Baseline Assessment of Organizational Culture in an Acute Care Setting Prior to an IPE Intervention

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University of Pittsburgh, 2019

Abstract

<u>Purpose</u> Medical errors are a significant public health problem. Many errors are the result of poor communication between professional healthcare staff and are avoidable. The need exists to educate hospital staff and health professional students on how to effectively communicate and collaborate in an interprofessional setting. Prior to the implementation of an interprofessional education intervention designed to improve communication and collaboration, I conducted a baseline assessment of the organizational culture of the setting where the intervention was conducted. My research questions sought to identify staff knowledge, attitudes and behaviors regarding interprofessional practice.

<u>Methods</u> To measure baseline staff behavior, knowledge and attitudes regarding IPP as well as unit culture, I conducted pre- and mid-intervention unit observations and pre-intervention semi-structured staff interviews. I thematically coded and analyzed the qualitative data through NVivo.

<u>Results</u> Several themes emerged from the data regarding barriers to IPP such as hierarchy, stress and strain, miscommunication, as well as facilitators of IPP such as leadership and teamwork. These themes guided us to obtain a baseline assessment of the organizational culture of the unit, enabling us to tell how the intervention will be received and make recommendations for its continued success.

Implications If the intervention is successful at changing health professionals' attitudes and behavior, and there is a corresponding reduction in adverse patient events and improvement in patient outcomes, this would support expansion of the model to other hospital units and hospitals, which may have major implications for population health.

Potential Uses For Findings Once results are analyzed, the intervention will be implemented in other UPMC-Presbyterian units. Ongoing program evaluation will be necessary to implement changes in the education, implementation and hospital policy. The continued success of the program will require methodologies to be developed to identify and integrate changes in medical knowledge and clinical practice.

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Preface

I want to first and foremost thank my husband, Patrick Flaherty, for believing in me and being committed to my pursuing my MPH. His selfless dedication to our family enabled me to devote entire days and weeks to studying, writing, reading or doing what was necessary to complete this degree. I also want to thank my children Leah and Sean, for being patient and understanding about my not being as available to them as they are accustomed. Without everyone's effort as a family, I could not have done this. Thank you from the bottom of my heart.

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Finally, I am incredibly grateful to my amazing academic advisor and MPH committee chair, Dr. Jeanette Trauth, who has guided, encouraged and believed in me. Also, thank you to Dr. Kimberly Rak, my MPH practicum mentor, for her time and inspiration, and for recommending my participation in the IPDEU study, which became the focus of my MPH thesis and program evaluation certificate practicum.

I am grateful to all of you for being in my life and supporting me through this process..

1.0 Introduction

Healthcare and hospital systems in the United States are confronted with challenges that require a rethinking of how healthcare is delivered in hospital settings. Foremost among these challenges are the financial costs associated with medical errors and the shortage of healthcare staff.

Medical errors are a major public health problem and include practice defects that range from the superficial to fatal clinical mistakes. These mistakes take a financial and personal toll on patients and healthcare systems that is unacceptable because these medical errors are almost entirely avoidable. Statistics show that there were upwards of $17.1 billion in costs related to medical errors in 2008, which is approximately $11,000 per patient (Robeznieks, 2014). These costs do not include medical malpractice nor the errors that are actively concealed by suppliers and providers. A study at Johns Hopkins University found that there were more than 250,000 medical error deaths in 2016, and this number is projected to rise (Makary & Daniel, 2016). They also observed that these errors are not due to "bad" doctors, but that most errors represent systemic problems, including poorly coordinated care between physicians and other healthcare staff as well as insurance companies, and the lack of protocols and "safety nets" that would help in preventing medical errors from occurring. The Institute of Medicine (IOM) compiled reports noting the connection between poor communication of healthcare professionals and increased medical errors in patient care (Robeznieks, 2014). These reports emphasized that, "…although some of these cases of preventable adverse events may stem from incompetent or impaired providers, the committee believes that many could likely have been avoided had better systems of care been in place" (Kohn, et al, 2000).

Medical errors range from patient falls, hospital-based infections, medication prescribing errors, surgical errors such as cutting off the wrong limb or operating on the wrong body part, and pressure ulcers (which Robeznieks claimed are first on researchers list of the ten most common medical errors, and rank second among the most costly, avoidable injuries). In a Mayo Clinic study with the American College of Surgeons, "…8.9% of participating U.S. surgeons reported the belief that they've made a major medical error within the last 3 months — and 1.5% believe their error resulted in a patient's death" (Shanafelt, et al., 2017). One study found that over the course of their careers, orthopedic hand surgeons had a one in five chance of performing a surgery on the wrong side of a patient's body (Seiden & Barach, 2006). Healthcare-associated infections are the most common complications among hospitalized patients, and they have resulted in upwards of 90,000 - 100,000 patient deaths per year in the United States (Burke, 2003). Several longitudinal studies performed in the United Kingdom show that 50% of maternal deaths are the result of substandard patient care, primarily due to poor communication between healthcare workers (Lewis, 2007). Yet another study asserts that many medical errors are avoidable and are the result of poor communication between professional healthcare staff (Zwarenstein, et al., 2009).

When healthcare workers are under stress and overworked, their ability to effectively communicate with their peers and patients drastically diminishes, increasing the possibility for mistakes. One major stressor for healthcare professionals is working under conditions where there is not enough staff in the patient-care environment. The World Health Organization has noted that there is a shortage of health care workers, and that this shortage will continue to grow exponentially (WHO Health Workforce, 2018). According to the Bureau of Labor and Statistics, between 2014 and 2022, it is projected that there will be a shortage of over one million healthcare workers in the United States (Weinstein, 2011). This shortage includes nurses and physicians, nurse practitioners

and other professional hospital staff. When healthcare professionals are stretched too thin, are stressed and unhappy, their job performance suffers, thus generating an environment for medical errors to more easily occur.

Not only do medical errors occur with more frequency, but a stressed healthcare workforce can also create a hostile working environment. This negative culture can generate an isolated and individualistic environment that is challenging to transform without some type of intervention. A hostile work environment, or “negative work culture,” where employees are pitted against each other is also known as “horizontal hostility,” and can rapidly lead to unwarranted stress, burnout and high job turnover rates (Wilson B, et al., 2011). A healthcare environment should be one that, although hectic and fast-paced, instills confidence and inspires staff to strive to provide the best possible patient care. In an under-staffed, stressed workplace, this is not possible. Hospital culture needs to change, as “…an organization’s vitality, values and culture profoundly affect its employees” (Hasmiller & Cozine, 2006).

Difficulties with poor communication and collaboration between healthcare professionals continue to be a concern as it compromises the delivery of quality patient care, increasing the possibility for medical errors to occur (Reeves, 2016). There is an urgent need in hospitals to educate existing and incoming staff on how to effectively communicate and collaborate to help relieve staff stress thus improving overall patient care and decreasing medical errors. One strategy to reduce the incidence of medical errors and improve healthcare quality is through improving interprofessional communication and collaboration amongst healthcare staff. In the United States, interprofessional practice and collaboration, and effective healthcare team functioning have been associated with improved patient safety outcomes (Institute of Medicine, 2004). Interprofessional practice (IPP) is defined as, ***“when multiple health workers from different professional***

backgrounds work together with patients, families, care givers, and communities to deliver the highest quality of care" (Institute of Medicine, 2015).

As health care becomes progressively more specialized, health care providers increasingly operate within professional silos. Breaking down these silos and training health care professionals to communicate effectively with one another regardless of their clinical background and training is a pressing need. To address this need, an interprofessional education (IPE) intervention was designed for health care professionals working in a hospital setting with a goal of improving staff communication and collaboration. Interprofessional education is defined in the literature as, "when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health" (Institute of Medicine, 2015).

The purpose of this thesis is to describe the baseline results of the qualitative evaluation of the IPE intervention conducted at UPMC-Presbyterian on acute unit 5G and how it influences hospital unit culture and the impact on quality of care.

PUBLIC HEALTH SIGNIFICANCE

By reducing pain and suffering through lessening medical errors, the quality of a hospital workforce improves, subsequently improving patient outcomes and reducing costs. If the implementation of an IPE intervention can reduce medical errors, the resultant effect on population health would be tremendous, thus making the public health significance of this intervention substantial.

The remainder of this thesis includes the following content. Chapter 2 is a review of the literature on IPE programs nationally and internationally to summarize successful interventions and lessons learned. Chapter 3 describes the methods used to collect and analyze the data for this

thesis including a detailed explanation of how the qualitative interviews and unit observations were conducted. Chapter 4 presents the results of the evaluation and Chapter 5 presents a discussion of the meaning of the results. Finally, Chapter 6 contains the conclusions and recommendations.

2.0 Literature Review

This chapter provides a review of the literature on IPE programs nationally and internationally and identifies what has been successful as well as gaps in knowledge addressed, in part, by my thesis research. Two noted gaps in IPE research include the lack of longitudinal and mixed methods studies, and a lack of studies utilizing a theoretical framework to guide the design and implementation of IPE interventions. Another major gap identified is the few studies that include an IPE intervention for both medical profession students and staff in an already-established hospital environment of trained IPP professionals.

RCT Trials and Successful IPE

When Brashers, et al., (2015) conducted a comprehensive literature review of IPE, they discovered there were several gaps that needed to be addressed in order for more rigorous IPE studies to be performed. One of their recommendations was to conduct research with more rigor, such as by employing randomized controlled clinical trials (RCTs). In one such exemplar RCT trial conducted at the University of Iowa on physician-pharmacist collaboration with hypertensive patients, medical errors frequently occurred by miscommunicating patients' pharmaceutical needs (Carter, et al., 2008). After including a group of physicians and pharmacists in an IPE intervention, collaboration between these two disciplines improved, medical errors decreased, and patients were diagnosed more efficiently with better outcomes. They noted that blood pressure was controlled in 82.4% of patients with uncontrolled hypertension who were included in the IPE intervention as compared to only 52% of patients in the control group. This study illustrates the effectiveness of an IPE intervention on improving professional collaboration and patient outcomes. The rigor of an

RCT study design may influence the views of the scientific community who may otherwise not be convinced of the effectiveness of such an intervention on patient outcomes. However, what would strengthen this intervention, and what is lacking in IPE research in general, is the inclusion of qualitative data -- such as the candid opinions of staff and patients to complement the quantitative results.

A Qualitative Longitudinal IPE Study at the VA Increases Staff Self-Efficacy

Another gap in the IPE literature is that there are very few IPE longitudinal studies that would be valuable in demonstrating the long-term positive outcomes an IPE intervention can have on healthcare staff. The Veterans Affairs Office of Academic Affiliations conducted a year-long study on interprofessional, team-based care in an effort to close gaps in care for patients with chronic diseases (Kaminetzky, et al., 2017). A quarterly interprofessional, didactic training was provided to physicians, nurses, and pharmacists, that included patient case studies on a variety of chronic conditions. After each training, participants completed self-evaluations on their perceived ability to complete various interprofessional activities. Results from this qualitative study revealed overall improvement in confidence and skills and increased self-efficacy in recognizing when to identify appropriate clinical situations to introduce interprofessional practice to improve patient care. The authors noted, however, that further research needs to be done to include patient outcomes to make a stronger connection between this and the presence of successful IPP interventions and increased staff self-efficacy. In contrast with the previous study at the University of Iowa, this study shows that qualitative research can indeed improve staff collaboration, but the need for mixed methods IPE research still prevails.

Successful IP Collaborative Efforts at the Boise Veteran's Administration Hospital

A qualitative study performed at the Boise Veterans' Administration Medical Center developed an IPE intervention for healthcare professionals treating high-risk primary care patients. This included developing interprofessional care team conferences that focused on IPP collaboration when creating patient care plans (Weppner, et al., 2016). Professions included were physicians, psychologists, and nurses. Some outcomes of the intervention included positive feedback from various medical professions with the perception that it improved staff self-efficacy in interprofessional participation and perceived improvement in patient care. For example, as a result of observing a psychologist perform a successful motivational interviewing session with a patient, an internal medicine resident reported that his motivational interviewing skills improved, and he was able to help a patient modify his lifestyle. Other positive outcomes included improved collaborations between pharmacists and psychologists who were better able to treat patients with diabetes and depression in an interprofessional manner. Although impressive improvements in staff collaboration were made in this study and are important, the addition of a theoretical framework and a mixed-methods approach would strengthen the validity of the results. The addition of a theoretical framework would make the study more generalizable therefore giving it more credibility, and the combination of qualitative and quantitative methods increases validity as qualitative results can add in-depth understanding and deeper meaning to quantitative results by including the actual voices and observed behaviors of the population being studied.

Addressing the Student/Current Healthcare Environment Gap: The MUSC IPE Initiative

To address the gap in the literature regarding the disconnect between student IPE training and professional workforce engagement with and application of IPE, the Medical University of South Carolina (MUSC) began an IPE initiative that focused on changing institutional culture at

the University (Blue & Mitcham, 2010). This collaborative effort was directed towards student learning and included a comprehensive approach to create interprofessional collaborative experiences throughout the academic environment of the University.

MUSC has been a leader in IPE education since the 1990s and given the opportunity to improve upon this, it was unanimously approved as a 10-year quality-enhancement plan (QEP). MUSC created the “C^3” -- Creating Collaborative Care – which integrates IPE faculty training and resources such as a healthcare simulation center available for students to facilitate learning and practice (albeit simulated practice). The C^3 concept is based on several theories including Mezirow’s Transformational Learning Theory, Kegan’s framework on personal and professional intellectual development, and Baxter-Magolda’s Transitional Knowing theory, as well as an implementation framework the authors created to ensure program fidelity and adequate penetration into MUSC culture. The authors expect that the implementation framework they created can be generalized to other institutions. Their use of theoretical frameworks as well as integrating student learning into simulated healthcare environments strengthens the research and is a promising step toward closing the gaps to more successful IPE strategies.

Boston VA IPE Collaborative: Introducing “Hands-On” DEU Learning

In Massachusetts, the Boston VA Hospital formed a “collaborative” with six local schools of nursing with the goal of forming “dedicated units” specifically for university students to turn interprofessional practice classroom learning into real-world, hands-on experience on an actual hospital unit (McVey, et al., 2014). Following the interprofessional framework provided by the Institute of Medicine in 2005, they created a curriculum for the universities and a structured program allowing a collaboration with hospital acute care units, creating interprofessional “dedicated education units” (DEUs) that provided nursing students the opportunity to rotate

through during clinical rotations. The authors note that some of the opportunities that evolved from this DEU pilot project were that, "…students' understandings of the health professions were deepened, and their expectations significantly extended. (p. 154)." Working within an academic-practice partnership afforded better communication about student expectations and illustrated the need to increase dialogue within practice settings. Although introducing DEUs to nursing students is a valuable endeavor for IPE interventions to undertake, there are no other medical professions included in this practice which, in many ways, defeats the purpose and goals of interprofessional practice in a healthcare environment. Having more medical professions included in the DEUs would be indicative of a stronger IPP initiative.

2.1 International IPE Efforts

IPE in Australia: How Professional Hierarchy is Detrimental to Successful IPP

In Queensland, Australia, a qualitative study was performed examining the effects of interprofessional collaboration on nurses and primary health care team members in remote areas of Aboriginal areas (Mills, et al., 2010). Results of this study indicated that, "…nurses working within interprofessional teams in remote or isolated areas of Queensland recognize the significance of collaboration, communication, and the establishment of partnerships in practice" (p.590). Conversely, they also found that, members of the healthcare team that experienced poor communication within the interprofessional team felt "devalued" (p. 592). Study participants overall found that there was a fundamental lack of understanding of other professions' roles on the team, and that not having a meaningful understanding of their peers' roles is "fundamental to poor interprofessional team cooperation" (p. 593). The lack of understanding of roles was the most

profound between nurses and indigenous health care workers. They also discovered negative hierarchical patterns and views, especially between nurses and physicians, assuming that the indigenous workers were "subordinate to nurses" (p. 594). These views are detrimental to successful interprofessional collaboration. These findings, the authors state, support the IPE literature that asserts the importance of understanding others' roles as being crucial for successful interprofessional practice and collaboration to occur.

Australian Hospital Collaborative IPE Study

Another qualitative study in Australia involved recent university nursing, pharmacy and medicine graduates who underwent IPE training in an academic setting (Gilligan, et al., 2014). These recent graduates were employed as healthcare professionals in several Australian hospitals. The study involved focus groups to gage participants' understanding and perceived value of IPE, and if they utilized IPP in their current healthcare work environment. Themes and subthemes from focus groups consisting of 68 healthcare professionals were coded and analyzed. Results showed an overwhelming existence of professional silos. Participants also, however, acknowledged the value and importance of IPP in healthcare environments due to these professional silos. When asked about the IPE they underwent at their respective universities, students stated that breaking down these silos was not included in the various universities' IPE curriculums. Overall, most participants felt ill-prepared to work on successful IPP teams in their professional clinical practices. The authors note that the study emphasizes the need for improved IPE curriculum at the university level, as well as a better way to incorporate these newly-learned skills in the professional healthcare environment after graduation. One participant eloquently stated, "…patient safety, interprofessional teamwork and communication will only improve if a positive interprofessional culture exists in the clinical context. When undergraduates who are taught best-practices skills in

communication, teamwork and interprofessional practice graduate and work in a climate of hierarchy, silos and stereotypes, any IPE efforts are destined to fail" (p. 8). This realization of the disconnect of IPP from the university level to the healthcare workforce echoes what some experts in the field of interprofessional practice and education have already noted. Brandt, et al., (2018), said that students who only received IPE training at the University level without professional practice, "…are placed in traditional practices that do not role model collaborative practice. Because much of what is learned in practice is informal and implicit, such environments can negatively influence students by reinforcing hierarchical beliefs as well as stereotypes and biases about their professions, contradicting what is taught in their early IPE education" (p. 1437). In another article, Brandt (2015) remarks that there is a "…lack of professional role models to support team competencies…" (p. 11). This invites the opportunity for exploration into healthcare organizational culture and the best way to introduce students newly trained in IPP in a hierarchical hospital structure.

Swiss IPE Study: Organizational Theory

An effective way to explore hospital culture and how it influences IPE initiatives, is through the lens of organizational theory. In Switzerland, Schmitz, et al., (2017), performed a qualitative study utilizing narrative interviews of physicians, nurses, psychologists, occupational therapists, and physiotherapists in a variety of medical practice settings including primary care, surgical, internal medicine, psychiatric and palliative care. They used an organizational theory framework to guide their research. It has been documented in the literature that IPE interventions have typically not been theory-based, and the importance of doing so has been emphasized in order to have more rigorous, meaningful research and evaluation of IPE interventions. Organizational theory investigates "micro"-organizational behaviors – i.e. individual and group dynamics – as

well as “macro”-organizational issues such as structural power relations. The authors were surprised to find that successful interprofessional collaboration (IPC) “…strongly depends on the contexts or settings in which these health professionals work.” From these results, they emphasized the importance of structuring IPE interventions to fit into various healthcare environments for successful IPC to take place. They concluded that, “…a constructive culture of cooperation and equal-footing relationships between professional groups are key requirements for successful IPC,” and that “…cultural change provides a necessary but not sufficient foundation for sustainable promotion of IPC. Equally crucial is recognition of, and adjustment to, the specific requirements of each setting, defined in organizational and professional terms (p. 3).” Of particular interest, the article mentions that Switzerland currently has a federally-funded program running from 2017-2020, providing $1 million/year towards IPE research projects, analyses of IPC best-practice models, and to help IPC become a visible and viable resource for improving healthcare environments.

Exploring Organizational Culture through Organizational and Systems Theories

As discussed in the previous Swiss study, it would be challenging to implement an IPE intervention into a hospital or healthcare environment without first understanding the culture of that particular environment. To do so highlights the importance of theory in guiding research. In this case, the underpinnings of organizational and systems theories may provide a more comprehensive understanding of hospital cultures and the best ways to work successfully within them. When the culture of an organization is unstable, it must improve to introduce any structural change, including an IPE intervention. Organizational theory suggests that, in order to introduce an IPE collaborative practice initiative, having a stable environment upon which to introduce change is imperative for success (Suter, et al., 2013). Understanding organizational culture is also

vital in predicting job performance and satisfaction, as well as influencing teamwork and treatment outcomes (Strasser, et al., 2002). It has also been noted extensively in the interprofessional literature that, on the organizational level, high-quality teamwork is associated with cost reduction, higher workforce retention, and a reduction in staff turnover (O'Leary, et al., 2012). The roles of organizational culture and teamwork that are described in the organizational theory literature are also aligned with what is at the core of a successful IPE/IPP intervention.

Many healthcare systems and universities world-wide have implemented IPE training into their medical profession schools. However, this effect appears to be vastly short-term and oftentimes not comprehensive enough to tackle complicated issues within real-life healthcare situations. What is lacking in most IPE interventions is follow-up once students enter the workforce and are surrounded by other healthcare professionals not formally trained in IPP. This lack of follow-up inhibits measurement of the challenge of introducing trained students into an untrained healthcare environment where hesitation to change is increased. As Paradis and Whitehead (2015) stated, "…when confronted with an unmanageable issue, we often turn to education as a solution of last resort in the hope that the next generation may fix it. We argue that it is not only unrealistic, but also inappropriate to expect learners to be catalysts for systems change (p. 405)."

The IPE intervention I evaluated for my BCHS Program Evaluation is described in the following Methods section.

3.0 Methods

The methods that I used to execute my thesis research are described in this chapter. My work consisted of a baseline assessment of organizational culture on an acute care unit which was part of larger mixed-methods IPE study conducted at UPMC-Presbyterian Hospital on acute care unit 5G. The purpose of establishing the baseline organizational culture was to determine how the intervention would be received on the unit and to make recommendations for its continued success. The study was modeled after the Massachusetts General Hospital (MGH) Interprofessional Practice Dedicated Unit (IPDEU), which has been successful in improving staff collaboration as well as patient outcomes (Institute of Medicine, 2015).

The program goals and objectives for both the MGH and the UPMC IPDEUs follow the core competencies of the Interprofessional Education Collaborative (IPEC) (Appendix C) which are as follows:

> <u>IPEC Competency 1: Values/Ethics for IPP</u> – Work with individuals of other profession to maintain a climate of mutual respect and shared values. (10 subcompetencies)
>
> <u>IPEC Competency 2: Roles and Responsibilities</u> – Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations. (10 subcompetencies)
>
> <u>IPEC Competency 3: Interprofessional Communication</u> – Communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment and disease. (8 subcompetencies)
>
> <u>IPEC Competency 4: Team and Teamwork</u> – Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population-centered care and population health programs and policies that are safe, timely, efficient, effective and equitable. (11 subcompetencies)
> (Interprofessional Education Collaborative, 2016)

Based on the IPEC Core Competencies, both the MGH and UPMC IPDEU program goals were formed. These goals include being able to understand and practice IPEC Core Competencies during everyday clinical practice, being able to model these competencies for medical profession students rotating through the IPDEUs and have the ability to implement interprofessional collaborative skills into everyday clinical practice. Both programs include training healthcare professionals on acute care hospital units on interprofessional collaborative practice and training a subpopulation of these professionals on becoming interprofessional instructors (IPIs). IPIs will in turn teach medical profession students rotating through as part of their university curriculum the importance of IPP in everyday clinical activities for even more impactful outcomes, as described in the following paragraphs in this chapter. Both MGH and UPMC IPDEU programs hypothesize that, by introducing an IPE intervention to healthcare professionals, there will be a shift towards positive unit culture and staff attitudes towards IPP.

The MGH and UPMC IPDEUs have similar program elements. One difference is that MGH's model utilized 180 university students in contrast to UPMC IPDEU's 50 university students. The types of students also differed: MGH included medical students whereas the University of Pittsburgh School of Medicine did not participate in the pilot study, although they expressed an interest in future participation. Overall, the UPMC IPDEU pilot study is smaller, utilizing only one acute care unit compared to MGH's three IPDEU units. The project did not require University of Pittsburgh IRB approval, but was approved as a UPMC Quality Improvement project (Project ID #1473). This study is supported primarily through the University of Pittsburgh Health Policy Institute.

3.1 IPE Intervention Setting

The UPMC Presbyterian Interprofessional Dedicated Unit (IPDEU) pilot study began in September 2018 and will conclude in April 2019. The program was implemented on UPMC-Presbyterian acute care unit 5G. This unit was chosen because it has been successful in performing other quality improvement projects, and unit management and staff were amenable to working on such developments. This unit primarily serves a neuro-trauma patient population who receive a variety of medical services because of the complicated nature of their cases. The unit also has a significant geriatric patient population.

3.2 IPE Intervention Participants

The intervention utilized approximately 30 staff who underwent online IPE training. The training included how to manage stressful situations and how to best collaborate with other health professions. Of these 30 staff members, 10 served as interprofessional instructors (IPIs). Some of the IPIs were asked by the unit manager to participate while other staff volunteered. In addition to the initial training, the IPIs completed a 5-hour IPE instructor training, including a live simulation using actors at the UPMC Wiser Center to practice IPE and instructor skills.

3.3 IPE Intervention Training

The IPE education included simulations that guided staff through complicated situations that can occur on an acute care unit and led them through how to manage these in an appropriate interprofessional manner. The education corresponds with what MGH has utilized and also with information that has been validated and recommended by the Institute of Medicine and the National Center for Interprofessional Practice. Some of the education was specifically tailored to our study population which differed from the Massachusetts General intervention. The goal of the educational curriculum is to teach hospital-based interprofessional collaborative practice skills.

3.4 IPE Intervention Implementation

Beginning in September 2018, the IPIs were assigned 2-3 University of Pittsburgh medical profession (RN/PT/OT/ST) students who rotated through the IPDEU twice a week (two half-days) during the Fall 2018 semester. The IPIs taught and demonstrated the importance of IPP in solving complex patient problems and providing excellent patient care throughout the course of a typical day on the unit.

3.5 Quantitative Study Measures

The IPDEU pilot study is a mixed-methods project utilizing both quantitative and qualitative measures. Quantitative measures include pre- and post-intervention staff surveys

measuring staff knowledge, skills and attitudes completed by the 30 healthcare professionals to determine program impact. Other quantitative measures are various patient outcomes that are being collected by the UPMC Wolff Center. The quantitative outcomes are not available for review in this thesis as results will not be available until after the second iteration of the pilot intervention which concludes in April 2019. The quantitative measures are important to mention, however, as it has been noted extensively in the literature that what is most lacking are mixed-methods studies to connect IPE intervention impact on patient and other quantitative outcomes. I will focus only on the qualitative analysis that I performed for the project as part of this thesis.

3.6 Qualitative Study Measures

The qualitative data collection and analysis was conducted by me and Kimberly Rak, MPH, PhD, who is a Medical Ethnographer for the University of Pittsburgh, Department of Critical Care Medicine, and was my primary mentor on this project and MPH Program Evaluation certificate supervisor. We were also guided by Jeremy Kahn, MS, MD, who is Professor at the University of Pittsburgh, Department of Critical Care Medicine, and also a member of the Interprofessional Practice Committee at the University of Pittsburgh. Dr. Kahn supported me and helped direct the program evaluation process. This project served as my MPH BCHS practicum and fulfilled the 400 practicum hours required to complete the University of Pittsburgh Graduate School of Public Health BCHS Program Evaluation certificate and was approved by the Director of the Evaluation Institute, Thistle Elias, DrPH. My main role in this project was that of a program evaluator, and I performed the qualitative interviews and unit observations necessary for a baseline assessment of organizational culture for the project. I worked directly with Dr. Rak and was also mentored by

Cassandra Leighton, MPH, who is a doctoral candidate at the University of Pittsburgh Graduate School of Public Health, Health Policy Institute.

In order to inform program implementation and prepare to evaluate organizational culture of the IPDEU, I conducted qualitative baseline data collection before the intervention began. Included in this process were baseline staff interviews and unit observations, as well as unit observations midway through the implementation of the intervention, all of which have been completed, coded, analyzed and described in detail in the following sections.

3.7 Qualitative Data Collection

I conducted 13 pre-intervention staff interviews including six with RNs, and one each with a physician, social worker, physical therapist, occupational therapist, unit secretary (HUC), speech therapist and patient care technician. Of the staff interviewed, three serve as IPIs (PT, OT, RN). I conducted the pre-intervention unit observations in May 2018 and included 13 hours of total observations throughout a two-week period over four different days. Times were varied so as to capture the unit at different levels of activity throughout the course of a day. Mid-intervention observation data was collected over four hours on one day in mid-November 2018, with the aim of documenting if the intervention was being delivered as planned and for project fidelity. During pre- and mid-intervention unit observations, 32-total staff were observed from 11 different profession types or levels (see Table 1). I achieved adequate saturation after 13 hours of pre-intervention unit observations were completed.

Table 1: Staff from Interviews and Observations

#Unit Professions (N=11)	#Observations (N=32)	#Interviews (N=13)
Physician	9	1
Nurse	11	6
Nursing Student	1	
Social Worker	3	1
Case Manager	3	
Housekeeping	1	
Unit Secretary	2	1
Physical Therapy	1	1
Occupational. Therapy		1
Speech Therapy		1
Pt Care Tech		1

Qualitative Measures

For staff interviews, the evaluators formulated a list of semi-structured, open-ended questions to promote conversation to enable exploration of the current state of interprofessionalism on the Unit and also obtain the staff's general understanding of IPP (Appendix A). For unit observations, I looked for specific indicators related to how interactions occur between unit staff, providing the opportunity to observe the circumstances, reasons, and results of IPP as they take place in daily practice. Both the interview and observation guides were framed with the Interprofessional Education Collaborative (IPEC) Core Competencies (Appendix B) in mind: values and ethics (n=10), roles and responsibilities (n=9), interprofessional communication (n=8), and team and teamwork (n=11). Following these guidelines, I was able to capture candid staff

opinions and interactions, allowing us to formulate a baseline of attitudes, knowledge, and behavior surrounding IPP, as well as current unit culture.

3.8 Qualitative Data Analysis

With the data from the interviews and observations, we created a codebook with relevant themes to guide us through the evaluation process (Appendix B). The data was coded using consensus coding between myself and Dr. Kimberly Rak. Dr. Rak and I identified and defined themes and codes in the data after a thorough examination of all transcripts. Once the codebook was completed, we went through part of the observation transcripts together, increasing the trustworthiness of the data through triangulation. Each of us took an identical section, read and coded it individually, and then we compared both documents noting similarities and differences in our approaches and interpretations of the data. We then went over the transcripts line by line and discussed the reasons why we coded in a particular way. After some discussion, we came to a consensus on the best codes to use. Since I was the evaluator who performed the observations, Dr. Rak did not have the same understanding of the context in which they took place. This often led to a discussion of why our codes differed at times. However, after context explanation, we mutually agreed on what codes were best to use. After we completed coding some of the data together, we concurred that a mutual consensus was formed, and only one evaluator was needed to code the rest of the data. I completed the rest of the coding of the transcripts and interviews using the codebook we created together.

3.9 Evaluation

The baseline assessment of organizational culture focused on formative processes throughout the intervention. The logic model (Appendix C) created for this project includes short-term outcomes of interest to the stakeholders which are mostly based on improvement in staff and student knowledge, skills and attitudes regarding interprofessional practice, as well as unit culture changes. The IPDEU team hypothesized that improved staff communication as a result of the IPE intervention will have a positive or neutral impact on patient outcomes. Some medium-term outcomes are shortened patient length-of-stay, reduced medical errors, reduction in patient falls, as well as improved hospital unit culture.

I conducted the data collection for the qualitative part of the study which included staff interviews and unit observations. We provided the unit full and complete disclosure of the project aims for purposes of transparency and also to build trust and rapport with unit management and staff. We have not yet shared the qualitative study findings with unit staff or management.

Prior to beginning the study, I spent time with the unit manager to introduce myself and discuss the best days and times for unit observations so as not to be disruptive of the day-to-day unit functions. Convenience sampling was used to determine unit staff for interviews. Staff was initially suggested by unit management with subsequent snowball sampling after the first couple of interviews were conducted. The staff interviews were recorded with a secure and protected iPad (property of the Health Policy Institute) using a voice recording application. The interviews were informal and occurred in a variety of settings, depending on what was most convenient for staff members who were offering their time during a regular work day. Some interviews were conducted at desks in the nurses' station, one RN interview was conducted while typing patient notes on a hallway computer. Three interviews were held over the telephone, and one was in a private office.

One interviewee was not comfortable being recorded, so I took notes during this interview. Some staff were asked to be interviewed but either declined or became too busy to dedicate their time. Those staff included two case managers, two social workers, a physical therapist, and several of the unit nurses. None of the staff were ever forced or coerced to provide an interview. There were no incentives for staff to participate. All those who participated seemed willing and eager to participate with us.

Unit observations utilized medical ethnography skills, and I conducted these as both a direct and immediate observer, so as to sustain good relationships with unit staff. For example, there were times throughout the course of the day that staff talked to me about their families, work history, and other personal discussions and seemingly accepted and felt comfortable with my presence as an observer on the unit. There were other times where such discourse would have been inappropriate such as during patient rounds. I recorded the observations in real-time by hand in an ethnographic journal. My reflections of the observations were written during and after they occurred. An employee at the University of Pittsburgh Department of Critical Care Medicine transcribed the audio-recorded staff interviews. I entered the data from interviews and observations into the NVivo system. All project transcripts as well as the interview guide and codebook were filed in Microsoft SharePoint for easy accessibility and transparency to the evaluation team.

3.10 Methodological Limitations

There are limitations worth mentioning about the methods of qualitative data collection and analysis. Although I am currently an MPH student approaching graduation, I come into this with 20 years of professional experience as a medical social worker, having worked in various

healthcare settings including hospitals, out-patient dialysis centers, hospice, home health and in- and out-patient psychiatric settings. I have worked on a multitude of teams in my social work career and have preconceived notions about what I believe constitutes good, mediocre and poor team functioning through my professional experiences. Although my belief coming into this was that my social work experience would *enhance* my ability to effectively perform hospital unit observations and staff interviews having "been there" before as a professional in similar working environments, my previous experience undoubtedly disallowed me to have a completely objective view of the hospital environment. My past experiences, having worked with all professions interviewed and observed in this study, gave me a different perspective going into this than someone who has never worked in a healthcare setting. Though one could argue that there are advantages and disadvantages to both sides of this equation, it is important to note my background given its similarities to the setting in which the research was conducted. Another researcher could have come away with a completely different understanding of this environment. Related to this, is that I was the only researcher performing the observations and interviews. Had there been two or three observers/interviewers, not only could we have gotten different perspectives, but also could have potentially had more staff interviews.

Another limitation was in the sampling for staff interviews. The unit manager initially assisted me in getting the first few interviewees, then, as previously stated, snowball sampling arose from that. The possibility exists that these staff may have felt they had no choice but to provide an interview given that their manager asked them to do so. This would have an effect on the interview process and the information the staff provided to me during the interview. The desire to please the interviewer was also in question. Many of the interviews were conducted during or immediately following unit observations. Due to this, there is a strong possibility that staff were

trying to “please” the observer/interviewer in trying to behave in such a way or answer questions that they believe to be more pleasing to the interviewer or the research study in general. Given that this is a study on interprofessional practice, there may have been the inclination to prove that their team performance was already commendable. Although these interviews are noted as being confidential, many of them were conducted on the unit where other employees and sometimes the manager were visible and potentially listening to the interviewees’ responses. This could have skewed the interviewees’ responses. My presence as unit observer, though I tried to be discrete as possible, was visible given the limited space on the unit. Although staff did seem to have a certain level of comfort with me, my presence could have triggered them to behave differently than they would have normally.

4.0 Results

4.1 Defining Interprofessional Practice and Education

Guided by the WHO definitions of IPP and IPE, we asked 5G staff during semi-structured staff interviews how they perceived IPP to obtain a baseline level of knowledge on the subject. We created a theme in the codebook entitled, "***Definitions of IPP on the unit***" and specified this as meaning: "***The way in which multidisciplinary unit staff defines interprofessional practice***."

On 5G, there was a recurrent theme during staff interviews and unit observations that IPP is about "better communication" but, in general, it wasn't clear if staff were referring to intra- (communicating within the *same* profession) or interprofessional communication. The idea that IPP has do to with "helping" your colleagues is another frequent theme with unit nursing staff. They expressed with pride their views of how nurses "jump in" and "help" each other during a patient emergency.

There were varying degrees of staff knowledge regarding the definition of IPP. During one interview with a speech therapist, this person provided a succinct definition of IPP that most closely resembles the WHO definition:

> *"It's everybody looking at the same problem from their different angle and saying, 'how can we collectively address this? Is it better addressed by you or by me, or do we need to do something together?'"*

The description of IPP by other members of the care team was less clear:

> ***"****I guess when I think of it, within the patient's needs; needs of care."*

> *"Well we attempt to be inclusive and multidisciplinary in our rounds, and that includes involving the bedside nurse and the supervisor so that we have cohesive communication about a plan, and accurate updates about information, and ideally trying*

to integrate with other consulting specialties, or ancillary services, which can be a challenge given timing to have people together. But I think the most frequent component to that is having nursing partners engaged with rounds

"…it's the interdisciplinary team working together."

4.2 Unit Culture

One of the evaluation goals was to capture at baseline how staff described the *unit culture*. We looked at unit culture and its relation to IPP and defined this theme as: "*The instinctive way in which staff talk about or interact with each other that has developed into an acceptable and habitual norm*."

Hierarchy

Embedded in 5G unit culture was a theme of hierarchy, appearing frequently in both observations and interviews. We defined "hierarchy" as:

> *"The belief that one's profession or professional tenure ranks higher and/or has decision-making authority over another profession or someone with less professional tenure."*

The hierarchical themes and patterns of behavior were mostly surrounding discharge planning discussions and with physicians-in-training. Through observations and interviews, it became apparent that discharge planning is at the core of most interprofessional communications. It was quite common, for example, for the case manager to initiate impromptu, informal discharge planning meetings with various staff at the nurse's station to ensure patient discharges are managed efficiently and in a timely manner. Case management staff also tried to troubleshoot potential issues that might delay a patient discharge. Case management staff seemed to direct the physical

therapists frequently, telling them what patient to see and when, in what appeared to be a hierarchical manner. Some examples of this were noted in unit observations:

"CM told PT to 'evaluate this patient.'"

"CM told PT what patients to see and evaluate for discharge."

"CM asked PT to see a patient this morning."

Another example of hierarchy surfaced during an RN interview. This RN was describing the atmosphere on the unit each July when new resident rotations go into effect. This example highlights the RN thinking that the "newbies" are wrong, and, on the contrary, the new residents thinking the nurses are wrong since, as this nurse implied, the physicians are demanding things be done their way primarily because of their position of power:

> "*All the newbies are starting. And some of them think they know everything. But you as a nurse know that's not right 'cause you've been here and know that it should be done this way. And we try to teach them that but they're like, "No, no! It has to be done this way. I'm the doctor." And just 'cause they're the doctor it doesn't mean anything. You have to do what's right and safe for the patient*."

Continuing with the "hierarchy" theme, a nurse described patient rounds with patient care technicians (PCT) and health unit coordinators (HUC) during a staff interview:

> *"We try to promote very good communication between nurse and the PCT also, and PC to PCT, and then also pull in our poor little HUCs that are there in the mix there. Get them involved."*

Leadership

In our review of the current unit culture, we wanted to know about the impact of leadership on the unit. We described and defined this theme as: *Impact of Unit Leadership*: "*How unit leadership promotes or facilitates interprofessional practice on the unit.*"

The Unit Manager states that leadership is shown by example to staff, and that she is a good example of a visible leader. The UM's approach to manage "communication issues" is to provide books for staff to read:

> *"Oh, you have to walk it! You have to be the example in teaching them how to communicate. It's stressful out here and there's always tears when a physician is not nice or when somebody's snippy even amongst themselves. We have a lot of hurt feelings when a senior nurse is explaining something to a junior nurse and they think that there's a tone or they're being 'bullied' is the term now. So, I bought all these books; 'The Crucial Conversation' books, and I give them out to people to read so that they understand how to communicate with each other."*

Others recognize leadership's strength with regard to interprofessionalism:

> ***"****I think that actually the leadership on 5G is amongst the more pro-active that I've encountered with regards to that."*

Some staff think that the leadership is good and has improved over the years, but does not support the direct patient care staff sufficiently:

> *"Our leaderships are pretty good here. It's gotten better over the many years I've been here. But sometimes I think they're more concerned about like their audits or this or that, than trying to help on the unit. Especially with all the new nurses, sometimes a senior nurse can always bring new nurses, and then our leadership nurse who is off doing their own thing. You're like, "Wait. We need help." And so sometimes they're like later but like…"*

Here is an example of the Unit Manager using leadership skills for staff conflict resolution:

> *"I bring them in and I just listen. I listen to all sides of this story and I am non-reactive whenever something happens. And I hear the story the first time from the first person. I wait to gather all the information. And then the other thing I try to do—mediation. I'll bring all parties in and I will be the judge and jury, and I'll just allow them to talk. I've had yelling too."*

Teamwork

Another way that leadership can promote interprofessional practice is through active team building and team process improvement. There were no strong examples of team building in the

interviews or observations. If there are aspects of team building that staff participate in, they were not mentioned.

Another theme we looked for regarding unit culture is the "*perceptions of the current state of teamwork*." We defined this as, "*The way unit staff perceives how they work together as an interprofessional healthcare team, to provide the best possible patient care*." The perception of the current state of teamwork on the unit varied based on who was asked, and with such a limited number of interviews across professions we are not able to provide insight into the distinctions. The differences in opinion range from the unit as a team, to a well-functioning sub-team process (RN/PT/PCTs) with the exclusion of the medical team, to a view that the unit has entrenched challenges with interprofessional practice.

Here is an example when the Unit Manager spoke very positively about teamwork on the unit, stating that the nursing team on 5G works well with most ancillary services, but notes issues with the physicians:

> *"On 5G? I am always complimented on the team here. When we have resource staff come, they always talk about the teamwork that goes on 5G amongst themselves. And I think we have great teamwork with physical therapy. I think we have great teamwork with the ancillary departments that come to help us take care of our patients. Where we struggle is with the physician group. We don't have a medical director so we have neurology, neurosurgery, and trauma, neuro-trauma. And sometimes they don't talk to each other and we are left out, and you know it can be a little chaos in taking care of that one patient who might be very complicated. And it's always that person too. It's that complex trauma patient who has many different services involved that no one's talking to. So that's a big team issue that we have here on 5G."*

The importance of good IPP in conjunction with teamwork was noted by a nurse

> *"In this population especially, you cannot work alone. It takes an army. Sometimes you say it takes a village to raise a kid. It takes an army to take care of a patient! You need everybody's expertise. And sometimes, the therapist may see something that you didn't see. Like this morning, one of my patients wasn't doing as well, one of the physical therapists came to me and said, "hey I saw this guy two days ago and I feel he's really declined." And I had already had the man on the way to CT scan. So it was nice that he also felt that*

way. You know, and he said to me, "there's something not right." And I said, "I agree." But what happens if I would have been busy and not saw that man right away? He would have came to me and gave me a heads up. I think it's just the culture here. I think on this unit, I think there's a lot of respect for each other."

In contrast to the previous example, many responses to discussions of "teamwork" tended to default to intraprofessional as opposed to interprofessional teamwork. The nurses interviewed talked positively about intraprofessional team functioning on 5G as well as with other members of the care team such as PCTs.

Staff Expectations Regarding the Value of IPP

Two constructs that are a component of many behavior change interventions are an individual's "expectations" and "expectancies" regarding a particular outcome. In this intervention, we wanted to explore these concepts and we defined staff "*expectations*" regarding IPP as: "*The staff's anticipated outcome of an interprofessional practice intervention on the unit*." The following are several examples of what some staff believe will be the outcome (their "expectations") of an IPP intervention:

> *"Enhanced communication, decreased repetitive calling for clarification about plans. And I think probably provider satisfaction on both ends linked to that. Yeah, I think it likely translates into some improvements of clinical care as well."*
>
> *"It can help people communicate better in certain circumstances and see how people work together – all professions."*
>
> *"Better communication. People have better outcomes. Patient safety would be amazing if we had people who know how to talk, and communicate, and work together as a team and deliver care. I think we'll have better patient satisfaction. I know a lot of times the same question is asked over and over again to a patient and they get frustrated with that. And I think that there will be better staff satisfaction. So, staff and patient satisfaction."*

Similarly, we looked for "*expectancies*," defined as: "*The perceived value that staff place on the outcome of an IPP intervention.*" In this example, a staff member discusses the potential value of an IPP intervention as opposed to previously used methods:

> ***"****We've done these multi-disciplinary patient-led… or nursing-led rounds and then having a nurse administrator there. We have our trauma nurse coordinators there. I think all those individuals probably make a contribution. I'm not aware of a model that works better than another."*

The same staff member believes that there ***is*** value to an IPP intervention, but stated what is lacking is maintenance or sustainability of a program:

> *"I've seen lots of initiatives to try to enhance this, and I'm certainly not above trying other things, but it seems like we sort of come up with a new way to do stuff and it lasts for three or four months and then fades off. And then we go back to doing the same thing we've done for awhile until somebody takes the initiative to do something. No disrespect intended but just like this, right? I haven't seen the flavor yet of if that works."*

The Unit Manager perceives value in an IPP intervention because of staff excitement and "buy-in":

> *"The staff completely have bought into it. The physicians we talked to on the kick off, they were actually excited about it, especially the trauma guys were excited about it. So, I think people will, again, I think we presented it well too with that kick off. And we were excited about it therefore, they were excited about it."*

Contrarily, another staff member does not see any value at all in it:

> *"…stated that she is 'jaded' and doesn't see how interprofessionalism would help this unit and that '...people are too set in their ways to change or improve.'"*

4.3 IPP in Practice – Facilitators and Barriers

The staff were asked what they thought were the facilitators and barriers to IPP. The staff's answers to these questions led to another major theme: "*problem-solving/shared goals*." We defined this as: *"When the healthcare team works together in a cooperative manner, aligning their*

individual patient assessments to solve difficult problems, resulting in high-quality patient care." The problem-solving and shared goals theme usually emerged around staff discussions of discharge planning. The goal of the patient "plan-of care" is for an efficient, timely discharge and the unit leverages interprofessional practice to address any barriers to this goal. Here are some examples of this during staff interviews and observations:

> *PT – "Mostly with the nurses and the case managers and social workers to an extent. Just talking about who's ready to discharge and what their needs are going to be, and what they might need from physical therapy."*

> *ST – "Everybody had different training and different education, and so you're gonna have different solutions maybe to the same problem. Or if you're struggling with coming up with a solution, a colleague from a different background might have, "oh what if I try this?"*

> *NSPA1 talked with another MD about a patient going home. NSPA1 then told RNRH the same – had pleasant, professional but information interactions about patient being discharged and that the "pic line will need removed." CM2 joined the conversation saying, "are you talking about Mr. ___?" They said "yes." CM2 told NSPA1 and RNRH that he would organize the discharge, tell family and coordinate rehab for the patient.*

Facilitators to IPP

Facilitators to interprofessional practice were observed in both staff interviews and unit observations. Facilitators are defined as, "*those factors that help make interprofessional practice interactions possible."*

"*Respect*" was an IPP facilitator we defined as, "*Appreciating all members of the healthcare team, enabling the team to work more effectively together to provide the best possible patient care*." "Respect" was mentioned frequently as having significant importance to successful IP interactions:

> *"Just the interdisciplinary respect. Saying, "Yes I know you have this very explicit training in this thing. Help me." And sort of remembering it's not about your ego. It's about the people in the beds."*

"And you get to sort of see how your people work. And I think that leaves you to respect them and really get where they're coming from more, and so then you can have better conversations about conflict because I know that you have the patients in terms of heart and I know that you respect me as a professional."

"I think just having an innate level of respect for the contributions of every member of the team and recognizing how integral it is to practice as a multi-disciplinary and multi-specialty team is key."

Another frequent theme seen as "facilitating" IPP was the *"Go-to person,"* defined as: *"A staff member who provides assistance by observing what's happening and intuitively knowing the best way to handle a situation; that person that you can rely on for assistance. This could also be a person who serves as a conduit for 1. up-to-date patient information and, 2. the flow of information between professionals."*

In the first example of the "go-to person" theme, the health unit coordinator (HUC) was observed acting thoughtfully in a circumstance where a patient had lost an expensive leg brace. This situation could have escalated had she not used her innate intuitiveness to help staff solve the problem:

"In the meantime, the HUC had already called the ED and they said they would look for the patient's leg brace. The HUC also called security about this. Security told HUC 'they are bringing something up to the unit that could be the patient's leg brace.' PTBD was very grateful to the HUC for helping to solve this issue for the patient."

In this example of a "*go-to person*," a physician asks case management to have PT evaluate a patient to help determine a discharge disposition:

CM1 talked with MDRM about a patient discharge to rehab. MDRM did not think the patient was ready for discharge due to new medical problems but asked CM1 to get physical therapy back in to see this patient for a new evaluation. MDRM was pleasant but curt with CM1 – MDRM seemed busy and rushed.

Here, a physician discusses the importance of having nursing available for patient rounds:

> *"Well we attempt to be inclusive and multidisciplinary in our rounds, and that includes involving the bedside nurse and the supervisor so that we have cohesive communication about a plan, and accurate updates about information, and ideally trying to integrate with other consulting specialties, or ancillary services, which can be a challenge giving timing to have people together. But I think the most frequent component to that is having nursing partners engaged with rounds."*

Another example of this theme is the HUC talking about being the "*Go-To Person*" on the unit:

> *"Well I'm like the center of everybody so I'm the first person everybody sees so…. 'Cause they tease me sometimes they're like, 'Oh I know everybody.' But everybody comes to you so you have no choice but to know 'em. I have some doctors that I just switched, I told you, like two years ago and I'm surprised most of the neuro doctors know me by name. I didn't even know that. Even the attendings, some of 'em. I'm like, 'how you know my name?!'"*

Another emerging theme representative of IPP facilitation was "*Psychological Safety*," which we defined as: "*The perception that your opinion is valued and appreciated, and the belief that you can talk freely without being judged and/or personally diminished.*" This theme was evident in several observations of interprofessional interactions. In the first example during unit observations, the physical therapist was completely confident and fearless disagreeing with the physician about a patient discharge:

> *PT, CM and MDNR spoke about a patient wanting to be transferred to St. Margaret. MDNR stated that "we can't hold the patient here against her will," and that "she can sign out AMA." PT said he evaluated the patient yesterday and told her she was not safe for discharge home. Pt now wants to go to St. Margaret's where she says her neurologist would take care of her. PT told MDNR that he cannot tell the patient that she's ok for discharge if it's not safe. MDNR seemed stressed as it seemed there was miscommunication between them.*

Here's an example of a lack of psychological safety when an RN discussed how newer nurses don't feel comfortable disagreeing with the physician:

> “*Especially like newer nurses too. They might be a little more wary to approach the doctor ‘cause they think, ‘Oh well they’re the doctor! They do know what’s right.’ But until they get their critical thinking and their experience… We’ve all been there.”*

In this example during unit observations, a social worker describes how younger, less experienced social workers have difficulty working with nurses on the unit, causing them to quit. Psychological safety was portrayed in a negative manner here:

> *MSW regarding why they can’t keep a regular social worker on the unit: “…it’s a combination between staff (RNs specifically) that have been there a long time, high patient acuity, and the last few social workers have been young and didn’t stand up for themselves so they quit.”*

In this example of psychological safety, an RN describes the fear that new nurses experience when contacting physicians:

> *“Especially having new nurses now that are trying to not be afraid to call physicians and letting physicians understand that they’re afraid. We know you’re not a bad guy but these nurses don’t know what they don’t know, and they’re afraid to call you. So just walk them through. Talk to them. Teach them. Be that physician in an academic medical center who you are learning so teach the new nurses and help them to understand better why you ordered that if they’re calling to clarify something.”*

A couple of these examples highlight tenure (or lack thereof) as being one factor impacting a professional’s level of psychological safety. Increasing new team members communication and confidence skills related to asking questions or providing input might be one area to be targeted in the IPE intervention, and also through focused activities by unit leadership.

“*Comradery*” was another IPP facilitator. We defined “*Comradery*” as, *“When members of the team promote feelings of personal belonging, familiarity and togetherness with each other, including having sincere, personal discussions regarding their personal lives, as well as including each other in social activities.”* There were plenty examples of comradery, especially during down times on the unit:

CM and MSW had informal, long conversation about their weekends. Pleasant, jovial, friendly; they discussed family.

RN offered to do a "Starbucks run" for everyone and came back to the unit with the staff's orders.

Barriers to IPP

Along with facilitators, we also looked for "barriers" to IPP. We defined *"barriers"* as, *"Those factors that are impediments to staff working in an interprofessional manner."*

"*Miscommunication/conflict*" was a theme noted as an IPP barrier. This was defined as, *"The ability to resolve conflict within the team regarding patient care while maintaining a manner of professionalism and respect to other healthcare professionals, keeping the patient's best interest in mind."* Most of the time, staff thought *conflict* was handled fairly well. However, one staff member disagreed:

> *"Conflict with staff on this unit is not handled well at all. It's like you send an email or tell someone something about a problem you're experiencing, and you never hear back from anyone. The issue never gets resolved. Things could definitely be handled better. How could things be handled better? By meeting with staff members in person about the issue, not just ignoring it or forgetting about it. If it's a patient/staff conflict, things usually get resolved because you have to get Patient Relations involved and they resolve it. Things get done that way."*

Here is an example of how a *miscommunication* between staff was a barrier to successful IPP. In this example, they discuss why a weekend discharge didn't occur:

> *NSPA asked why a patient hadn't been discharged over the weekend. RNBH said maybe it was a transportation issue. RNBH said that she had worked the day before (a Sunday) and seemed to recall that there was no family visiting patient on that day. RN said this patient's family is very supportive and attentive. CM1 said "if family was so supportive then why weren't they with this patient on Mother's Day." RNBH was exasperated that there were no discharge orders in EMR on this patient. CM1 told RNBH that she would "get on this" as quickly as possible.*

We noted, "*Stress and strain*" as another IPP barrier, and defined it as, "*When staff are overwhelmed with the amount of responsibilities they have and the notion that this could interfere*

with their ability to provide high-quality patient care. Stress/strain could result in staff feeling frustrated or annoyed and is in part a result of there being lots of 'moving parts' for the patients in their unit."

Here is a speech therapist feeling stressed about being paged excessively about seeing a patient that they had not had time to see yet:

> *"We have 24 hours to see a consult. So, if you put in a consult right now and I have ten waiting for me, I have to see those ten. An understanding of that would be good. Don't page me six more times today to ask me if I've seen the consult just 'cause that takes time…so then I have to step somewhere, pull up the computer 'cause I don't wanna sound like an idiot when I talk to you about my patient; have their chart in front of me. It delays patient care, not that we don't want to be communicating and updating, but we have to find a happy medium."*

Validating the above example of stress and strain, during an interview, a staff member talked about paging the speech therapist incessantly to evaluate patient:

> *But again, I hope… Like the other day, I was talking to the Speech Therapist because I know… I know we aggravated the heck out of her… we were relentless calling her to come see a patient who was threatening to leave AMA until he got a speech… you know, if he didn't get something to eat.*

Another example is from a staff member talking about knowing (or not knowing) when the speech therapist is coming back to the unit:

> *I think sometimes, or like speech will come and they'll see a patient. And then yeah, you know they're gonna come back, but when? So, it would be helpful if they said, "I'm gonna see speech every other day", or "we'll see them the third day", or "you know what, they're really not gonna improve so I'm not gonna come up."*

Here's an example of how unit leadership handles stress in front of staff:

> *"So, when I'm out there and I'm stressed, I try to hold it all together and be the example so that they understand when the heat's on, you still have to stay calm and deal with it. You have to really work hard on holding that all together."*

The theme of staff being "*Frustrated/annoyed*" also arose. This was defined as, *"feeling irritated about something during the course of the workday."* There were some examples of this

in both interviews and observations, but it generally occurred in situations where the staff member was busy and had an extra task to do secondary to another staff not doing the task and it was now an extra burden, or when a situation became more complicated than anticipated:

> *"I think the only thing that's confusing with our population, because with the stroke and the trauma population, pain and disability really drive a lot of the patients' PT care. And we all know the PT people are the discharge people. Whatever they say pretty much goes. And what's hard is that… So on Friday, you have a plan for rehab and then they come in on Monday and of course, they've progressed and now the plan has totally changed to a SNF or to home with home care which they're required to do a home care consult. So that gets a little frustrating for case management as well. Every other day, we had like four plans of care that were totally changed. And all that work the CM had done and had authorizations and all that, and they didn't even need to."*

This example displays how better staffing in the ED could have alleviated a stressful situation for unit staff and, ultimately, the patient:

> *"Well again, they (ED) were short. So, if they worked towards having the adequate staffing, that's usually the answer. This patient had been in the ED almost the whole day, the day before and didn't come up here 'til late; 'til 6:00 when the bed was available for discharge. So why wasn't he seen on the ED? The ED should have called speech to come see him down there. But they don't take care of them so they don't know. They don't think about that. And then he comes here and that's a problem for everybody. So, I mean, you know, it's one case out of a million. But for that man, it meant everything. I mean, he was swearin'. He was yellin'. He was cursin'. Threatenin' AMA. Here's me— 'Here's your papers! See ya!' I mean, what can you do?"*

Another theme denoting an IPP barrier was "*Lots of Moving Parts*," which is *"…the perception that there are so many layers of and changes to providing quality patient care that it promotes feelings of confusion, being overwhelmed and stressed. One factor contributing to the feeling that there are a lot of moving parts is when there are many specialty physicians involved in a patient's care."*

Here are some examples of this:

> *5G is very high energy. The patient turnover is very quick. So, I like to think of it as a constant state of organized chaos. Sometimes it is very difficult to get a hold of the people that you need to talk to in that aspect. It is so busy, and the patients are neuro and*

> *trauma related. Sometimes there's a lot of different people helping patients with a lot of different things. So sometimes some needs can go unnoticed. What could be a more urgent thing is going on in the background. And there's a lot of moving parts with that.*
>
> *Where we struggle is with the physician group. We don't have a medical director so we have neurology, neurosurgery, and trauma, neuro-trauma. And sometimes they don't talk to each other and we are left out, and you know it can be a little chaos in taking care of that one patient who might be very complicated.*

The *"Issue of availability"* came up in staff interviews and unit observations. We defined this as, *"The perception of the patient care team that they have access to the professions that they need, when they need them."*

This theme was often in reference to the various physicians that come through the unit:

> *"We try to round together but sometimes that can be time consuming so just trying to find the right timing is important."*

Along with "availability," is the "*timing of rounds*" which was also perceived as a problem. Several staff members discussed the issue of not having sufficient time for multi-disciplinary patient rounds, creating a major barrier to successful IPP. The first example talks about how rounds are short, and some staff want more information than the physician is able to provide in the brief time they have:

> *"Sometimes rounds are, by necessity, a prompt endeavor. And understandably the folks that are on the floor, who are gonna be on the floor there full-time, are eager to get as much information as they can. But I think that sometimes there's a little bit of a lack of understanding on both ends about the duration of time, the topics for discussion, and what actually should be sorted out on rounds. You know, we're not medicine doctors. We do things a little bit differently, and that's by design and by necessity. And so, I think the way in which nursing staff interacts with various specialties changes in the way the specialties expectations that they have of nurses are different. And that kind of creates a barrier at times."*

Here a physician explains why rounds must be limited to a specific amount of time:

> *"I round with 20 minutes left to go before I have to start an operation, and six more patients to see."*

There was another frequent theme creating a barrier to successful IPP, which was that of "physician presentation." Frequently, during staff interviews, they talked about issues and barriers surrounding physician communication with staff, whether that it's lacking or that the physicians are curt and rude. A physician interviewed also brought up physician/staff communication issues on the unit and admitted patient rounds can be short. He also implied that these issues might be resolved if staff was able to understand that the numerous physician services rounding on the unit provide varying patient information.

During unit observations, there were no observed negative communications between staff and physicians. This, however, as stated above, was a recurrent theme in staff interviews:

> *"When we did the My Voice Survey two years ago, the score on 5G for nurse/physician relationship was in the toilet. I mean, it was the lowest. So, I've been really working with our physician leaders to try and strengthen that."*

> *"Cause really the physicians are the ones who I see a lot of the sort of disconnect with as far as like working as a team. 'Cause like, with everyone else it's like social work, case management, PT, OT, speech. Like everyone else, we sort of work pretty well together. It's not every physician and it's not every team. But some of the physician to nurse communication and working together is…They can be disrespectful."*

> *"I do notice sometimes these physicians won't take responsibility for their patient and I don't know if it's because they have so many patients that they have to deal with, and they think, 'Oh well that's not mine.' They're like, 'Oh that's not my patient." I'm like, "But you wrote the note this morning.'"*

5.0 Discussion

The approach that we used in the analysis of this qualitative research relied on grounded theory which allows for the researcher to hear the voices of the population being interviewed and observed. Much of what we heard relates to concepts that are found in the organizational theory literature that provides an explanation for what we found (Schmitz, et al., 2017; Suter, et al., 2013). Organizational theories provide a lens through which one can understand the meaning of the results of our research. Some of these theories examine micro-organizational issues, such as individual and group dynamics, while others focus on macro- issues, such as structural power relations, i.e., the hierarchical relations between different professions. Certain concepts from organizational theories provide a natural way to interpret and understand the results of this study and resonate with the emerging themes from the data.

The concept of organizational culture was explored in-depth in this analysis. Two components of organizational culture relate to patterns of communication and the hierarchical structure of the organization and the ways in which different professionals as a group relate to one another.

Communications in general among unit staff – whether good and bad – relate to the concept of hierarchy. For example, when staff felt that they were able to openly communicate in a "psychologically safe" environment, they believed that the unit would run smoother and they would be better able to provide high-quality patient care. The way in which an organization communicates generally flows from the top down. If top-level leadership values and promotes good communication by example and psychologically safe environments exist in the organization, then we would expect for good communication to occur. Although there were examples in the data

where staff believed the unit was run in a psychologically safe environment that was conducive to good communication between staff, this was not consistently the case and was not always evident in unit observations.

Many themes that described unit culture relate to hierarchical relationships. How these relationships play out amongst staff either facilitated or presented a barrier to successful interprofessional practice. One example of this that presents as a barrier to IPP was, when a nurse described the atmosphere on the unit when new residents begin July rotations, explaining that, nurses who attempt to teach incoming residents on patient-related matters specific to their unit are frequently met with resistance from residents who believe they already know the best way to proceed with anything related to patient care. Examples of hierarchy being played out as an IPP facilitator were rare, but one example was when staff consult the physical therapist in a somewhat demanding way to see patients needing a discharge disposition. Although this could be perceived as a barrier to some, depending on the tone delivered and the relationship between these staff members, the physical therapist may interpret this as being identified as an integral team member whose professional expertise is respected and vital to delivering excellent patient care.

Hierarchical relationships and communication patterns are rooted in the heart of an organization. A key concept of organizational theory is the notion of a "learning organization" in which individuals work and learn together to collectively improve the quality of their work environment (Suter, et al., 2013). The definition of IPP -- presented in the Introduction section of this thesis -- is "...when multiple health workers from different professional backgrounds work together with patients, families, caregivers, and communities to deliver the highest quality of care" (Institute of Medicine, 2015). When looking at the core values of organizational theory alongside

the definition of IPP, we can begin to see how naturally they align, as they both value working and learning together.

There are a number of explanations provided by several organizational theories that can help us understand the results that we found. The first of these is contingency theory which is an organizational theory that explores how, "…organizational culture as a contingency factor affects worker motivation" (Suter, et al., 2013). Given the thematic descriptions of hierarchy, miscommunication and leadership from the data, it would be suitable to believe that, what makes up the culture of an organization is contingent upon how it relates toward any new and learned behaviors such as IPP. If factors such as disorganization and poor communication are at the forefront of a unit's culture, that organization would not benefit much if at all from an IPE intervention. In fact, it may even create more confusion for the organization as it would not be starting from a steadfast foundation. The themes derived from staff interviews of the IPDEU indicate that, although some staff perceive communication to be good, others did not. Unit observations tended to show a clearer picture of how hierarchical positions negatively affected communication, in particular with the physician-staff communication dynamic. If learned behavior is contingent upon solid underpinnings of communication as this theory suggests, it would be beneficial to look closely at these issues and attempt to improve them to have a successful IPE intervention.

Building on this, another organizational theory related to contingency theory -- the behavioral theory of the firm -- indicates that, if the organization is not functioning from a position of stability amongst its management and staff, any intervention or new policy introduced will have difficulties being maintained for long if at all (Suter, et al., 2013). Based on this, we can presume

that an IPE intervention may not have motivating impact until improvements are made and the unit stabilizes.

Finally, implementation theory states that, despite our best efforts, no intervention will be sustainable without individuals and groups who communicate well and perceive that they are on the same level without the negative hierarchical foundations that diminish collaboration (Suter, et al., 2013). Additionally, this theory suggests that, at an organizational level, if the administration or senior executives do not have significant buy-in of whatever it is you're trying to implement, it will be short-lived. Relating this back to the UPMC-Presbyterian IPE intervention, this theory stresses the importance of ensuring that there is sufficient buy-in at every level including top-level UPMC administration and unit management. It is recommended that there continues to be a continued and stable plan for ensuring as much as possible that stakeholders at all levels remain engaged, involved and excited about the project.

The effort to comprehensively weave the elements of organizational theory into understanding the fabric of effective and patient-centered care delivery requires thoughtful planning. While IPP and IPE are not new concepts, they are well-designed to address and improve current operational system defects observed in the U.S. healthcare system. IPP and IPE are well-positioned to address the organizational culture and structure of any localized unit, hospital, or system. In order to begin to correct our flawed healthcare system, we must first inspect systematic problems at a micro-level within our hospitals may that have created the problems in the first place. By critically examining and attempting to solve micro-level hospital system issues, we can then begin to examine problems from a macro-level. To do so, we must start by looking at the clinical staff of a successful hospital or healthcare system as this is where it most directly interfaces and impacts patients.

When healthcare systems are running efficiently and at their best, it is because organizationally these systems have successfully bridged the benefits of specialty service lines by ensuring staff work together in collaborative fashions, allowing for smoother operations. These organizations are run well from the top down, listen effectively to staff issues and attempt to solve them fairly and diplomatically, keeping the staff and patient at the heart of the discussion. These efficiently managed healthcare systems, unfortunately, are anomalies in today's fast-paced, complex patient and high staff turnover systems. They are critically outnumbered by systems who organize around specialty silos and disconnected care leading to the current critical situation. We need answers to help fix these complex issues within healthcare systems. The first place to start is within the systems themselves, with the very people who make them tick – the staff. When staff communicate well and work together in an interprofessional manner, staff and patient satisfaction, and patient outcomes improve, making healthcare systems function better overall.

5.1 Study Limitations

Limitations to the IPDEU study at UPMC-Presbyterian include the fact that physicians were not included in the IPE education modules. While some physicians were informed that the IPE intervention would take place on 5G during the "IPDEU Kick-Off Event," the physicians were ***not*** included in the IPE modules, although the IPDEU team is currently trying to get them on board. This oversight is of particular interest since staff repeatedly indicated that, how physicians communicate, or the lack thereof, is a major IPP barrier. Even a physician interviewed discussed how physician-nurse communication could be improved "on both parts." With this knowledge, it seems reasonable to revisit the decision not to include physicians in the IPP education models, if

not for this specific iteration then for future iterations. Reasons for their omission remain unclear but could be because physicians in general are not considered to be unit "staff." Also, hierarchy could be so ingrained in unit culture that staff think physicians are "above" being asked to change or learn IPP. Or, perhaps the staff intentionally excludes physicians because they are considered difficult to communicate with, creating a "why even bother, it's hopeless" attitude.

Communication issues between unit staff and physicians can only begin to be resolved by including physicians in collaborative staff educational initiatives such as the 5G IPDEU study. While leaving them out may not have been intentional and may have been in response to an already established and accepted unit culture, they are undeniably an integral part of the patient care team. Without the physicians on-board with this learning process, not only will the intervention most likely not be successful, but it would be in direct conflict with the IPE intervention goal of improving collaborative efforts amongst all unit staff in an effort to improve patient care. Without inclusion of all staff, this goal would be difficult to reach.

Another limitation is that there may not have been sufficient staff buy-in for the intervention. This manifested itself through pre- and mid-intervention observations when some staff members refused to participate in interviews despite previously stating their intentions otherwise – some staff agreed to do interviews, but never made time to do so despite being asked several times. Mid-intervention observations showed that, at times, on days when IPIs had medical profession students rotating through the unit, they did not include the students in their day-to-day patient care, leaving the students in the hallway for prolonged periods of time. Also, some IPIs much of the time did not discuss interprofessional practice at all during patient rounds and provided patient care as if the students were nonexistent. Continued efforts to keep the unit staff encouraged and engaged in the study throughout the intervention would be helpful in creating and maintaining

more excitement about the project and its importance. Unit leadership needs to be regularly engaged in the intervention. If management is not engaged with it, there would be little incentive for them to be enthusiastic about ensuring that their staff remain engaged.

Interprofessional practice and education interventions have been effective in improving staff collaboration and patient outcomes. IPP-trained clinicians improve their abilities to perceive the inefficiencies and gain insight into fostering a more holistic, inclusive approach. Although the mechanism by which these benefits occur is unclear, it is hypothesized that, as a result of an IPE intervention, staff will recognize that working in a clinical environment promoting IPP will improve the efficiency and quality of their work. As a result, the redundancies associated with professional silos will be lessened through better communication and care coordination.

5.2 Recommendations

Through this baseline assessment of the existing organizational culture, I was able to identify factors that could enable the success of the IPE intervention as well as identify changes that need to be made in order to promote its success. For example, given some of the gaps in responses from staff interviews and unit observations in defining IPP, there is room for improvement regarding what is meant by IPP (corresponding IPEC subcompetencies: TT3, TT4, RR3, RR5). It is expected that there will be improvements post-intervention with how staff uniformly define IPP.

When looking at the "unit culture" theme that emerged from the data, some staff were automatically included as core participants of interprofessional interactions, while others (such as the example of when an RN referred to the HUC [unit secretary] as the "poor little HUC" who is

oftentimes overlooked in the unit's collaborative efforts) are more of a peripheral member of the care team. It appeared that the nurse considered the unit secretary to be an afterthought, highlighting the hierarchical theme. Therefore, baseline culture of this unit reveals an opportunity for promoting a broader and more inclusionary approach to interprofessional practice, and the IPE that some staff underwent focused on this (IPEC subcompetencies: VE4, RR7, RR9, CC4, CC7, TT6).

Emerging leadership themes also showed that there is room for improvement for increased leadership support and promotion of interprofessional practice (IPEC subcompetencies: VE8, RR8, CC5, CC6, CC8, TT5, TT6, TT8, TT9, TT10). Specifically, for helping to reduce staff stress and strain as well as fostering opportunities for bedside staff to engage in both formal and informal interprofessional communication.

There is a clear miscommunication between staff and some of the therapies that appeared stressful for all involved. This could be improved by the IPE intervention. Making staff aware that this is a fairly common issue and coming up with a solution could work to alleviate some of the stress surrounding this problem.

Given the recurrent theme identified by multiple interviewees regarding physician/nurse communication issues and keeping in mind that the patient is at the heart of successful IPP, the scenario for the patient who has multiple services and sometimes contrasting medical opinions may create confusion and chaos for the patient and family. It is imperative to improve this, and the IPE modules that some staff completed and also the patient/staff simulations included in the interprofessional instructor trainings focused on how negative interactions between staff and physicians can be improved.

Some staff stated how teamwork could be improved on the unit and had a level of expectation that the IPE intervention could hopefully be an avenue for improvement (IPEC subcompetencies: VE4, VE5, RR3, RR5. RR9, CC3, CC4, TT1, TT3, TT4, TT11).

The following are a series of recommendations that address issues at the policy level and at the hospital unit level – both individually and interpersonally – in order to facilitate the uptake of an IPE intervention.

As seen through the lens of organizational theories, the make-up of a healthcare system is complex, and operates at multiple levels with varying stakeholders from top-level hospital administration to unit staff – nurses, patient transporters, unit secretaries, etc. Due to its complexity, any change in a hospital system will take diligence and patience. Changes will require meticulous planning, and a steady, consistent team to implement them and see it through over time. At the institutional and policy levels, stakeholder engagement and retention are key to this process.

One recommended change based on the baseline unit culture of 5G, is to ***appoint a Medical Director for the unit*** to help with collaborative efforts between physicians and unit staff, as the lack of physician communication was noted as a barrier to successful IPP. Appointing a physician to champion this position could ameliorate the tension between unit staff and the physicians from various services who see patients on 5G. Having a physician as a point of contact for the unit would not only assist in improving communication between staff, but also would be helpful for the IPE intervention director to have to access to a physician to model IPE for her/his medical colleagues which would familiarize them with the process. When physicians understand and appreciate the benefits of an IPE intervention such as improved patient care and population health and a more efficiently run hospital, it is expected that they will, in turn, be more eager to participate in the education modules of an IPE intervention.

Another recommendation at the institutional and policy level, is to ***keep hospital administration and leadership interested and involved in an IPE intervention*** which is critical to its success. Initially, educating leadership regarding IPE is important, followed by how an IPE intervention can decrease the enormous amount of duplication in the content taught in silos (Cuff, 2013). Also, showing them how the results of successful IPE can have a positive impact such as improved patient safety, improved patient outcomes and quality of care which in turn lowers the costs of care.

At the individual and interpersonal levels, hierarchy was a common theme that worked as a barrier to IPE on the unit. A third recommendation ***is to model the 5G unit's structure after the Broadway Family Medicine Clinic in North Minneapolis, MN*, *which is a nonhierarchical, collaborative environment***. In this clinic, "the front desk reception leads the staff meetings, and physicians interact fully with the nurse practitioners. Learners internalize the values and behaviors expressed in this nonhierarchical, collaborative environment" (Cuff, 2013). This unique example models IPP through nonhierarchical, nontraditional modes of communication and would serve as a great model for successful IPE implementation on 5G. Such a model would enhance teamwork as well as provide staff with a means to break down professional silos and negative hierarchical associations to which they have become so accustomed that can be detrimental to IPP.

Another recommendation to enhance teamwork and communication in hospital units on interpersonal levels, is ***to have team-based goals for the unit based on IPP knowledge and skills.*** For example, developing measurable units based on the IPEC competencies for each profession that are tied to the staff member's yearly review, raise and/or bonus would be an incentive to keep, not only physicians, but all staff members interested in the intervention. Instead of focusing on

medical errors and adverse patient events, you would approach it from a strengths-based perspective which is positive and motivational instead of intimidating and negative.

On an individual level, staff interviewed, although had varying degrees of understanding of IPP, were mostly excited about the intervention and proud that it was being piloted on their unit. Most staff agreed that IPE could improve communication and unit functioning overall. Given even a small level of enthusiasm, it is reasonable to believe that, if it is perceived that the IPE intervention improves staff communication even minutely, the unit would continue to make positive strides with further iterations of the IPE project. However, the IPE research program staff and evaluation team should be engaged and closely involved with unit staff and management for support as well as troubleshooting and risk management strategies throughout the process. This is imperative for program success and continued successful implementation. A final recommendation is ***to appoint an IPP/IPE "champion" from the research team to ensure staff involvement and enthusiasm*** which is crucial for successful implementation and sustainability.

6.0 Conclusion

There is a dire need to systematically change the significantly flawed healthcare system in the United States. By implementing a cutting-edge IPE intervention at UPMC Presbyterian, we are accelerating this much-needed, essential transformation. If it is successful, once results of this pilot intervention are analyzed and disseminated, the IPE intervention will be implemented in other UPMC units and hospitals. IPE will eventually be integrated with existing hospital and University policies in the training of new and current hospital employees, as well as students in the medical health professions. Once integrated into the hospital system, program costs will be minimal as the approach utilizes existing hospital staff and students to organically promulgate the project. However, continued stakeholder engagement is imperative as this is an integrated, iterative process that will require hospital policy adaptations and changes, and ongoing data collection to provide administrators and health insurance providers with current patient and hospital measures to ensure the program's continued effectiveness. Because of this, further funding may be requested in order for a multi-year, longitudinal study to be completed utilizing a randomized control study design of hospital systems utilizing the intervention and those that are not. Results of such a study would be analyzed and compared between multiple, similar hospital systems and would provide more robust data for clinical outcomes. Also, ongoing program evaluation will be necessary to implement changes in the education, implementation and hospital policy. Further grant funding would be needed for this.

It is expected that an IPP clinical environment will result in increased regular collaborative behaviors between clinical professions which can be reasonably predicted to lessen some of the work pressures caused by a fast-paced, oftentimes short-staffed hospital

environment. Potential examples of this related to an IPE intervention include improved consistency and clarity in patient care documentation across services as clinicians become increasingly aware and more respectful of what each profession needs in order to provide optimized care. For example, both nurses and doctors will observe a shift from difficulty interpreting orders across various medical services to implementing orders in a collaboratively-sequenced manner inclusive of cross-service considerations. Physicians will be able to enjoy improved patient outcomes as a result of reduced delays, fewer overlaps in care, and the resultant increase in their ability to spend time with staff and patients. This increased work efficiency will also lead to improved communication and overall staff satisfaction. Due to this, we hypothesize that overall costs and medical errors should also decrease.

In the current healthcare environment, the march towards value has led to a resurgence of interprofessional collaborative practice efforts. This may be due to the financial pressures being applied to U.S.-based providers who are aggressively seeking to streamline all aspects of care delivery in an effort to decrease costs and improve quality. This effort has been nationally organized as medical providers focus on the "Triple Aim," the main tenants of which are: improving the individual experience of care, improving the health of populations, and reducing the per capita costs of care for populations (Berwick, et al., 2008). With this in mind, it has never been more imperative for health professions to work together in an interprofessional manner in an attempt to coordinate patient care more accurately and efficiently without losing sight of the most important aspect – that the patient is a partner in their own healthcare decisions.

Appendix A Interview Guide

<u>IPDEU Interview Guide</u>

We are interested in learning more about how different types of clinicians work together in your unit, a concept sometimes referred to as "interprofessional practice". We would like to hear your opinions and experiences with interprofessional practice and about the ways in which interprofessional practice impacts patient care. This work is part of a UPMC quality improvement project and has been approved by the UPMC Quality Improvement Committee. Your answers will be kept completely confidential; no one will be able to associate you with your answers. You will be identified by an ID number and profession and not by name. Thank you for taking the time to talk with us today.

Begin recording and make sure to state the date, time, and participant ID number and profession.

1.To begin, please describe your role within the care team.

2. I would like to learn a little about interprofessional practice.

3.What does the term interprofessional practice mean to you?

4.What are some of the benefits of interprofessional practice?

5.What are some of the challenges of interprofessional practice?

6.What are some skills that health professionals need in order to practice in an interprofessional manner? [<u>probe</u> for any types of core competencies]

Next, I would like to learn more about your unit.

7.For a typical day, please describe the interactions you have with other professions related to patients in this unit. [probe for how they share information]

a.What are some of the barriers to working collaboratively with other professions?
b.What are some of the facilitators to working collaboratively with other professions?

8.How would you describe team functioning in this unit?

a.What would you change about interprofessional practice in this unit?

9.How does unit leadership impact interprofessional practice?

10.Sometimes members of different professions are in conflict about how to best manage a patient. How is conflict handled in this unit?

11.What value do you see from interprofessional practice?

a.Should interprofessional practice be taught to health sciences students? [if yes, probe for the best way to teach this. If no, why not?]
b.How did you learn to practice interprofessionally? Please tell me more about that. [if learned through experience ask for examples; if taught ask about what and how]

Lastly, I would like to learn more about you:

12.What is your gender?

13.How old are you?

14.How long have you been a [professional role]?

Interprofessional practice: "When multiple health workers from different professional backgrounds work together with patients, families, [careers], and communities to deliver the highest quality of care." (WHO 2010)

Appendix B IPDEU Codebook

Parent	Child	Grandchild	Great-Grandchild	Definition
Professional Role (RR1)				Ways that different clinicians describe their responsibilities within the overall care team. This includes both what they conceive of as their responsibilities.
Definition of IP				How clinicians describe what interprofessionalism encompasses and entails.
Professionalism (CC6, TT5, VE7, VE9)				This is for how a particular profession is expected to act as well as how they do act. There is a level of social judgment based on some amorphous standard. This encompasses aspects of specialized knowledge, competency, honesty and integrity, accountability, self-regulation, image. We are distinguishing between clinicians acting with professionalism and communicating with professionalism.
	Respect (VE4, VE6, TT4)			Both discussions and observations of when and how clinicians demonstrate the view of patients as people and treat them with respect. For example, when a clinician knocks before entering or introduces themselves and their role to the patient/family.
	Empathy			Both discussions and observations of when and how clinicians demonstrate the view of patients as people and display empathy.
	Honesty (VE9)			When clinicians discuss the patient care plan with patients, family members and other healthcare professionals with truthful facts regarding the pt's care and presents this with integrity and with the patient's best interest in mind.
	Treatment (TT4, VE9)			When healthcare disciplines work together on a patient's care plan, integrating and combining each profession's specialized skills to create the best care for the patient and family while maintaining respect.
	Communication (RR1, CC2, TT5)			The ability to discuss your professional role in a manner that is easy to understand to patients, families and with the healthcare team, and providing your professional opinion with regard to

				the patient's care plan in a clear, understandable manner.
Care Provider Interactions (individuals)				
	Interprofessionalism (RR5, RR9, CC3, VE5)			Working with other members of the healthcare team, clearly defining your role, and also integrating other professional roles into the patient care plan in a way that optimizes patient care.
		Communication and Reception (RR1, RR6, CC1, CC2, CC4)		The ability to maintain open discussion with patients, families and other members of the healthcare team in a way that is effective in promoting the highest quality patient care. The ability to keep all lines of communication open, including the use of the technologies made available to professionals such as the ability to utilize information systems and other technological advances made available.
			Availability	The perception that members of the patient care team have the appropriate amount of time (or that you don't) to provide high-quality patient care.
		Challenges		Healthcare professionals' perceptions of obstacles that make it difficult to provide optimal patient care.
			Miscommunication and conflict (VE8, TT6)	The ability to resolve conflict within the team regarding patient care and maintaining a manner of professionalism and respect to other healthcare professionals, while keeping the patient's best interests in mind.
			Stress/Strain	The feeling of being overwhelmed with amount of responsibilities you have and the feeling that this could interfere with your ability to provide high-quality patient care.
			Lots of Moving Parts	The perception that there are so many layers of and changes to providing quality patient care that it promotes feelings of confusion.
			Frustrated/annoyed	Feeling irritated about something during the course of the workday, not in an IP manner, but because of everyday stressors. This can manifest itself from stressful situations from someone's personal life displaying itself in the workplace.
		Facilitators		
			Tenure	When a member of the team operates from the notion that having more years of professional

				experience gives them the ability to provide better patient care.
			Comradery	When staff promote feelings of personal belonging, familiarity and togetherness with each other, including having sincere, personal discussions regarding their personal lives, as well as including each other in social activities.
			Problem Solving/ Helpful/Insight (RR5, RR9, TT3)	When a staff member intuitively helps other staff solve or brings helpful insight for problems regarding patient care.
			Shared Goals (VE5)	When the team works together in a cooperative manner, aligning their individual professional patient assessments and combining them as a team to promote high-quality patient care.
			Go-to Person	The team member you intuitively contact and rely on when you need specific help with something.
			Psychological Safety	The feeling that your opinion is valued and appreciated and that you can talk freely without being judged and/or diminished.
			Respect	Appreciating all team member, enabling the team to more effectively together to provide the best possible patient care.
	Feedback (CC5)			The ability to actively listen to other members of the team's professional opinions and being able to provide them with respectful feedback with regard to their assessment. Also, listening to others as they provide you with feedback.
Unit Culture				
	Patient centeredness/ protection			When healthcare professionals feel as if they are keeping the patients' best interests in mind. Also, guarding them from what they perceive as a potential threat to their care.
	Pride			Feelings of deep satisfaction and admiration of the healthcare team and the belief that you provide the best care and have a great appreciation for the team involved in providing this care.
	Hierarchy			The belief that one's profession or professional tenure takes precedence over another profession or someone with less professional tenure.
	Team Building (TT8, TT9)			Activities that motivate and engage unit staff to a feeling of togetherness, building team confidence and satisfaction.

		Level of unit teamwork		The way in which unit staff is motivated to work together in a collaborative fashion.
	Leadership impact on team (TT5)			The effect that unit leadership has on team functioning.

Appendix C Core Competencies

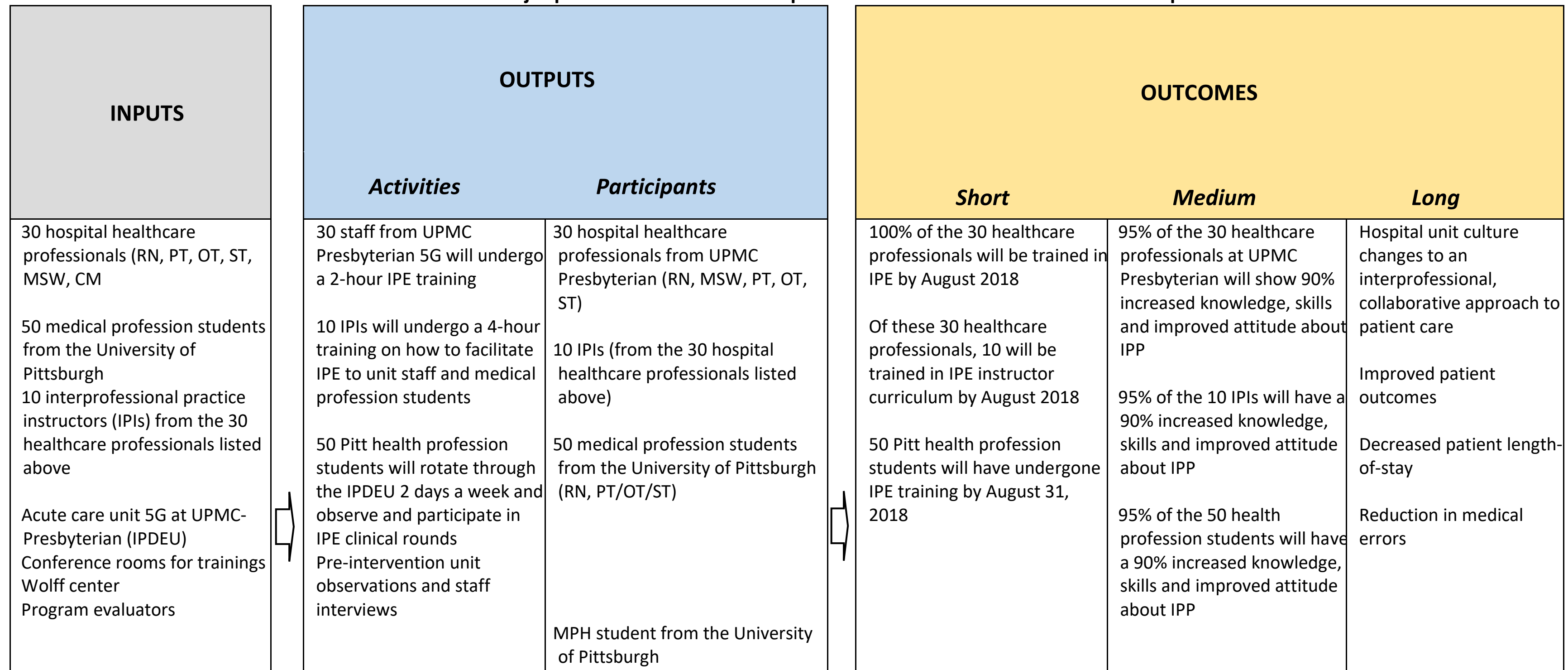
Competency 1.	**Values/Ethics for Interprofessional Practice (VE) – Work with individuals of other professions to maintain a climate of mutual respect and shared values.**
	Values/Ethics Sub-competencies
VE1	Place interests of patients and populations at center of interprofessional health care delivery and population health programs and policies, with the goal of promoting health and health equity across the life span.
VE2	Respect the dignity and privacy of patients while maintaining confidentiality in the delivery of team-based care.
VE3	Embrace the cultural diversity and individual differences that characterize patients, populations and the health team.
VE4	Respect the unique cultures, values, roles/responsibilities, and expertise of others who contribute to or support the delivery of prevention and health services and programs.
VE5	Work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevention and health services and programs.
VE6	Develop a trusting relationship with patients, families, and other team members
VE7	Demonstrate high standards of ethical conduct and quality of care in contributions to team-based care.
VE8	Manage ethical dilemmas specific to interprofessional patient/population centered care situations.
VE9	Act with honesty and integrity in relationships with patients, families, communities, and other team members.
VE10	Maintain competence in one's own profession appropriate to scope of practice.
Competency 2.	**Roles/Responsibilities (RR) – Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations.**
RR1	Communicate one's roles and responsibilities clearly to patients, families, community members, and other professionals.
RR2	Recognize one's limitations in skills, knowledge, and abilities.
RR3	Engage diverse professionals who complement one's own professional expertise, as well as associated resources, to develop strategies to meet specific health and healthcare need of patients and populations.
RR4	Explain the roles and responsibilities of other providers and how the team works together to provide care, promote health, and prevent disease.
RR5	Use the full scope of knowledge, skills, and abilities of professionals from health and other fields to provide care that is safe, timely, efficient, effective and equitable.
RR6	Communicate with team members to clarify each member's responsibility in executing components of a treatment plan or public health intervention.
RR7	Forge interdependent relationships with other professions withing and outside of the health system to improve care and advance learning.
RR8	Engage in continuous professional and interprofessional development to enhance team performance and collaboration.

RR9	Use unique and complementary abilities of all members of the team to optimize health and patient care.
RR10	Describe how professionals in health and other fields can collaborate and integrate clinical care and public health interventions to optimize population health.
Competency 3.	**Interprofessional Communication (CC): Communicate with patients, families, communities, and professional in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease.**
CC1	Choose effective communication tools and techniques, including information systems and communication technologies, to facilitate discussions and interactions that enhance team function.
CC2	Communicate information with patients, families, community members, and health team members in a form that is understandable, avoiding discipline-specific terminology when possible.
CC3	Express one's knowledge and opinions to team members involved in patient care and population health improvement with confidence, clarity, and respect, working to ensure common understanding of information, treatment, care decisions, and population health programs and policies.
CC4	Listen actively and encourage ideas and opinions of other team members.
CC5	Give timely, sensitive, instructive feedback to others about their performance on the team, responding respectfully as a team member to feedback from others.
CC6	Use respectful language appropriate for a given difficult situation, crucial conversation, or conflict.
CC7	Recognize how one's uniqueness (experience level, expertise, culture, power, and hierarchy within the health team) contributes to effective communication, conflict resolution, and positive interprofessional working relationships.
CC8	Communicate the importance of teamwork in patient-centered care and population health programs and policies.
Competency 4.	**Teams and Teamwork (TT) – Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population-centered care and population health programs and policies that are safe, timely, efficient, effective and equitable.**
TT1	Describe the process of team development and the roles and practices of effective teams.
TT2	Develop consensus on the ethical principles to guide all aspects of team work.
TT3	Engage health and other professionals in shared patient-centered and population-focused problem solving.
TT4	Integrate the knowledge and experience of health and other professions to inform health and care decisions, while respecting patient and community values and priorities/preferences for care.
TT5	Apply leadership practices that support collaborative practice and team effectiveness.
TT6	Engage self and others to constructively manage disagreements about values, roles, goals, and actions that arise among health and other professionals and with patients, families, and community members.
TT7	Share accountability with other professions, patients, and communities for outcomes relevant to prevention and health care.
TT8	Reflect on individual and team performance for individual, as well as team, performance improvement.
TT9	Use process improvement to increase effectiveness of interprofessional teamwork and team-based services, programs, and policies.

TT10	Use available evidence to inform effective teamwork and team-based practices.
TT11	Perform effectively on teams and in different team roles in a variety of settings.

Core competencies for interprofessional collaborative practice: 2016 update. Washington, DC: Interprofessional Education Collaborative.

Appendix D Logic Model



Problem Statement: Medical errors have become a major public health issue due to poor communication between healthcare professionals.

INPUTS	OUTPUTS		OUTCOMES		
	Activities	*Participants*	*Short*	*Medium*	*Long*
30 hospital healthcare professionals (RN, PT, OT, ST, MSW, CM 50 medical profession students from the University of Pittsburgh 10 interprofessional practice instructors (IPIs) from the 30 healthcare professionals listed above Acute care unit 5G at UPMC-Presbyterian (IPDEU) Conference rooms for trainings Wolff center Program evaluators	30 staff from UPMC Presbyterian 5G will undergo a 2-hour IPE training 10 IPIs will undergo a 4-hour training on how to facilitate IPE to unit staff and medical profession students 50 Pitt health profession students will rotate through the IPDEU 2 days a week and observe and participate in IPE clinical rounds Pre-intervention unit observations and staff interviews	30 hospital healthcare professionals from UPMC Presbyterian (RN, MSW, PT, OT, ST) 10 IPIs (from the 30 hospital healthcare professionals listed above) 50 medical profession students from the University of Pittsburgh (RN, PT/OT/ST) MPH student from the University of Pittsburgh	100% of the 30 healthcare professionals will be trained in IPE by August 2018 Of these 30 healthcare professionals, 10 will be trained in IPE instructor curriculum by August 2018 50 Pitt health profession students will have undergone IPE training by August 31, 2018	95% of the 30 healthcare professionals at UPMC Presbyterian will show 90% increased knowledge, skills and improved attitude about IPP 95% of the 10 IPIs will have a 90% increased knowledge, skills and improved attitude about IPP 95% of the 50 health profession students will have a 90% increased knowledge, skills and improved attitude about IPP	Hospital unit culture changes to an interprofessional, collaborative approach to patient care Improved patient outcomes Decreased patient length-of-stay Reduction in medical errors

Assumptions/Theoretical Constructs There is a need in hospitals to educate existing and incoming professional direct patient care staff as well as students in the medical professions (MD, MSW, PT/OT/ST/RN) on how to effectively communicate and collaborate to improve overall patient care, improve patient outcomes, and decrease medical errors. Introducing an Interprofessional Practice intervention to healthcare professionals and students will improve collaborative efforts on the professional healthcare team which will lead to improved patient care. When professional staff collaborate effectively, patient care improves, and the possibility for medical errors drastically decreases.

External Factors IPDEU staff may find difficulty incorporating the time into their work schedule.
Resistance from IPDEU staff due to the increased work caused by the intervention.
Students may have difficulty finding time for the intervention due to demanding course load
Turnover in healthcare staff could affect the outcome of the intervention.
Patient admission numbers will vary and will affect the outcome of the intervention.
Not all medical errors may be reported, affecting intervention outcome and research validity.

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