rights by agreeing to participate.
APPENDIX F

INTERVIEW GUIDE
Interview Guide

Introduction and purpose of the study
My name is Julie Cerese and I am a nursing PhD student at the Niehoff School of Nursing, Loyola University. I am interested in learning about the processes and daily interactions of nurse and physician that encompasses practice development. I hope information gathered in this study will not only add to the body of nursing and physician knowledge about nurse-physician practice development, but also inform national leaders and agencies, give guidance to educators, and provide a framework for future research.

Review rights of the participant
Participation in this study is voluntary. As a participant you have the right not to answer questions, request that the tape recording be turned off, or to cease participation at any time during the interview. Please speak freely as data from this study will not be attributed to individual. Please try not to disclose confidential patient information or medical errors however if such information is disclosed all identifiers will be redacted from the transcripts.

Collect demographic information and begin interview

Demographic Data
Gender: ______
Age: ______
School and Graduation date: _________________
Degree earned: __________________
Time in practice: _________________
Describe your current role:

Interview Questions
In your day to day care of patients; can
• Can you tell me about your practice experience working with other professionals (nurse/physicians)?
• What is positive or negative about that experience?
• What makes the practice with other professionals (nurses/physicians) more successful or less successful?

What influences the way you practice with other professionals?
• Is there anything specific about your experience or education that you believe has made an impression on how you practice with other professional?
• Are there things you have learned that have helped?
• What are the most important skills/lessons learned?

If collaborative practice is identified follow up questions include:
Can you share an experience where collaborative practice made a difference? Has that experience been either positive or negative? Thank you for your time, a $20.00 gift card will be sent in the mail, you should receive it in the next two weeks.
APPENDIX G

INTERVIEW SCRIPT (MODIFIED)
Interview Guide (Modified)

Introduction and purpose of the study
My name is Julie Cerese and I am a nursing PhD student at the Niehoff School of Nursing, Loyola University. I am interested in learning about the processes and daily interactions of nurse and physician that encompasses practice development. I hope information gathered in this study will not only add to the body of nursing and physician knowledge about nurse-physician practice development, but also inform national leaders and agencies, give guidance to educators, and provide a framework for future research.

Review rights of the participant
Please speak freely as data from this study will not be attributed to individual. Please try not to disclose confidential patient information or medical errors however if such information is disclosed all identifiers will be redacted from the transcripts.

Collect demographic information and begin interview
Demographic Data
Gender: ______
Age: _______
School and Graduation date: ______________________
Degree earned: ______________________
Time in practice: _________________
Describe your current role:

Revised Interview Questions
Think back to your first few weeks as a new X, Tell me about your experience doing those early days of practice
  - Tell me about your interactions with colleagues such as nurses or physicians
  - Walk me through a typical day

Tell me about your practice today
  - Tell me about your interactions with colleagues such as nurses or physicians
  - Walk me through a typical day

Now think back again to your earlier practice what has changed? Or what is different?

Tell me what you learned in your programs that prepared you for your role?

Thank you for your time, a $20.00 gift card will be sent in the mail, you should receive it in the next two weeks.
REFERENCE LIST


Delunas, L. R., & Rouse, S. (2014). Nursing and medical student attitudes about communication before and after interprofessional education experience. Nursing Education Perspectives, 35(2), 100-5.


VITA

Julie Lynn Cerese earned her baccalaureate degree in nursing at the Niehoff School of Nursing, Loyola University in Chicago. She began her nursing career as a staff nurse on a medical-surgical unit in Chicago and shortly thereafter assumed increasing levels of leadership positions in the cardiology and cardiovascular surgery clinical service areas. Later in her career, she assumed roles in the performance improvement and quality arena at academic medical centers and teaching hospitals in Chicago. She completed a master’s degree in nursing at the Niehoff School of Nursing Loyola University in Chicago.

Ms. Cerese is currently a Group Senior Vice President of Performance Management and Networks at Vizient. She is responsible for leading the physician nursing leadership agenda and the performance management quality and safety strategy and for providing a seamless and coordinated set of offerings to member organizations. Ms. Cerese works directly with senior administrative and medical leaders in the Vizient membership to improve quality of care, patient safety and reduce total cost of care through the use of comparative data, analytics and implementation of best practices. She is also responsible for facilitating interactions between Vizient and national organizations such as CMS, American Association of Medical Colleges, Agency for Healthcare Research and Quality, National Quality Forum, and The Joint Commission. She has led efforts in several federally funded programs, been a co-investigator in several funded research projects and authored or co-authored articles on clinical process improvement and organizational characteristics of top performance.
Ms. Cerese is passionate about the role of teamwork and partnership in nursing and medical practice and its relationship and impact on patient care delivery, patient experience and clinical outcomes. Her focus during her doctoral studies at Loyola University has been on interprofessional education and nurse and physician collaborative practice development.