

Speech Language Pathology, Occupational Therapy, and Physical Therapy Student  
Perspectives of an Interprofessional Education Simulation

By

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A Thesis Submitted in  
Partial Fulfillment of the  
Requirements for the Degree of

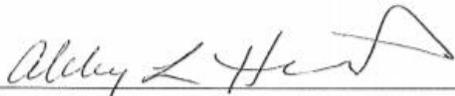
Master of Science  
Communication Sciences and Disorders

At  
The University of Wisconsin-Eau Claire  
May, 2021

Graduate Studies

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The University of Wisconsin-Eau Claire, 2021  
Under the Supervision of Dr. Abby Hemmerich

**ABSTRACT**

**Introduction:** Interprofessional education (IPE) provides the groundwork for interprofessional practice (IPP), with a range of methods for implementation, including a simulation.

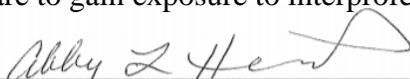
**Methods:** Graduate students in Speech-Language Pathology (SLP), Occupational Therapy (OT), and Physical Therapy (PT) completed a simulation of an inpatient assessment of an individual with an acquired brain injury. Participants completed the Interprofessional Education Collaborative Competency Self Efficacy Tool (IPECC-SET) before and after an IPE simulation, to assess their self-efficacy for interprofessional collaboration. These data were used for comparisons across groups. Students submitted a written reflection following the event, which was used for a qualitative thematic analysis.

**Results:** Participants showed significant positive change in all four domains of the IPECC-SET from pre-test to post-test, but there were no differences across groups. In the qualitative analysis, outcomes that were commonly discussed included roles and responsibilities, interprofessional communication, and teams and teamwork. Major themes that arose from that analysis included: benefits of co-evaluation, benefits of simulation, recognizing competence, value of feedback, and advocacy.

**Discussion:** The use of a simulation event had a positive impact across the disciplines participating in this study. Clinical implications included students understanding the importance of advocacy, gaining awareness of areas in which they need more practice, articulating their own roles and responsibilities as well as understanding the rehabilitation team, understanding complexities of co-morbidities, and finding creativity in assessment.

Future directions for the simulation event and limitations are provided.

**Conclusion:** Simulations may be an effective way for disciplines involved in rehabilitative care to gain exposure to interprofessional education and practice.



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Thesis Adviser (Signature)

5/11/21

Date

## Dedication

To my professor and thesis mentor, Dr. Abby Hemmerich, who helped facilitate this new experience for UW-Eau Claire Speech-Language Pathology graduate students, as they learn from and with Occupational and Physical Therapy graduate students from UW-La Crosse.

To my professor, supervisor, undergraduate research mentor, and thesis team member, Dr. Tom Sather, who introduced me to the world of Interprofessional Education and individuals with aphasia early on, driving the interest in this research and clinical practice.

To my cohort, for participating in this research even in the uncertain times of COVID-19. I hope this experience will inspire you all to engage in interprofessional practice as we begin our new careers.

## Acknowledgements

I would like to acknowledge Dr. Laura Schaffer and Dr. Inga Cluppert from UW-La Crosse for their willingness to collaborate and coordinate this interprofessional education event. The first step is the willingness to collaborate!

I would also like to acknowledge the undergraduate student researchers, Brooke Wiles and Liz Ratajski, for their time and effort in the qualitative coding process, and Brooke Wiles for the continual insight with the themes and editing process.

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## **Introduction**

### **Interprofessional Education and Practice Overview**

The need for interprofessional collaboration is imperative as the United States faces a growing complexity in health care, as well as an evolution to a new service delivery model (Health Professions Accreditors Collaborative (HPAC), 2019). Pechak and colleagues (2018) describe an increasing demand on the health care system and its workforce with fewer resources, which ultimately requires a focus on team collaboration. This collaboration would allow for quality and cost-effective care that creates positive health outcomes for individuals and the overall population (HPAC, 2019). High quality collaboration can be achieved if each health care professional begins his or her career with a strong foundation in practice. This early learning of multi-professional collaboration is what is known as interprofessional education (IPE). The World Health Organization (WHO) defines IPE as “when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes” (WHO, 2010). This lays the groundwork for Interprofessional Collaborative Practice (IPCP). Students are expected to transfer IPE/IPCP into their professional careers, where they are often working against systems that adhere to models where professionals are siloed into their own distinct roles (Weiss et. al, 2019).

### **Terminology**

IPCP is defined as, “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). The American Speech-Language and Hearing

Association (ASHA) has adopted this definition (ASHA, 2021); however, ASHA refers to IPCP as interprofessional practice (IPP) which will be used throughout the remainder of this paper. There are also other terms that are often used interchangeably with IPP such as multidisciplinary, interdisciplinary, and transdisciplinary teaming. The working definitions of multidisciplinary and interdisciplinary do not directly align with IPP. A multidisciplinary approach allows health care services to be provided equally across disciplines, but with little to no collaboration between the respective disciplines. An interdisciplinary team “recognizes the several services from professionals on a team,” and allows for a balance among health care services without crossover (Edwards, 2015). There is also the addition of dedicated time to communicate and collaborate during team meetings. As these teams work with the patients and their families, there is little overlap between the roles of the professionals when working together. A transdisciplinary approach aligns best with IPP, as it allows for *role release* between disciplines, as well as the potential for one or more professionals to provide services with the assistance of the team (Hong, 2014). Role release incorporates sharing information and instructing other disciplines how to perform specific skills, as well as accepting and emphasizing skills sets of each professional. This role release allows for an increase in generalization of skills between professions in the work setting (Edwards et al., 2015). The transdisciplinary approach closely aligns with the IPP approach because these professionals must learn about each other and work together collaboratively in all aspects of their services, in order to deliver the highest quality of care. Hong (2014) suggests a transdisciplinary approach allows for the highest level of coordination and integration compared to other multidisciplinary and interdisciplinary approaches. Throughout the rest

of this article, the transdisciplinary approach will be referred to as IPP, as these terms demonstrate synonymous characteristics.

### **Building Capacity for IPE and IPP**

IPE must be implemented in both didactic and clinical training in order to generalize the transdisciplinary approach from the practicum level to the professional workplace. Frequently, a disconnect, or gap, occurs between IPE and IPP in which students who learn IPE values throughout their academic career do not carry these standards into the workplace as they encounter traditional clinical environments (Edwards et al., 2015) that adhere to models where professionals have limited opportunity for collaboration (Weiss et. al, 2019). Therefore, the knowledge that these students bring to the workplace often becomes extinguished as they “assimilate to the existing culture” (Weiss et al., 2019).

Goldberg (2015) stated that there is “ongoing local, national, and international support of IPE as central to the preparation of students in the health professions to promote safe, effective, efficient, and sustainable health care.” One of the ways that students are achieving successful IPE is through experiences that target the domains within the Interprofessional Education Collaborative (IPEC) core competencies (IPEC, 2016). These standards were originally designed to promote collaborative endeavors that would enhance IPE experiences in health professional schools. The tool is intended to standardize each discipline’s expectations to create an interactive learning experience that is not only focused on discipline-specific education/content, but on team-based care focused on improving population health outcomes. The IPEC core competencies are comprised of four domains: values/ethics, roles/responsibilities, interprofessional

communication, and teams and teamwork. Each domain is comprised of eight-to-eleven sub-competencies; the complete IPEC list of competencies can be found in Appendix A for further detail. The IPEC core competencies provide a framework that pushes students to collaborate effectively across multiple disciplines to enhance health care while also quantifying growth and/or change in student skills (IPEC, 2016). In general, this effective team functioning increases career satisfaction, decreases clinical exhaustion, and reduces burnout, which, in turn, improves quality of care and patient satisfaction. This benefits individual providers, the patients they care for and the health care system at large (Weiss et al., 2019; HPAC 2019; Clarke, 2013; Willard-Grace, 2014).

In addition to understanding the effectiveness of a teamwork-based approach and patient-centered care, another benefit of IPE includes students gaining the confidence they need to become an effective team member in their future professional role (Goldberg, 2015). For example, students in a pharmacy program exhibited significant positive changes in self-perceived confidence when talking to patients and other professionals during an interprofessional simulation (Davies et al., 2015). In this study, students were given information at the beginning of the semester about the objectives, structure, and description of the interprofessional activity. This built upon the previous two years of standardized patient interactions, where students learned patient interview techniques, as well as techniques for providing counseling and further recommendations for drug therapy based on evidence-based medicine. Midway through the semester, students role-played patient and colleague interactions given a specific case to become familiar with the activity. During a final two-day event at the end of the semester, students were given one of five patient profiles to review prior to completing a

standardized patient interview. Following the interview, the students completed a SOAP (subjective, objective, assessment, and plan) note to document their findings and recommendations, as well as developing a care plan used to assess critical thinking skills and communication. On the second day of the event, the opportunity for IPE was demonstrated when students held a five-minute conversation discussing evidence-based recommendations. Here, students were asked to defend their assessment and care plan to a physician volunteer who played a scripted role in the conversation. A pre- and post-assessment survey addressing level of confidence was completed by each student regarding discussing and making recommendations with other health professionals. As mentioned previously, outcomes of the experience included significant positive changes in perceived confidence when talking to patients and physicians. The greatest increase in student confidence was when making evidence-based recommendations and defending these recommendations even in situations where the physician disagreed (Davies et al., 2015). This suggests that IPE role-play experiences, even without actual clinical practice, could facilitate skills in IPP, as students gain confidence through lower stakes experiences. The sheer act of going through a challenging conversation simulation helped students develop skills for future implementation.

The value of IPE at the pre-professional level is clear and with frequent, high-quality experiences, this may translate more often to clinical practice. Students who learn through IPE not only gain an understanding of the roles of other professions and how to work together collaboratively, but they also gain the skills necessary to encourage communication and coordination among disciplines once in practice (Weiss et al., 2019). Students learning through IPE are also provided with the “preparation to engage in safe

and effective interprofessional collaborative care throughout their career” (Weiss et al., 2019, pg. 8), which may facilitate system-level change. Academic medical centers play a major role in training a workforce in optimal care models, translating knowledge to improved practice of patient care; however, all training programs and workplaces can play a role in prioritizing, and implementing, IPE and IPP. Riskiyana, Claramita, and Rahayu (2018) evaluated IPE experiences through a systematic review and concluded that IPE, “increases student understanding and performance on interprofessional collaboration” (pg. 77), which parallels the domains of the IPEC Core Competencies. Results of this study provide cumulative evidence that IPE acts as a connecting method between health professional education and professional practice, including IPP, in health care systems.

### **IPE Continuum**

The benefits of IPE are well-documented, and these experiences can look different depending on whether the learning modality is in-person or is taking place through collaborative online learning (HPAC, 2019). The following section will focus on an IPE continuum centered on in-person learning, as most studies have focused on that modality.

There are a wide variety of ways that students can engage in IPE at both the undergraduate and graduate level. These activities range from didactic lectures discussing IPE and other professional roles and responsibilities, to the rich environment of collaborative clinical placements that emulate the realistic workplace (see Table 1). It should be noted that each IPE experience is fluid and may contain elements used in other IPE experiences.

Table 1. Continuum of IPE Experiences

<b>IPE Continuum</b>	
<b>IPE Experience</b>	<b>Description</b>
Didactic lectures	Where students from one profession learn about IPE and other professions through lecture in a classroom setting
Collaborative Courses	Where students from different professions attend the same class and learn the material that is IPE based and applicable to both disciplines
Case-based learning	Where students from different professions work together collaboratively to solve a case presented in a classroom setting
Workshops/Forums	Typically, a one-day event where students from different professions participate in a mixture of lectures, cases, and breakout sessions working collaboratively in the process
Simulation	Where students from different professions work together collaboratively given a case and standardized patient
Collaborative clinical placements	Where two or more students from different professions work collaboratively in a clinical rotation outside of their respective universities

\*Experiences and descriptions may vary across institutions.

The beginning of the continuum of IPE experiences allows for students to develop an understanding of what IPE involves, why it is important, and build a basic understanding of other professions' roles and responsibilities. The latter end of the continuum allows for rich interactions between professionals that allow students to expand their scope of practice, have a solid understanding of the roles and responsibilities of other professions with whom they work, minimize the gap between IPE and IPP in the workforce, and engage in a real-world clinical experience. Institutions may wish to strive for IPE experiences that allow for students to work together in an environment that emulates their future workplace (Institute of Health Medicine (IOM), 2015). However, these rich IPE experiences are not always feasible. Examples of a range of IPE activities, and their outcomes, are presented next with a focus on studies that included students from speech-language pathology programs.

The didactic lecture option at the beginning of the continuum has been shown to increase knowledge of other profession's roles, which is one key component of IPE. Ghassemi & Fabus (2017) conducted a pilot study with a ten question pre- and post-assessment relating to the roles of speech language pathologists (SLPs) and nurses in the assessment and intervention for individuals with dysphagia. Participants consisted of 14 graduate student SLPs and seven undergraduate nursing students. The activity consisted of a didactic lecture given to each group of students and a question-and-answer session immediately following the lecture. A nursing faculty member gave a one-hour didactic lecture to the SLP students about the nurses' roles and responsibilities in dysphagia screening and assessment, based on their scope of practice. A SLP faculty member gave a similar lecture to the nursing students regarding collaboration for dysphagia intervention and making SLP referrals. "While all students showed gains, undergraduate students showed improvement in the post-test measure compared to the graduate SLP students" (Ghassemi & Fabus, 2017, pg. 498).

Edwards et al. (2015) presented a collaborative course model, integrating various student professions, specifically SLP and social work, into one classroom setting to review relevant topics in meaningful ways. The framework presented by Edwards et al. (2015) did not include outcome data, but rather a way of arranging an experience for students to collaborate. This collaborative course model would not only teach students about transdisciplinary practice, but also create rich discussions on the various roles and responsibilities within each professions' scope of practice, as well as when role release could apply in different cases. It was suggested that both undergraduate and graduate courses could be created addressing relevant patient populations that each discipline may

encounter. This may start out, as a first step, having a classroom assignment built within a course that allows for interdisciplinary collaboration but could be expanded to include an entire course in which students from two or more disciplines are enrolled. Suggestions of classroom topics addressing IPE included barriers and facilitators of interprofessional teams, theories of group work tasks, leadership development, negotiation skills, conflict/resolution skills, and “hands-on” learning experiences, such as service-learning projects that would take place outside of the classroom (Edwards et al., 2015).

The benefits of collaboration through a case-based learning model were described by Pitti and Matheny (2016), where athletic training (AT) and graduate SLP students worked through a case regarding vocal cord dysfunction (VCD). The students were presented a scripted case led by AT faculty, who highlighted key elements of the case in a systematic manner. When these key elements were shown, AT students were asked to determine the differential diagnosis, appropriate referral, treatment options, and follow-up care. Details about the roles/activities of the SLP students during the case-based learning experience were not provided, but it was clear they shared information about their professional roles in serving VCD patients with the AT students. While this study focused on AT activities and outcomes, the authors recognized the benefits for students in both professions. These benefits included understanding the roles of each profession and developing discipline-specific skills. AT students learned to recognize the features of VCD and gained knowledge of their own scope of practice in relation to services an SLP could provide. SLP students gained experience in providing education about the SLP role in working with individuals with VCD and the role of the AT in serving this population. Knowledge gained through this IPE experience reached beyond this isolated experience,

as the authors reported that SLP students sought feedback and the expertise of the AT students when working with a client who has VCD. This collaboration has also prompted further research and support of IPE between AT and SLP students at Ithaca College.

Lairamore et al. (2013) described an IPE forum involving video case-based learning that had a “positive influence on student’s attitudes towards working as a team and enhanced professional identity and perceived competency” (pg. 472). During this IPE experience, students from occupational therapy (OT), nursing, physical therapy (PT), SLP, and dietetics were given a simulated medical record to analyze before the IPE forum, targeting a patient with an acute neurological injury in the intensive care unit. Students were then asked to determine what aspects of the case were within their scope of practice, what additional information they may need, and what their role was in treating the patient described in the case. Students from each profession were divided into multidisciplinary groups and were tasked with discussing each profession’s roles, goals, and outcomes for the video-based case. Individual group discussions and a faculty panel were conducted following the group case analysis. Students’ attitudes and perceptions of their own and other professions showed positive changes. An increased awareness of the need for interprofessional communication, interdependency, and teamwork showed that students could gain insight on the benefits in IPE within a short period of time and through a case-based discussion with other pre-professionals. These outcomes may be more pronounced when students are in their later years of the educational process due to their matured sense of professional identity.

An example of simulation was described previously (Davies et al., 2015), where there was improvement of student performance and positive effects on student’s

perceived confidence when pharmacy students completed a standardized patient/colleague interaction. To review, a simulation involves a case-based experience, but combines that with hands-on clinical activities in a role-play format. Although the study called this an “interprofessional” activity, the participants were pharmacy students, standardized patient actors, and standardized colleague physicians. The standardized physicians consisted of volunteer family medicine physicians, therefore not entirely meeting the definition of IPE where, “*students* from two or more professions learn about, from and with each other...” (WHO, 2010). However, this study still demonstrated improvement in student performance and perceived confidence in an activity that imitated interactions that may occur in the workplace.

Ludwig, McGraw, & Baird (2019) noted that many IPE experiences take place as a one-time event including workshops, simulations, team communication, reflective exercises, case studies, and problem-based learning exercises. They suggested collaborative clinical placements as a “gold standard” that offers rich learning experiences that emulate the demands of work settings. These collaborative clinical placements often occur less frequently, as they present many challenges. Ludwig et al. (2019) outline these challenges as: “leadership buy-in, professional and support staff acceptance of IPP productivity requirements, training resources, time for collaboration, feedback mechanisms, clear clinical education expectations, and faculty and student support, (pg. 280)” as well as requiring a strong working relationship with the facility hosting the clinical placement(s). To overcome these challenges, Ludwig et al. describe an IPE collaboration model associated with the Midwest Interprofessional Practice, Education and Research Center (MIPERC) (Grand Valley State University, 2021). This

model includes direct didactic training, guided instruction, experiential learning, reflective learning, and cross-discipline learning; in sum, they integrated activities from across the IPE continuum, culminating in real clinical practice. In this study, students in the disciplines of SLPs and dietetics focused on the topic of dysphagia in a skilled nursing facility, as this is applicable to both disciplines' scope of practice. Beyond learning about each other's professional roles, they collaboratively treated patients with dysphagia in a clinical setting. Benefits of using this model included expanding the scopes of practice of both speech-language pathology and dietetic students, providing greater employment value and future job security, and allowing the disciplines the ability to validate "higher staffing levels due to the ability to combine staff functions to improve efficiency and coordination of clinical services" (Ludwig et al., 2019, pg. 284). Challenges of losing specialization in clinical services as well as a required increase in communication between health care providers were identified as potential barriers that would need to be addressed throughout this type of experience.

There are many ways for students to participate in IPE that ultimately benefit them as future healthcare professionals. Riskiyana et al. (2018) described the ideal IPE experience based on their systematic review; case-based, simulation, and experiential-based learning through clinical and/or community practice may be "the most beneficial learning methods for interprofessional education" (pg. 74). Therefore, balancing the demands on faculty in creating IPE experiences with student learning outcomes, which may lead instructors to choose simulation-based learning experiences as this may provide a high-quality experience that could be created in the academic setting.

## Assessing IPE

In order to identify whether students are developing knowledge and skills associated with IPE, they need to be assessed on a consistent metric to allow comparison of various IPE teaching strategies. Instructors may choose a measure based on the learning outcomes they wish to measure in their students in a pre-posttest design. Researchers may choose a measure based on particular outcomes but must also consider the need to utilize a standard measure across studies to allow evaluation of experiences and/or teaching techniques. While many measures are based on the IPEC core competency framework, there are enough differences that direct comparisons across measures cannot be made.

There are at least eight published measures that facilitate the measurement of student learning associated with participation in IPE. Some scales focus on student attitudes on perceptions of IPE, while others measure performance of specific skills. While most are loosely based on the IPEC core competencies, they all have unique terminology and items in an attempt to capture different aspects of the IPE experience. Each of the eight assessment measures will be described briefly because they appear in IPE research. However, in general, the gold standard measure for measuring IPE outcomes is the IPECC-SETT.

*The Readiness for Interprofessional Learning Scale (RIPLS)* is a common measure used to assess the attitudes and perceptions of undergraduate health-care students and their readiness for interprofessional education (McFadyen, Webster, & Maclaren, 2006). This scale consists of 19 items using a 5-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5). The 19 items are categorized by four subscales: teamwork &

collaboration (items 1-9), negative professional identity (items 10-12), positive professional identity (items 13-16) and roles & responsibility (items 17-19) (McFayden et al., 2005). This scale was originally designed to measure “differences in students’ perception and attitudes towards multi-professional learning” containing three subscales: team-working and collaboration, professional identity, and professional roles (Parsell & Bligh, 1999). It was later adapted to improve the reliability for the use with undergraduate healthcare students, using four different subscales (McFayden et al., 2005).

*The Interprofessional Attitudes Scale (IPAS)* was originally designed to assess the 2011 Core Competencies for Interprofessional Collaborative Practice; it was revised in 2016 with regard to the interprofessional attitudes of students. This scale includes a total of 27 items using a 5-point Likert scale rating from “strongly disagree” (1) to “strongly agree” (5). The subscales categorize items into teamwork, roles, and responsibilities, patient-centeredness, interprofessional biases, diversity & ethics, and community-centeredness. According to Norris et al. (2015), this measure expands upon the RIPLS by covering a wider range of interprofessional attitudes by including the subscales of diversity and ethics, community-centeredness, and interprofessional biases. This assessment measure was originally developed to better reflect a broader set of student attitudes toward interprofessional competencies, because at the time there were no validated measures that assessed all four domains of the IPEC Core Competency (Norris et al., 2015).

*The Assessment of Interprofessional Team Collaboration Scale Two (AITCS-II)* contains 23 items pertaining to three subscales: partnership, cooperation, and coordination. (Orchard et al., 2018). This measure originally contained 37 items within four subscales,

including partnership, shared decision making, cooperation, and coordination, and has undergone subsequent refinement. It continues to use a 5-point Likert scale “measuring collaboration within teams and when patients are included as team members” (Orchard et al., 2012, pg. 58). This measure takes a total of 10 to 15 minutes to complete and can be used “in research, continuing education, performance assessment, and evaluating team practice” (Orchard et al., 2012, pg. 65). This valid and reliable measure assesses the potential level of collaboration within healthcare settings, while also including the patient. Despite the value of including patients in the team as collaborators, this measure has received only limited use because it only applies to practicing professionals. However, there has recently been a revision to include student teams, known as the *AITCS-II (Student)* (Orchard et al., 2021).

*Interdisciplinary Education Perception Scale (IEPS)* is a measure that is similar to the RIPLS, measuring students’ attitudes and perceptions of their own and other professions. The original IEPS was published by Leucht et al. (1990) and included 18 items using a 6-point Likert scale ranging from “strongly agree” (6) to “strongly disagree” (1). It is based upon four subscales: competency & autonomy (items 1,3,5,7,9,10,13), perceived need for cooperation (items 6,8), perception of actual cooperation (items 2, 14, 15), and understanding of others’ values (items 4, 11, 12, 16, 18) (Leucht et al., 1990; McFadyen, Maclaren, & Webster, 2007). This version was then revised by McFadyen et al. (2007) due to its “lack of evidence of the stability of the original instrument and of the test-retest reliability of the items and sub-scales when used with undergraduates” (pg. 433). The revised version now contains 12 of the original 18 items, using the same Likert scale, and measures three subscales: competency and autonomy (five items), perceived need for co-

operation (2 items), perception of actual co-operations (five items) (McFadyen et al., 2010). This measurement is similar to the RIPLS as they both assess the attitudes and perceptions of students participating in IPE events, however, the IEPS captures students' perceived attitudes about team collaboration within their own profession." (Lie et al., 2013).

*The Student Perceptions of Interprofessional Clinical Education-Revised (SPICE-R)* instrument contains ten items pertaining to three categories: interprofessional team and team-based practice, roles/responsibilities for collaborative practice, and patient outcomes from collaborative practice (Dominguez et al. 2015). It uses a 10 item, 5-point Likert scale rating from "strongly disagree" (1) to "strongly agree" (5). This is specifically used to measure health professional students' perceptions of IPE and IPP. This instrument was originally created specifically for medical and pharmacy students, however, was revised and validated by the authors to incorporate perceptions from a more general population of health professional students (Dominguez et al. 2015).

*The Interprofessional Collaborator Assessment Rubric (ICAR)* is used for the assessment of interprofessional collaborator competencies where faculty rate the students' performance on a Likert scale from minimal (1) to mastery (4). There are six domains that contain two-to-four subcategories in which the students are assessed. These include communication, collaboration, roles and responsibility, collaborative patient/client/family-centered approach, team functioning, and conflict management/resolution (Curran et al., 2011). This is the only assessment where faculty provide ratings of student's performance, compared to the student self-reported measures that are commonly used. This measure was originally designed to allow instructors to

“improve the planning of learning experiences and increase the quality of direct instruction by providing focus, emphasis, and attention to particular details as a model for learners” (Curran et al., 2011, pg. 1). The author also noted that it may improve the learners’ performance and learning because the learner would “understand how they will be evaluated and can prepare accordingly (Curran et al., 2011).

*The Interprofessional Collaborative Competency Attainment Scale (Revised) (ICCAS-R)*

measures the students’ growth in their “perceptions of changes in their attitudes and behaviors with regard to IPEC competencies as a result of IPE” (Schmitz et al., 2017).

This measure was originally created by MacDonald et al. (2010), then scale items were later revised with the addition of item number 21, where students rate themselves on their ability to collaborate professionally after completing both post-post assessment scales.

The current measure consists of 20 items across six domains: communication, collaboration, roles and responsibilities, collaborative patient-family centered approach, conflict management/resolution, and team functioning. Items 1-5 were categorized under the “communication” domain, 6-8 as “collaboration,” 9-12 as “roles and responsibilities,” “13-15 as “collaborative patient/family centered-approach,” 16-18 as “conflict management/resolution,” 19-20 as “team functioning.” This measure was created to allow students to reflect on and retrospectively identify where they perceived their skills were before and after the learning experience, (MacDonald et al., 2010; Schmitz et al., 2017).

*Interprofessional Education Collaborative Competency Self Efficacy Tool (IPECC-SET)*

measures the self-efficacy, or belief in one’s capacity to execute behaviors, for interprofessional competence for health professions students (Hasnain, 2017). It is based on the 2011 Core Competencies for Interprofessional Collaborative Practice, therefore

uses the following domains: values/ethics for interprofessional practice, roles/responsibilities, interprofessional communication, and teams and teamwork. This uses a 100-point slider for the 38 items, where students rate each competency using an electronic survey (i.e., Qualtrics). This measure uses language taken verbatim from the IPEC core competencies in 2011, which facilitates generalization of results as this framework has been cited in numerous studies and is considered to be the gold standard of IPE. Although the IPEC core competencies have been revised as of 2016, this measure can still be generalized to the current IPEC core competency domains as mentioned previously. It allows for researchers to develop a “comprehensive baseline, interval or summative measure to assess development of competence over time or for a formative evaluation in which the learner would benefit from a thorough level of reflection” (Gruss & Hasnain, 2020).

### **Healthcare-based IPE**

There are many potential disciplines that can participate in healthcare-based IPE. For the purpose of this paper, speech-language pathologists, occupational therapists, and physical therapists will be the focus, as these three disciplines are often comprise a rehabilitation department. Brief overviews of each discipline will be provided next, followed by an example of how these disciplines may work together to serve a particular patient population.

### **Speech Language Pathology Overview**

The American Speech-Language and Hearing Association (ASHA) governs and certifies professionals in both speech-language pathology (SLP) and audiology. Four

requirements must be met for SLPs to provide clinical services independently, as well as supervise other professionals and pre-professional students/trainees. The requirements for certification include academic coursework (obtaining a bachelor's and master's degree), supervised clinical practicum, national examination (Praxis), and a clinical fellowship. This certification process may or may not meet a state's licensure requirements; therefore, SLPs must obtain state licensure in order to practice in their state. Many also earn the Certificate of Clinical Competence (CCC) which is required to practice in all healthcare settings and some educational settings (ASHA, 2021A).

ASHA defines the scope of practice of an SLP as providing care to individuals with a variety of speech, language, and swallowing disorders and differences using eight service-delivery domains. These domains include collaboration, counseling, prevention and wellness, screening, assessment, treatment, modalities/technology and instrumentation, and population and systems. Other professional practice domains include advocacy and outreach, supervision, education, administration/leadership, and research (ASHA, 2016). SLPs serve in many settings including hospitals, home health, skilled nursing facilities, birth-3 programs, schools, and private practices. They serve a wide variety of populations across the lifespan, with communication and/or swallowing needs ranging from mild to severe. Some of these practice areas could include (but are not limited to): fluency, speech production, language, cognition, voice, resonance, feeding and swallowing, and auditory habilitation/rehabilitation (ASHA, 2016). To review an extensive list of practice areas and populations that SLP's serve, visit <https://www.asha.org/practice-portal/>.

SLPs work with many professionals in both medical and educational settings, therefore providing many opportunities for IPP in a wide variety of environments. SLPs are encouraged to work collaboratively with other professionals, as ASHA defines the domain of “collaboration” as requiring “joint communication and shared decision making among all members of the team, including the individual and family, to accomplish improved service delivery and functional outcomes for the individuals served” (ASHA, 2016). To build the foundation of these collaborative skills in IPP, ASHA supported standards that require students to develop skills in interprofessional teamwork, which they may meet through IPE in their graduate programs. These standards are created by the Council on Academic Accreditation (CAA) of ASHA that accredits graduate programs in both audiology (AuD) and SLP. CAA also recognizes the importance of IPP, therefore making opportunities for developing professional teaming skills a requirement in graduate programs for SLP. As of 2017, graduate programs must meet the standard (Standard 3.1.1.B) by teaching their students accountability, integrity, effective communication skills, professional duty, and collaborative practice in order to prepare their students for IPP in the workforce (ASHA, 2019). Although outcomes related to IPP must be met, CAA does not specify exactly how these IPE standards must be addressed (i.e., what types of experiences are required).

### **Occupational Therapy Overview**

The American Occupational Therapy Association (AOTA) governs and certifies professionals in occupational therapy (OT). Four requirements must be met to practice as an OT at a master’s degree level, which includes graduating from an accredited OT program (either master’s or doctorate), successfully completing a period of supervised

fieldwork experience, passing an entry-level examination approved by the state (NBCOT), and fulfilling state requirements for licensure, certification, or registration (AOTA, 2021A).

AOTA defines standards of practice for OTs as the therapeutic use of occupations, also known as everyday activities, for individuals for the purpose of life participation in roles and situations in a multitude of settings. There are four standards that OTs must uphold such as (1) professional standing and responsibility, (2) screening, evaluation, and reevaluation, (3) intervention process, and (4) transition, discharge, and outcome measurement (AOTA, 2021A). OT's focus is centered on five aspects that affect a client's occupational identity, health, well-being, and life participation. These interrelated aspects include occupants (activities), client factors (values, body functions/structures), performance skills (motor/process/social interaction skills), performance patterns (habits/routines), and contexts/environments (AOTA, 2021B).

OTs work with many professionals in medical, occupational, and educational settings, therefore providing many opportunities for IPP in a wide variety of environments. AOTA and its accrediting body recognizes that OTs should, "Be prepared to effectively communicate and work interprofessionally with all who provide services and programs for persons, groups, and populations." (ACOTE, 2018). To build the foundation of these collaborative skills in IPP, AOTA recognizes that there must be standards that students are required to meet through IPE in their graduate programs. These standards are created by the Accreditation Council for Occupational Therapy Education (ACOTE®) which is an executive board of AOTA (AOTA, 2020). According to the 2018 Standards and Interpretive Guide (Standard 3.1.1.B), OTs must, "demonstrate

effective intraprofessional OT/OTA collaboration to: identify the role of the occupational therapist and occupational therapy assistant in the screening and evaluation process.”

They must also “demonstrate knowledge of the principles of interprofessional team dynamics to perform effectively different team roles to plan, deliver, and evaluate patient- and population-centered care as well as population health programs and policies that are safe, timely, efficient, effective, and equitable” as well as “demonstrate and identify techniques in skills of supervision and collaboration with occupational therapy assistants” (AJOT, 2018). Although outcomes related to IPP must be met, ACOTE does not specify exactly how these IPE standards must be addressed.

### **Physical Therapy Overview**

The American Physical Therapy Association (APTA) governs professionals in physical therapy (PT). To practice as a PT, students must graduate from an accredited doctorate program comprised of didactic coursework and clinical experiences. This would include acquiring skills that are grouped into three domains of (1) professional practice expectations, (2) patient/client management expectations, and (3) practice management expectations. Once they have completed their program, students must pass a national examination (NPTE) (APTA, 2011). Licensure for PT’s is managed by individual state regulatory boards (APTA, 2021).

According to APTA (2011), the scope of practice of the PT includes examination, evaluation, diagnosis, prognosis, intervention, and outcome assessment across the lifespan in a variety of settings (APTA, 2011). Patients/clients served could include (but are not limited to): individuals with disease, disorder, injury, or trauma, as well as

individuals with body function/structure impairments, activity limitations, participation restrictions, or environmental barriers ranging from mild to severe (APTA, 2011).

PTs work with many professionals in medical, occupational, and educational settings, therefore providing many opportunities for IPP in a wide variety of environments. APTA recognizes and supports IPP as well as “member engagement in team-based services” (APTA, 2019). To build the foundation of these collaborative skills in IPP, APTA recognizes that there must be standards for students to meet through IPE in their graduate programs. These standards are created by the Commission on Accreditation in Physical Therapy Education (CAPTE) of APTA which accredits physical therapy programs (CAPTE, 2021). As of January 2018, CAPTE created a standard (Standard 6F) that aligns with the IPEC Core Competencies, in that, “the didactic and clinical curriculum includes interprofessional education; learning activities are directed toward the development of interprofessional competencies including, but not limited to, values/ethics, communication, professional roles and responsibilities, and teamwork” (CAPTE, 2020). CAPTE recognizes the importance of IPE as it prepares PT students for the workforce, therefore making IPE a requirement of PT educational programs.

### **Rehabilitation Team**

As mentioned in each section detailing professional roles and training, IPE is a requirement made by accreditors of educational programs across multiple health professions, including SLP, OT, and PT (World Health Organization, 2010). Therefore, it is of interest to create IPE experiences that foster elements of collaboration such as team building skills, leadership, knowledge of professions, patient-centered care, impact of

culture and environment, and communication (Blaustein et al., 2017). One way to achieve this is through an IPE experience that focuses on clinical environments where SLPs, OTs, and PTs often collaborate in the workforce (IPP) - the acute and acute rehabilitation care settings. Here, SLPs, OTs, and PTs, who are part of the rehabilitation team are tasked with assessing patients to inform members of the care team, and the patient, of appropriate treatment. The types and frequency of various populations that the rehabilitation team may encounter in the acute and acute rehabilitation care setting commonly include but are not limited to: cerebrovascular accident (CVA): 50%, head injury: 10%, hemorrhage/injury 7%, respiratory diseases 6%, and central nervous system (CNS) diseases: 3% (ASHA, 2020). With over half the population admitted in the acute care setting having a medical diagnosis relating to brain injuries, it is important to highlight this population in the educational and clinical settings. This allows students who will eventually assume this role in their career to work effectively and efficiently alongside their rehabilitation team members when serving these individuals.

### **Acquired Brain Injuries**

A common population with whom SLPs, OTs, and PTs work are individuals with acquired brain injuries (ABI). There are two subgroups within acquired brain injuries known as traumatic brain injury (TBI) and non-traumatic brain injury (NTBI), such as a cerebrovascular accident (CVA); both may affect many structures and functions of the human body (Brain Injury Association of America, 2020). Impairments to structures and functions vary widely from person to person depending on the nature of the ABI, as no two injuries present with the same pattern of symptoms. Symptoms and complications that are seen after an ABI could include physical, communication, cognitive, behavioral

and/or emotional impairments that range from mild to severe. Refer to Table 2 for specific impairments in these domains; this is not an exhaustive list.

Table 2. Symptoms and complications associated with ABI

<b>Symptoms and complications associated with ABI</b>			
Physical	Communication/ Language Deficits	Cognitive	Behavioral & Emotional
Ataxia	Comprehension	Attention	Aggression
Dysphagia	Expression	Insight	Anxiety
Fatigue	Dysarthria	Memory	Depression
Headache	Dysgraphia	Perception	Disinhibition
Hearing loss	Dyslexia	Poor planning	Emotional lability
Incoordination		Poor sequencing	Inappropriate sexual behavior
Paralysis		Problem-solving	Mood change
Seizures		Safety awareness	Poor initiation
Sensory loss		Self-monitoring	Psychosis
Spasticity		Slow processing	
Visual loss		Social judgement	

(adapted from Graham, 2013)

### **Stroke in the Acute and Post-Acute Phase**

For the purpose of this study, individuals with NTBI, specifically CVA, will be the focus as this population is served frequently in the acute and inpatient rehabilitation setting. To obtain the best outcomes for these individuals, healthcare institutions often follow an algorithm or pathway to facilitate decision-making as the patient moves from the critical acute phase to the post-acute phase. Duncan et al. (2005) presented an acute phase stroke pathway that an individual could follow. Within this pathway, the medical team would first obtain a medical history and complete a physical examination. This is when an initial assessment of complications, impairment, and rehabilitation needs would also be evaluated. Stroke severity using the National Institutes of Health Stroke Scale

(NIHSS) would also be administered at this time, as initial services focus on stabilizing the patient and meeting basic survival needs. Once the patient is stabilized and deemed post-acute, the patient may be assessed for rehabilitation services. Here, the medical history would be reviewed and updated, and another physical examination would take place. This is when the nature and extent of rehabilitation services would be determined based on the stroke severity, functional status, and social supports. There are two different avenues a patient could follow, depending on their need for rehabilitation interventions.

Patients who fall at either end of the spectrum, being completely independent or completely dependent (requiring permanent, full-time support) may not be deemed appropriate for rehabilitation intervention. To make this determination, patients would be assessed for independence of activities of daily living (ADL), which could be assessed using a Functional Independence Measure (FIM) (Gillen, 2008). If the patient is independent, then discharge would be considered, followed by an arrangement for medical follow-up in primary care. Patients with severe stroke and/or maximum dependence, with poor prognosis for functional recovery would likely require full-time, permanent support. This would prompt education for the patient and their family about a future plan, and then a discharge to home or nursing home with arrangements of medical follow-up (Duncan et al., 2005).

For patients who fall between those two extremes, rehabilitation intervention is considered appropriate. The care team will determine whether the patient needs inpatient or outpatient rehabilitation services. As mentioned in Duncan et al. (2005), rehabilitation for individuals with a CVA or stroke begins in the acute phase once a diagnosis of stroke

has been made and life-threatening issues have been stabilized. The focus then turns to “assessment and recovery of any residual physical and cognitive deficits, as well as compensation for residual impairment” (pg. 104). Individuals with relatively mild rehabilitation needs may be best served in an outpatient setting. Those with more severe and/or diverse needs, particularly affecting mobility and independence in caring for oneself, may be better addressed in an inpatient rehabilitation setting where more intense services can be provided. The individual may be served by a care team member from one or more disciplines, with the frequency and duration of services dependent upon the individual's needs and the medical resources available. Evidence has shown that better clinical outcomes are reached when patients with acute stroke are provided with “coordinated, multidisciplinary stroke-related evaluation and services” (AHCPR, 1995 as cited in Duncan et al. 2005, pg. 104). The factors listed in Table 3 are often assessed and considered for admittance to an inpatient rehabilitation program (Duncan et al., 2005).

Table 3. Typical areas of need in post-CVA rehabilitation patients.

<b>Area Assessed</b>	<b>Professionals Who May Assess</b>
General Medical Status	Physician/Nurse
Functional Status (FIM)	Rehabilitation Team
Mobility	PT/OT
ADL/IADL	OT/PT/SLP
Communication	SLP
Nutrition	Dietitian/SLP
Cognition	Physician/Nurse/OT/SLP
Mood/Affect/Motivation	Psych/Physician
Sexual function	Physician/PT
Family Support	Social Work/Rehabilitation team
Resources	Social Work
Caretaker	Rehabilitation team
Transportation	Social Work/PT
Patient and Family Adjustment	Social Work/Rehabilitation team/Psych
Reassessment of goals	Rehabilitation team
Risk for recurrent CVA	Physician/Nurse

As noted in Table 3, SLPs, OTs, and PTs have many overlapping roles and responsibilities when serving adults with a CVA. Their primary goal is to aide in the prevention of secondary complications from the CVA and to enhance the patient's function and quality of life.

### **Combining Programs**

There is evidence of the benefits of IPP and IPE in various combinations in healthcare disciplines. Despite the frequent interactions between SLPs, OTs, and PTs, only one study has examined an IPE experience with these groups (Lairamore, et al., 2013). Accrediting bodies working with ASHA, AOTA, and APTA all recognize the need for interprofessional collaboration through the standards to which they hold programs accountable. This suggests that further information about IPE experiences involving these three disciplines may be useful and create an opportunity for growth for students moving into the workforce while also meeting IPE standards.

The IPE experience in this study included a simulation competency. The previous study examining an IPE experience with these disciplines used a similar simulation model but focused on a different setting, an intensive care unit (Lairamore et al., 2013). This study will extend the literature to the acute rehabilitation setting and focus the collaboration across therapy providers. On the IPE continuum, a simulation competency is near the latter end which would indicate a rich experience that permits students to learn with and from one another in a hands-on format. This type of competency also allows for the integration of other IPE opportunities that are listed towards the beginning of the

continuum, creating a basic foundation of knowledge in IPE. Specific to this experience involving SLP/OT/PT students the following research questions will be addressed:

1. Does the IPE event change student perceptions on the IPECC-SET?
2. Does the IPE event differentially affect perceptions of SLPs, OTs, and PTs?
3. Does each discipline show growth in the same domains?
4. Do disciplines demonstrate differences in how they reflect on clinical services provided during the IPE event?

## **Methods**

### **Participants**

Second-year graduate students from University of Wisconsin-Eau Claire and University of Wisconsin-La Crosse were recruited for participation. All students at both universities were required to complete the IPE experience, described later, as part of their graduate curriculum. Although all students participated in the IPE experience, a total of 15 (of 18) SLP graduate students from the UW-Eau Claire and 11 (of 26) OT students and 20 (of 44) PT graduate students from the UW-La Crosse were included in this study. Several students from each discipline opted out of the study by not consenting to their data use on the survey question or by failing to complete the pre-test survey. A larger group of both OT and PT students were excluded because they participated in the second lab section, which did not include the SLP students.

Faculty from each discipline assisted with the event; each had clinical and teaching experience in the area of adult ABI. The role of each faculty member was to observe students during the IPE experience, allowing the students to problem-solve

independently, unless teams needed further guidance to continue moving forward.

Faculty also managed the timeline of the experience and facilitated the discussions after both rounds of the simulation. Faculty were not considered participants in the study.

### **Procedure Prior to the IPE Event**

Prior to the IPE event, students within each program completed a sequence of academic coursework and clinical fieldwork that would prepare them for the experience. The coursework and fieldwork in the SLP program included graduate clinical practicum, aphasia and related disorders, counseling in communication disorders, organic voice and speech disorders, augmentative and alternative communication and assistive technology, dysphagia, and rehabilitation methods in communication disorders. Coursework that was in progress during the time of the IPE competency included motor speech disorders, acquired cognitive-communication disorders, and an additional clinical practicum (UW-Eau Claire, 2020).

The coursework and fieldwork in the OT program included human anatomy, critical analysis of human movement: development, learning and control, biomechanics and kinesiology applications in occupational therapy, applied biomechanics and kinesiology in occupational therapy, applied scholarly practice 1: assessment, occupational therapy intervention: group dynamics, applied occupational therapy intervention: group dynamics, occupational performance analysis, applied occupational performance analysis, occupational therapy in acute care settings, functional neuroanatomy, occupational performance: mental illness, applied occupational performance: mental illness, occupational performance: physical dysfunction 1, applied occupational performance: physical dysfunction 1, level 1 fieldwork: mental illness,

physical agent modalities. Coursework that was in progress during the time of the IPE competency included: level 1 fieldwork: physical dysfunction, impact of psychosocial issues in occupation, occupational performance: physical dysfunction 2, and applied occupational performance: physical dysfunction 2 (UW-La Crosse, 2020).

The coursework and fieldwork in the PT program included physiological regulation of exertion and disease, applied physiological regulation of exertion and disease, motor control/motor learning and motor development, applied motor control/motor learning and motor development, introduction to physical therapy practice and evaluation techniques, and applied introduction to physical therapy practice and evaluation techniques. Coursework that was in progress during the time of the IPE competency included: physical agents, applied physical agents, biomechanics and kinesiology of movement, applied biomechanics and kinesiology of movement, foundations of physical therapy examination, applied foundations of the physical therapy examination, functional neuroanatomy and applied functional neuroanatomy. The last two courses may also be taken later in the PT program, therefore not all students may have had functional neuroanatomy and applied functional neuroanatomy (UW-La Crosse, 2020).

Evaluation and assessment training for the inpatient rehabilitation setting took place in academic and/or fieldwork for each discipline. During academic coursework, all students performed some version of a neurological evaluation with their peers in order to understand the process and procedures, as well as identify any abnormalities one might find during this examination. Each discipline also had one lecture that outlined the basic

roles and responsibilities of OTs, PTs, and SLPs and how each of these disciplines overlapped in assessment and intervention.

One week prior to the IPE competency, students from each discipline became National Institutes of Health Stroke Scale (NIHSS) certified. This certification provided a similar level of competence in clinical stroke assessment using a measure that “evaluates the effect of acute cerebral infarction on the levels of consciousness, language, neglect, visual-field loss, extraocular movement, motor strength, ataxia, dysarthria, and sensory loss” (NIH Stroke Scale International, 1999). Students had the option to apply knowledge acquired through this certification to their simulation case during the IPE experience, which also provided a consistent baseline in the interprofessional assessment.

The *Interprofessional Education Collaborative Competency Self Efficacy Tool* (IPECC-SET) was chosen to measure the self-efficacy for interprofessional competence for these three groups of health profession students (Hasnain, 2017). The IPECC-SET was administered online via *Qualtrics* at both pre- and post-test; students used a 100-point slider to make their ratings. The pre-test and post-test included the same 38 self-efficacy items, across four domains: communication (8 items), roles/responsibilities (9 items), teams/teamwork (11 items), and values/ethics (10 items). Questions from each domain were mixed into four question blocks of 8-10 items. Additional questions were added to the pre-test in regard to consent, discipline, and which lab students were participating in (i.e., lab 1 = SLP/OT/PT, where data was analyzed and lab 2 = OT/PT, where data was not analyzed). In the post-test survey, additional questions were added in regard to whether students participated virtually or in-person, and if they acted as the

patient for one round of the evaluation. See Appendix B for the pre-test and post-test surveys.

### **Study Procedures/IPE Event**

Participants completed the pre-test IPECC-SET survey within one week prior to the event. The survey remained available until the start of the event, so some students completed it early, while others completed it immediately prior to the experience. All participants received an acute discharge note and an assessment plan outline to review and prepare for their roles and responsibilities during the assessment; these items were provided via email 4-5 days prior to the event. See Appendix C for the discharge note and Appendix D for the assessment plan outline.

On the day of the event, students were instructed on the outline of the day's events. Due to COVID restrictions, the SLP students attended the event virtually via the Zoom platform; two OT students who were in quarantine also participated remotely through Zoom. The remaining OT and PT students participated in the event in-person.

Students were assigned to teams of four-to-five, with each team having at least one member from each discipline. Each team had a physical workstation, but also had members joining via Zoom utilizing breakout rooms. One in-person member of each team was selected to be the patient, following the standardized patient instructions (see Appendix E). This was typically a PT student, but within a few groups, an OT student played the patient. Because students had two opportunities to practice the simulation, the patient role rotated to a new student between round one and round two; no students

participating virtually played the role of the patient. All students had a chance to complete the simulation in their clinical role at least once.

Students were allotted 15 minutes to collaborate with team members to decide who would evaluate various aspects of the client (i.e., cognition, swallowing, mobility, etc.). The students then entered into their roles of either the standardized patient or evaluating clinicians. Evaluation of the patient was completed in 30 minutes.

Immediately following the evaluation, the students reflected, with their interdisciplinary team, on the overall experience of the co-evaluation. During the debrief discussion, students were prompted with the following questions to guide their discussion: “what went well, what didn’t succeed, and how will you alter your approach for the next attempt.” The students were asked to revise their plan to be more efficient and prioritize aspects that may have been missed or undervalued in their first attempt. Round two began shortly after the debrief by following the same procedure as round one. Once both rounds were complete, students were brought together to complete a debriefing discussion with all disciplines, led by the OT faculty member. The main focus of this debriefing was to identify new things learned about other discipline. See Appendix F for the second round of debrief questions. Because this event served as a graded learning experience within their respective programs, students were assigned to complete a written reflection regarding the experience of the standardized patient assessment, which was submitted to their respective instructors. As a final step, students completed the post-test IPECC-SET survey following the IPE event. The post-test survey was available for one week after the event.

One week prior to event	Day of event	Within one week after event
<ul style="list-style-type: none"> <li>• Complete IPECC-SET pre-test</li> <li>• Students receive:               <ul style="list-style-type: none"> <li>• Discharge note (case)</li> <li>• Assessment plan outline</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 15-minute collaboration with team</li> <li>• 30-minute evaluation of standardized patient</li> <li>• Team debrief &amp; re-plan</li> <li>• 30-minute re-evaluation of standardized patient</li> <li>• Large group debrief</li> </ul>	<ul style="list-style-type: none"> <li>• Complete IPECC-SET post-test</li> <li>• Submit written reflection</li> </ul>

Figure 1: Order of IPE Simulation Event.

## Data Analysis

### *Quantitative*

Pre-test and post-test scores for each IPECC-SET question for each participant were downloaded from Qualtrics into a spreadsheet. An overall mean for pre-test was calculated for each participant, by averaging their scores across all questions; a post-test overall mean was calculated in the same manner. Change scores were calculated for each participant by subtracting the mean pre-test score from the mean post-test score. Change scores could range from -100 to 100; thus, scores that were positive indicated a higher self-efficacy after the IPE event, while scores that were negative indicated a lower self-efficacy after the IPE event. Mean pre-test and post-test scores by domain were calculated for each participant by taking the average of all questions within a specific domain (i.e., all Values & Ethics questions were used to create a mean pre-test and a mean post-test score for that domain).

Statistical analyses were completed in SPSS (IBM SPSS Statistics 27), to answer the research questions. To determine whether students demonstrated change in self-efficacy, and whether that change was similar across disciplines, a repeated measures ANOVA was completed. The pre-test and post-test scores for each individual served as the within-subjects factor, while discipline (i.e., PT, OT, SLP) served as the between-subjects factor. To compare whether differences in specific domains of the IPECC-SET existed between disciplines, a series of repeated measures ANOVAs were completed, with pre-test and post-test scores for each individual in each domain as the within subjects factor and discipline as the between-subjects factor.

The analyses for this study included all participants within a discipline when comparing across disciplines, despite some OT and PT participants serving as the patient for one round of the experience. This variable was assessed with a one-way ANOVA with role as patient (round one (n=13), round two (n=8), or never (n=25)) as the independent variable and overall mean change score as the dependent variable. This analysis was not significant ( $F=0.152$ ,  $p=0.859$ ), so groups were collapsed into their respective disciplines. Student participation in the online or in-person format was not considered in any analyses.

### *Qualitative*

Reflections from each discipline were reviewed and coded using an a priori coding scheme based on the IPEC Core Competencies. Two undergraduate students were trained by the researcher in application of codes based on all sub-items listed on the IPECC-SET. The training and collaboration were conducted through a Zoom platform where screen-sharing was provided. The researcher initially shared the IPEC Core

Competencies and one example of a coded reflection for the research assistants to review. The researcher then coded several reflections in real-time, asking the research assistants to provide their thoughts on which codes they believed would apply within each reflection. Once the two research assistants coded the selected essays collaboratively with the researcher, and all three were comfortable with the code definitions, the research assistants proceeded to code additional essays. The research assistants individually coded three essays, and then cross-checked the other assistant's essays for consistency. Upon completion of the six essays, the research assistants and researcher again collaborated to review the codes and came to consensus on any that were not in agreement. An additional two rounds of coding and consensus discussions were completed, using approximately eight more essays each, before the research assistants proceeded to code all remaining essays. Each essay was cross-checked by both research assistants, who also referred to the researcher if there were any questions while coding the remaining essays. Upon completion, the research assistants and the researcher reviewed all essays for consistency in application of codes. All coded statements were re-organized into discipline-specific documents, by a priori code, for further analysis.

A frequency count of coded statements was completed, within each domain, to compare which codes were most frequently discussed across disciplines. During review of coded statements sorted into the a priori categories, the research assistant observed broader, cross-categorical concepts. Additional hierarchical inductive coding occurred by the research assistant sharing her initial observations through a facilitated discussion via Zoom and phone call with the researcher. Questions included, "What themes did you notice in each domain? What themes did you notice in each discipline? What themes did

you see outside of the domains/disciplines?” After gathering the initial observations from the research assistant, the researcher completed the final inductive coding by using a physical (i.e., paper) sort of coded statements into cross-domain themes.

### **Results**

Results are presented below by research question.

*Question 1 and 2: Does the IPE event change student perceptions on the IPECC-SET and does the IPE event differentially affect perceptions of SLPs, OTs, and PTs?*

Nearly every participant showed positive change in all four domains of the IPECC-SET. A repeated measures ANOVA comparing pre-test scores to post-test scores within each discipline was statistically significant for the within-subjects factor of individual change pre-test to post-test ( $F_1 = 92.28, p < 0.01$ ), but was not significant for the between-subjects factor of discipline ( $F_2 = 0.33, p = 0.72$ ). The pre-test to post-test change is represented in Figure 1 for each discipline. In Figure 2, change scores for each participant by domain are displayed, with growth illustrated by a positive bar. Only four participants showed negative change in one or more domains. The most common domain that showed negative change, among these four participants, was “values and ethics.”

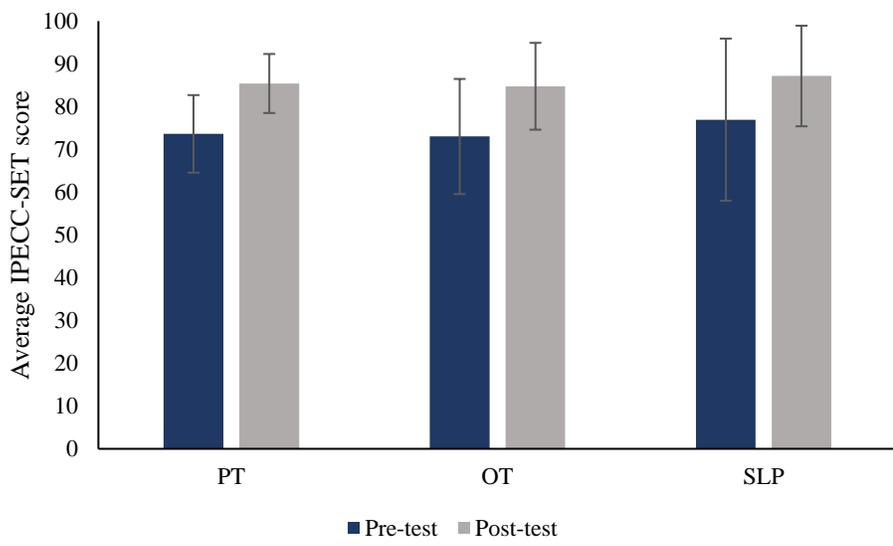
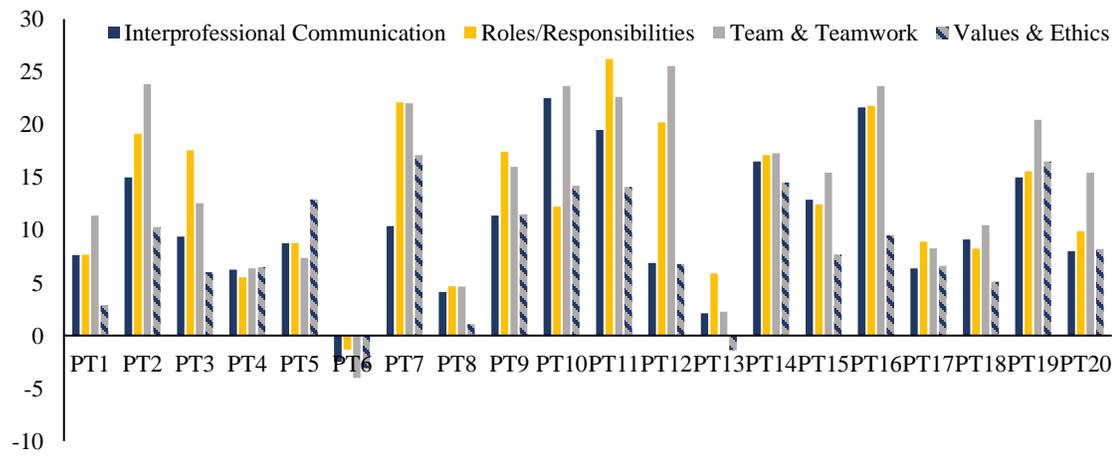


Figure 2. Pre-test and post-test average overall scores by discipline. Error bars represent standard deviation.



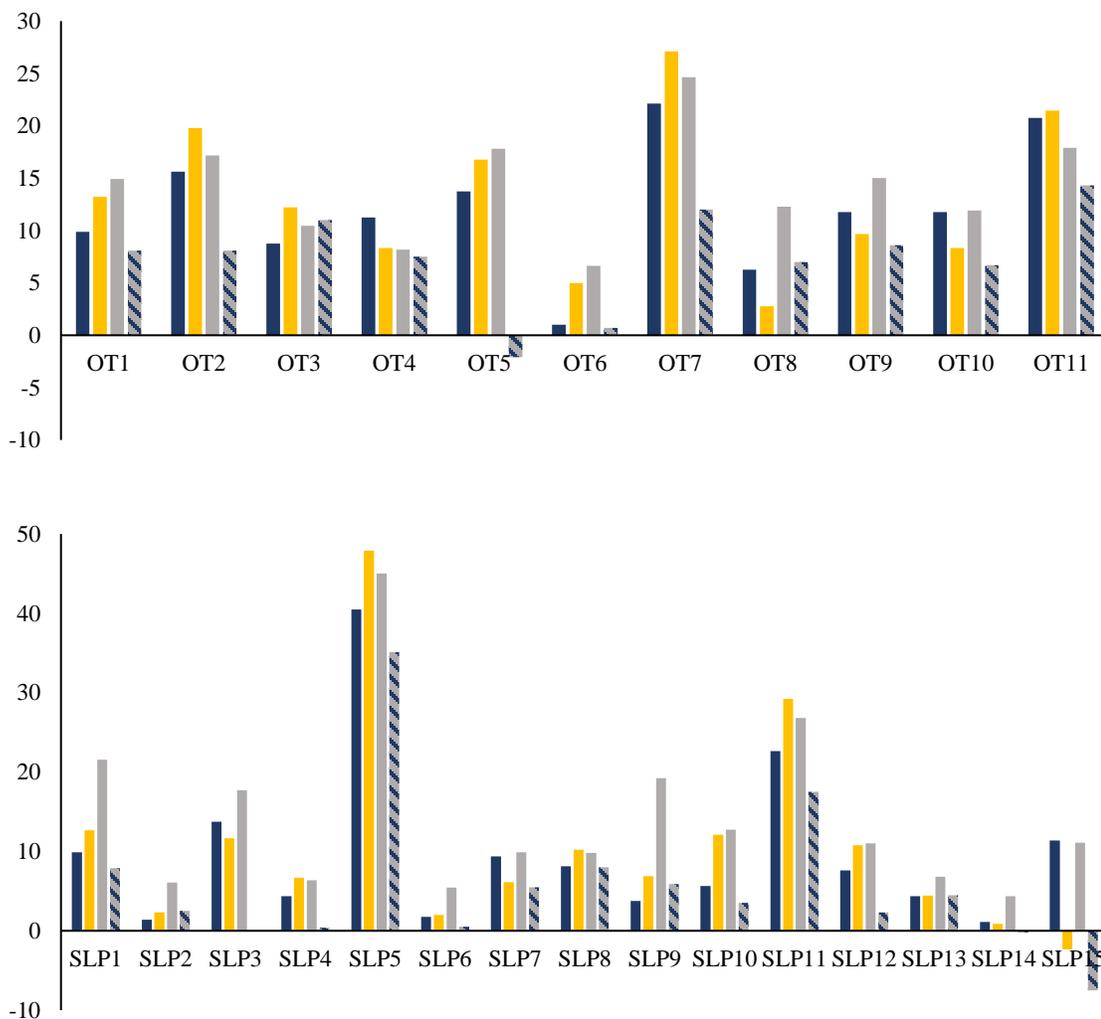


Figure 3. Average change score for each participant, by domain.

*Question 3: Does each discipline show growth in the same domains?*

A series of repeated measures ANOVAs were used to compare across disciplines and across the four domains of the IPECC-SET. None of these tests were statistically significant (statistics are presented in Table 4). Change scores were relatively similar across all three disciplines within each domain (see Figure 3 below), with SLP participants demonstrating a somewhat lower average change score in interprofessional communication, roles & responsibilities, and values & ethics, when compared to PT and OT participants.

Table 4. Repeated measures ANOVA results by domain.

Domain	Within-subjects			Between-subjects		
	F-value	p-value	Power	F-value	p-value	Power
Interprofessional comm.	83.22	<0.01	1.0	0.30	0.74	0.095
Roles & responsibilities	75.18	<0.01	1.0	0.21	0.81	0.081
Teams & teamwork	118.68	<0.01	1.0	0.34	0.72	0.101
Values & ethics	44.09	<0.01	1.0	0.58	0.56	0.141

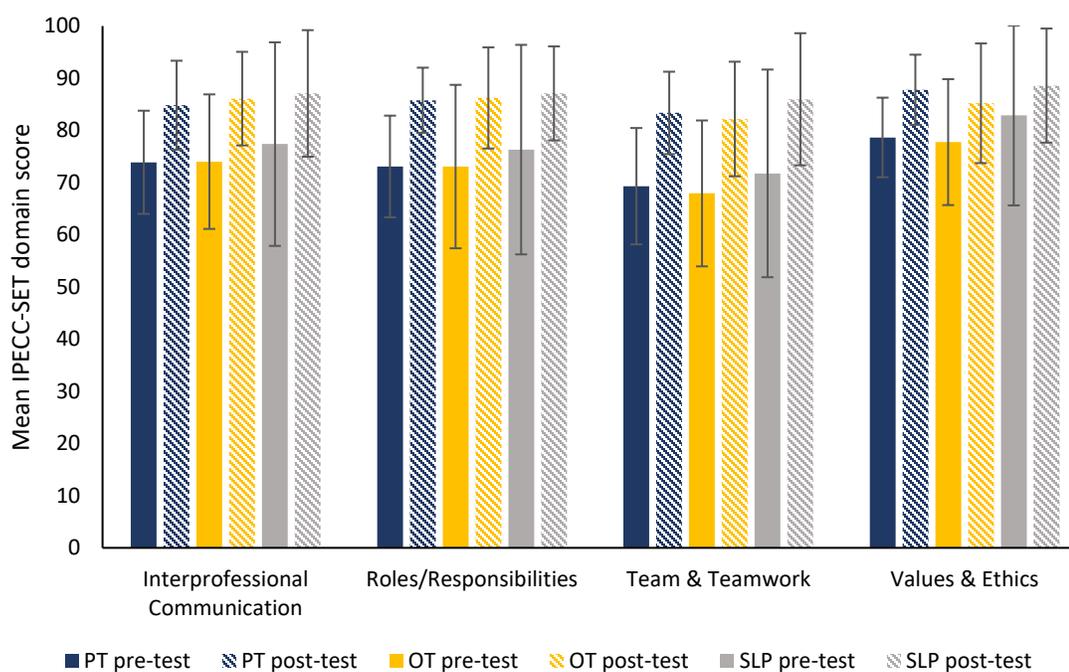


Figure 4. Pre-test and post-test mean scores for each discipline, by IPECC-SET domain. Error bars represent standard deviation (i.e., one standard deviation above and one standard deviation below the mean).

*Question 4: Do disciplines demonstrate differences in how they reflect on clinical services provided during the IPE event?*

Coding of each participant reflection was completed using a priori codes based on the IPECC-SET items. Within each domain, a frequency count was tabulated in order to determine which outcomes were most commonly discussed in the participant reflections. Frequency counts are presented as percentage of overall coded statements to allow

comparison across disciplines (Figure 4). The nine most frequently used codes are included in Table 5.

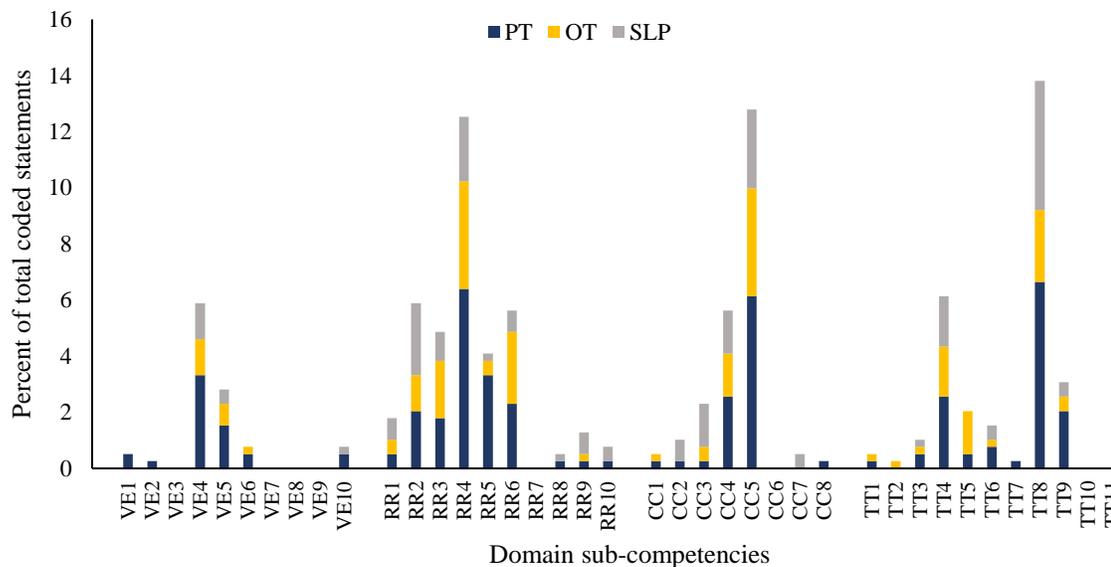


Figure 5: Frequency Count of IPEC Competencies Across Domains and Disciplines. VE1 – VE10 represent the 10 statements in the Values & Ethics domain; RR1 – RR10 represent the 10 statements in the Roles/Responsibilities domain; CC1-CC8 represent the eight statements in the Interprofessional Communication domain; TT1-TT11 represent the 11 statements in the Team & Teamwork domain.

Table 5: Most Frequent Codes as percentage of all coded statements

Sub-competencies	Percentage of overall coded statements
Reflect on individual and team performance for individual, as well as team, performance improvement (TT8)	13.81
Give timely, sensitive, instructive feedback to others about their performance on the team, responding respectfully as a team member to feedback from others (CC5)	12.79
Explain diverse professionals who complement one's own professional expertise, as well as associated resources, to develop strategies to meet specific health and healthcare needs of patients and populations (RR4)	12.83
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 (TT4)	6.14
Respect the unique cultures, values, roles/ responsibilities, and expertise of other health professions and the impact these factors can have on health outcomes (VE4)	5.88
Recognize one's limitations in skills, knowledge, and abilities (RR2)	5.88
Communicate with team members to clarify each member's responsibility in executing components of a treatment plan or public health intervention (RR6)	5.63
Listen actively, and encourage ideas and opinions of other team members (CC4)	5.63
Engage diverse professionals who complement one's own professional expertise, as well as associated resources, to develop strategies to meet specific health and healthcare needs of patients and populations (RR3)	4.86

Inductive coding was also completed to determine additional pertinent themes that overlaid a priori codes (Table 6). No hierarchical order emerged, so these themes are presented in no specific order.

Table 6: Cross-code themes, with definitions and exemplars.

Theme	Definition	Exemplars
Benefits of Co-Evaluation	Participants stated the benefits of a multiple professions completing the co-evaluation	<ul style="list-style-type: none"> <li>• “With the co-evaluation it was nice to have one profession perform a test while the others were observing, so that we could all document the patient’s performance on the test <b>without wasting time or fatiguing the patient by having three separate evaluations</b>”</li> <li>• “<b>I gained a significant amount of information pertaining to discipline specific evaluation findings from observing the OT and PT students interacting with the patient during their assessments.</b> Additionally, the lens of the SLP was valued by the OT and PT students as we were able to provide insight into a different viewpoint of patient’s cognition and provide suggestions for how they may be able to better communicate with the patient. Similarly, information provided by the OT and PT students informed plans for how the SLP team would interact with the patient during our part of the evaluation.</li> <li>• From my perspective, <b>there was significant overlap between OT and PT</b> with regard to collecting pertinent subjective information and performing a cognitive, musculoskeletal, sensation, transfers, and coordination assessment. However, <b>I did not realize that OT received more extensive training</b> with performing a vision assessment. Similarly, <b>I did not realize the significant role SLP plays</b> when it comes to determining cognitive function related to speech, the extensive knowledge they have with regard to the cranial nerves, especially the facial nerve, and how damage impacts swallow and speech function.</li> </ul>
Benefit of Simulation	Participants reported the benefits of the of the IPE simulation and its future implications	<ul style="list-style-type: none"> <li>• “<b>I’d say the experience was absolutely positive</b> as it aided in understanding the role of other healthcare professionals, what they can bring to the table for me as well as what I can bring for them, and <b>providing insight into how I will communicate with them in the future.</b>”</li> <li>• “<b>I do feel this was a valuable experience</b> in gaining more insight into how we can collaborate to evaluate a patient in the acute setting and the ways that we can gain information from other team members’ portions of the assessment.”</li> <li>• “<b>Following this experience, I feel more confident working with other professionals</b> to coordinate and carry out a plan of care for patients.”</li> </ul>

Table 6 continued: Cross-code themes, with definitions and exemplars.

Recognizing Competence	Participants recognize competence in their own and/or other professions' abilities through positive collaboration	<ul style="list-style-type: none"> <li>• <i>“Respect and consideration were demonstrated by all team members, as students from each field would ask questions, <b>acknowledging the other students’ competence in their field.</b> Additionally, the team conveyed respect by thoroughly listening to the thoughts and perspectives of each team member.”</i></li> <li>• <i>“I felt that we were all eager to do this [assessment] and <b>value each other’s perspectives.</b>”</i></li> <li>• <i>“Checking understanding and ability of the patient to accurately communicate is intriguing <b>and the [SLP] students that I worked with had some good strategies</b> for enhancing this communication.”</i></li> <li>• <i>“I most valued our chances to talk and explain our targets/assessments. ‘Tone’ was a category to assess but I wasn’t sure of the specifics. <b>It was really helpful to ask PT/OT students</b> for specifics there.”</i></li> </ul>
Value of Feedback	Participants report the value of giving and/or receiving feedback	<ul style="list-style-type: none"> <li>• <i>“I was able to receive feedback from my colleagues and peers throughout the exercise. A specific example was when I did a sensory system examination for sharp and light touch sensation. One of the PTs noticed that I needed to test a more comprehensive array of areas to check additional dermatomes. <b>I will now lock that advice into my long-term memory for future usage.</b> I provided feedback after our second trial evaluation when I noticed a discrepancy during the visual field test. I acknowledge that PT performing the test did a good job but may want to cover the eye not being test in the future.”</i></li> <li>• <i>“The PTs and I were able to <b>receive feedback from the SLP students</b> on remembering to provide simple language to the aphasia patient and give short directives throughout the evaluation. I was able to <b>give feedback about grading activities</b> as needed. For example, when putting on the patient’s socks I wanted to let her complete as much of this task as possible.”</i></li> </ul>
Advocacy	Participants reported the need to advocate and/or educate their roles/responsibilities with other participants	<ul style="list-style-type: none"> <li>• <i>“Although the feedback was initially dismissed, <b>we advocated for ourselves and our role as SLPs,</b> and took more of a role. Through this opportunity, we modeled the behaviors we wanted to encourage and through taking more of a role and leading the patient interview portion of the eval the second time around, <b>we saw the value of modeling that behavior and how it can lead to changes, even if they are subtle.</b> We felt proud of our ability to provide and model the care we felt to be best practice.”</i></li> <li>• <i>“If we were to do this over again, <b>I would like to voice the OTs role more and advocate for our field</b> by suggesting we cover more assessment areas.”</i></li> </ul>

## Discussion

The purpose of this study, and the IPE event in general, was to expose students in PT, OT, and SLP programs to one another to build self-efficacy in interprofessional collaboration through a simulation experience. The IPE simulation event was successful in positively changing student perceptions of self-efficacy in all domains of the IPECC-SET. There are likely multiple reasons for this positive change noted, with most based in the design of the experience itself, including the rich discussions of general roles and with specific populations that emerged through the case-based discussion, feedback given and received on the evaluation process, and the power of experiential learning through low stakes interactions. The statistical analysis of pre-test to post-test scores indicated student growth, with nearly all participants showing growth in all domains. Further, of the 39 items on the IPECC-SET, 31 were mentioned at least once in the reflections. This suggests a robust learning experience, where students had opportunities to practice and develop a range of knowledge and skills.

Similar to the collaborative course model presented in the study by Edwards et al. (2015), the simulation created an opportunity for rich discussions on the various roles and responsibilities within each professions' scope of practice. As students planned for their evaluation, they were prompted to discuss their roles and responsibilities in a general sense. Including time in the preparation process at the beginning of the event allowed students to gain a better understanding of each profession's responsibilities within and outside of the context of the simulation. Students then solidified this knowledge by observing and/or completing these roles throughout the evaluation process, therefore allowing the participants to "explain the roles and responsibilities of other providers and

how the team works together to provide care, promote health, and prevent disease” (IPEC, 2016). Students needed that chance to talk about and see each other in action to better understand the training each received and the areas in which their roles overlapped and/or were distinct. By having a better shared understanding of everyone’s roles, students were able to gain the confidence needed to complete their portion of the evaluation, even observed as students moved from the first to second round of the evaluation simulation. The fact that the roles and responsibilities sub-competency (RR4) emerged as one of the most commonly discussed codes further supports the value of this discussion period.

The case-based nature of the event also likely supported student growth. A clinical case provides a more concrete example for discussion and allows students to have a shared context as they talk about and practice their respective professional roles. In prior studies, students who participated in a case-based learning models gained experience in providing education about their role in working with a specific population, as well as seeking out feedback following the experience (Davies, 2015; Lairamore et. al, 2013; Pitti & Matheny, 2016). In the current study, students were obligated to share their role when working with a post-CVA patient, as well as seek out feedback on how to improve their evaluation skills with this specific population. Within their reflections, students recognized that they had to rely on their own knowledge to complete the assessment in all relevant areas in their scope of practice (sub-competency RR2). This may have illuminated the areas of their field in which they were not confident, recognizing “one’s limitations in skills, knowledge, and abilities” (IPEC, 2016). The collaborative evaluation around a shared case, especially with the second-round

evaluation taking place immediately after shared feedback, provided the opportunity to clarify each member's responsibility in order to effectively evaluate the specific patient (sub-competency RR6).

Beyond a shared context with a case, the experiential learning associated with simulation also likely contributed to student gains in self-efficacy, similar to Davies et. al (2015). The role-play aspect of the simulation provided students with a low-stakes opportunity to implement skills, not just talk about their roles. Learning through hands-on work provided a deeper understanding of students' skills and limitations. Being required to carry out their planned evaluation forced students to make specific choices and then evaluate the outcome of those choices, not only within their own discipline, but for the other two collaborating disciplines as well. The interdependency and teamwork required to effectively complete the role-play drove a deeper understanding of the value of the team approach, similar to Lairamore et al., (2013). Students reflected on this specifically in sub-competency RR3, identifying the process of simulation as pivotal for engaging with "professionals that complement one's own professional expertise," (IPEC, 2016). This came up as a larger ideal in the theme related to benefits of the simulation. Students discussed the experience as being a positive learning opportunity, as well as explicitly stating the knowledge that was gained from this experience that will be used in the future. This may seem similar to the "benefits of co-evaluation" theme, which is discussed in the subsequent paragraphs; however, this theme explicitly captures the feelings of the experience itself. In particular, students made statements related to communicating effectively with their peers during the experience and how that would translate to working with patients and other health professionals. They reported that the insights

gained from the hands-on experience, such as how to coordinate a co-evaluation and specific means for assessment will carry over into their future as therapists. This is crucial to note, as this shows promise in the generalization of IPE into the workforce, as students reflect on wanting to use this knowledge in the future, which is the ultimate goal.

“Recognizing competence” emerged as a broader theme in the reflections, evident in multiple domains, and shown through the respect that participants had for one another’s profession. This theme can be explained through the collaborative nature of the simulation, as well as forcing students to represent their own field in a small group. This allowed participants to be curious and ask questions about the other professions that they may not have understood. Competence is revealed when one student can actively listen to each discipline’s perspective and carry out a plan that combines these differing perspectives. The simulation nature of the IPE event created a low-stakes environment for open discussions without fear of embarrassment or worry about impact on a patient’s care.

The culmination of the event, pairing a case-based and experiential simulation approach, as well as providing opportunities for revision and repetition, meet the “best practice” standards provided by Riskiyana et al. (2018). The inclusion of two rounds of evaluation, with time in between for discussion, was critical. Because students were forced to evaluate their initial attempts, an opportunity for shared decision-making was built into the experience. Students frequently mentioned the value of this opportunity in their reflection essays. Specifically, the process of ongoing collaboration and formulation of a new and improved evaluation plan (sub-competency TT4), naturally forced students to make and receive suggestions in the form of feedback on an individual and group basis

(sub-competency CC 5). This concept frequently arose in conjunction with student statements about how they were not only providing feedback but listening and encouraging others to contribute their thoughts and ideas (sub-competency CC4). This was not only observed between students in clinician roles, but also between the standardized patient and clinician on how to best perform assessments, or what characteristics to keep in mind when acting as the patient. The broader theme relating to the value of feedback was evident throughout all reflections and across domains, capturing specific examples of reciprocal feedback that students were giving and receiving, as well as what they were going to do with that feedback in the future. Further, statements related to a broader evaluation of the team's performance also emerged as they collaborated (sub-competency TT8). The reflective process, particularly written reflections, incorporated at the end of the experience was essential for helping students solidify these aspects of their learning.

The IPE event did not differentially affect perceptions of SLPs, OTs, and PTs. This could be due to the small group sizes, but it is more likely that all groups had room for growth in the same areas and for the same reasons. This was the first IPE simulation experience in these programs that included SLP, OT, and PT disciplines. Lack of prior exposure to each other provided many areas for learning and growth. Further, each student was in the same trajectory in their program, having achieved both academic and clinical experience. While some students may have had prior exposure to other disciplines in their clinical rotations, it is likely this was the first chance they had to really talk in detail with others at the same level (i.e., all students). While most students showed growth across domains, the domain that showed the least amount of growth was the

“values and ethics” domain. This may be explained by the complexity of learning that topic itself. As evidenced by Riskiyana et al. (2018), ethics education needs to capture complex combinations of human perspectives, emotions, and ethical dilemmas.

Therefore, capturing values and ethics at both the skill and knowledge level within a simulation that also emphasizes clinical skill demonstration poses a challenge. The case presented in this event was not designed to target this domain; it was thought ethics may naturally arise in clinical discussions and the simulation experience, but it was not the primary focus. Within the student reflections, the values and ethics were not coded frequently. The one code that was somewhat commonly discussed related to respecting the roles/responsibilities and expertise of other health professions (IPEC, 2016).

Inductive coding revealed broad, pertinent themes that overlaid the frequency counts within the a priori coding scheme. These additional themes contain codes that pertained to each discipline across all domains, not just specifically in one domain. Several of these themes have already been discussed, as they pertain to the changes in student perceptions specific to the case-based, experiential-learning simulation event. The remaining themes, however, have more broad implications.

The “benefits of co-evaluation” theme arose across domains where participants discussed the benefits of having multiple professions completing the co-evaluation. Because this was a broader observation by the participants about clinical practice, not just the experience of the simulation, it truly emerged as a unique theme. This included statements of increasing participants’ awareness of the roles and responsibilities of other professions and their overlap, finding value in professionals supporting the other through their assessments, and discovering the value in the efficiency of the co-evaluation

through means of observation while another discipline is performing their portion of the assessment. These are important points to capture as the simulation experience provided an opportunity for experiential learning by mimicking the workplace. Similar to the study by Davies et al. (2015), simulations allow for the improvement of student performance and can have positive effects on student's perceived confidence which may carry forward into their clinical practice.

The "advocacy" theme describes participants recognizing that they needed to or should have advocated for their professional role at some point during the co-evaluation. This was most prominent in the SLP and OT participants; however, it was noted that SLP students were more likely to discuss the deliberate act of advocating and educating the other disciplines, whereas the OT students reflected on how they wished they would have advocated more for their profession. There were four PT students who discussed how they recognized that they needed to step back and allow the other professions take the lead in the assessment. This is a crucial realization for both sides, as this is often seen in the workforce where one profession may dominate another during a co-evaluation; unequal collaborations may lead to negative patient outcomes, inefficiency, or missing information. It is important for students to practice and gain these skills of advocacy, as seen in this simulation, in order for them to feel more comfortable advocating for themselves in their future workplace with professions that may or may not be within the rehabilitation team.

### **Limitations**

The limitations for this study include many factors that were outside of the researcher's control. One of these limitations included having small group sizes for the

actual study, as the cohort for the SLP discipline was small to begin with, and the OT and PT disciplines were split in half for scheduling purposes. The small group sizes, with participants from just two universities, limits the generalization of information from this study. Another limitation included the barrier of the COVID-19 pandemic, where students from the UW-Eau Claire program had to participate in the simulation online. This created multiple barriers such as technology issues with internet connectivity, background noise from other groups impeding on small group discussions, as well as SLP students modifying assessments so they could be performed virtually, which may have impacted the quality of the assessment. It also made natural discussions throughout the assessment less rich, as SLP students reported that they would either have a hard time hearing the OT and PT students during the evaluation, or they would have to ask clarifying questions frequently to gain a better understanding on what the other disciplines were doing. The online component did, however, allow this simulation to take place as it would have otherwise been canceled due to travel restrictions during the pandemic. Many students also reported that they wanted more time to collaborate with other disciplines in order to gain a better understanding of their roles. The time constraints of the simulation did allow for a brief discussion, but a more in-depth discussion before the simulation may have been beneficial for students to gain a global understanding of each disciplines' roles and responsibilities. Another report from students, and an observation directly from the researcher, was the need for specific training for the standardized patients who were simulating a person with aphasia (PWA) and left neglect. This could have potentially been managed better with the timing of the script that was given (i.e. giving students the script before the simulation instead of

during the event), as well as having students watch a video that depicted a PWA, to have a better understanding in the responses that they would have provided during the simulation.

### **Clinical Implications**

There were many important clinical implications that arose from the IPE event. The following implications were drawn from the analysis of both quantitative and qualitative data, as follows:

- 1) Students developed an understanding of the importance of advocating for one's own profession, as this is crucial to practice early in one's career so one can gain the experience and confidence needed to advocate for their profession and their patients in the future.
- 2) Students gained awareness of the areas in which they may need more knowledge or practice, or in other words, *knowing what they do not know*. This allows students to take charge in gaining the information in which they were not confident or lacked awareness of previously, so they are ready for a future assessment that may be similar to this experience.
- 3) Students need practice articulating ones' own roles and responsibilities to other professionals and/or patients, including what is within each discipline's scope of practice, using jargon that is comprehensible. An important part of professional practice is education of one's colleagues and those that they serve.
- 4) Students gained concrete understanding of the complexities of co-morbidities. This may be a surprising and/or a difficult concept to grasp until students are faced with their first patient (or simulation of a patient) with an acquired brain

- injury. This experience gave insight into some of the symptoms and complications patients may bring to the rehabilitation process.
- 5) Students learned to communicate about the roles of other disciplines. Having a better understanding of the roles of all members of the rehabilitation team can help clinicians set expectations for their patients., Further, they may now have a better idea about when they could complete a co-evaluation or treatment.
  - 6) Students were pushed to be creative and flexible in their assessment strategies and measures during this simulation event. Students had to determine how they could gain the information they needed through means that may not have been used if they were performing the evaluation alone, ultimately pushing them to think critically and creatively.

### **Future Directions**

This IPE event is just the first of what will hopefully be many more collaborative simulations in the future. Suggestions to improve the experience for future participants are as follows:

- 1) Hold a separate, initial meeting for students to get to know one another, and discuss their roles in general, then move into roles specific to the case provided for the simulation. This suggestion would allow students to gain a better insight in the roles and responsibilities of other professions, as well as come back with follow-up questions on the date of the simulation. This would also allow students to build confidence and understand what areas they are confident in, and where they may need to grow prior to the simulation event.

- 2) Have all professions complete the simulation in-person. This suggestion would allow students to easily communicate with one another, and the rationale for assessments would be readily discussed through this natural context. It would also align with the work environment were the rehabilitation team is typically having natural conversations about a case, versus feeling obligated to report what they are doing after they have completed an assessment task.
- 3) Have the standardized patient be a real person with a stroke, preferably someone with aphasia. This suggestion stemmed from conversations about how students could gain the most authentic experience possible, and this could be achieved through the collaboration with aphasia groups through UW-Eau Claire. The topics of advocacy often arise in these groups through project-based interventions, and this could be one way to achieve the optimal IPE simulation experience. This would also allow disciplines to gain insight into what it is like to evaluate a patient with aphasia.
- 4) If person with a stroke is not available, provide specific training to match the case and script. This suggestion would be optimal if there was not access to PWA. Students would then reliably depict the deficits that each discipline would be assessing for, ultimately creating an experience that is similar to what they would see in the workplace.
- 5) Complete the simulation multiple times throughout the program. This suggestion would be an interesting topic of study, to determine the growth in skills, knowledge, and self-efficacy that would arise from an ongoing simulation, as this has not been studied using these particular disciplines to date.

- 6) Include other disciplines to simulate the hospital environment. This suggestion would allow for students to gain more insight in the hospital environment, but it would also further their understanding of the roles and responsibilities of other disciplines associated with the medical setting. Disciplines that would be of interest to include, but not limited to, would be nursing, social work, respiratory therapy, and dietician.
- 7) Require documentation for further analysis. This suggestion arose initially through having students document their findings following the simulation. Given that this was an initial collaboration, a reflection was used for qualitative analysis. Future studies of analyzing SOAP (subjective, objective, assessment, plan) notes may be one way to capture additional information about student learning during the IPE experience. This would also obligate students to complete an accurate assessment that would simulate the information that they would need to gather in real-time.
- 8) Survey the same students at the end of the year using the IPECC-SET. This suggestion would allow for the comparison of the current research study in order to gain insight on the generalization of self-efficacy in the same areas of the IPEC core competencies domains. This then could inform the implications of the simulation into the workforce, as the students continue and/or finish their respective programs.

### **Conclusion**

This study was designed to gain more insight in the perception of SLP, OT, and PT students in an interprofessional education simulation event. This study showed that

there was a positive change in self-efficacy across all domains in the IPEC Core competencies as measured by the IPECC-SET. There were no differences across groups, in self-efficacy ratings or overall reflections. Major themes that arose from this study included: benefits of co-evaluation, benefits of simulation, recognizing competence, value of feedback, and advocacy.

## References

- Accreditation Council for Occupational Therapy Education. (2018). *2018 Accreditation Council for Occupational Therapy (ACOTE®) Standards and Interpretive Guide*. <https://acoteonline.org/accreditation-explained/standards/>.
- American Occupational Therapy Association. (2020). *ACOTE Accreditation*. <https://www.aota.org/Education-Careers/Accreditation.aspx>
- American Occupational Therapy Association. (2021A). Standards of practice for occupational therapy. *American Journal of Occupational Therapy*, 69(Suppl. 3), 6913410057. <http://dx.doi.org/10.5014/ajot.2015.696S06>
- American Occupational Therapy Association. (2021B). Guidelines for supervision, roles, and responsibilities during the delivery of occupational therapy services. *American Journal of Occupational Therapy*, 68(Suppl. 3), S16–S22. <http://dx.doi.org/10.5014/ajot.2014.686S03>
- American Physical Therapy Association. (2011). *Today's physical therapist: a comprehensive review of a 21st-century health care profession*. Alexandria, VA: American Physical Therapy Association.
- American Physical Therapy Association. (2019A). *Commitment to Interprofessional Education and Practice*. <https://www.apta.org/apta-and-you/leadership-and-governance/policies/commitment-to-interprofessional-education-and-practice>
- American Physical Therapy Association. (2019B). *Licensure*. <http://www.apta.org/Licensure/>
- American Physical Therapy Association. (2021). *About PT and PTA Licensure*. <https://www.apta.org/your-practice/licensure/pt-and-pta-licensure>
- American Speech-Language-Hearing Association. (2016). *Scope of Practice in Speech-Language Pathology [Scope of Practice]*. [www.asha.org/policy](http://www.asha.org/policy).
- American Speech-Language-Hearing Association. (2019). *About The CCA*. Council on Academic Accreditation. <https://caa.asha.org/about/>.
- American Speech-Language-Hearing Association. (2020). *Getting Started in Acute Inpatient Rehabilitation*. American Speech-Language-Hearing Association. [https://www.asha.org/slp/healthcare/start\\_acute\\_in/](https://www.asha.org/slp/healthcare/start_acute_in/).
- American Speech-Language-Hearing Association. (2021A). *Evaluating and treating communication and cognitive disorders: approaches to referral and collaboration for speech-language pathology and clinical neuropsychology [Technical Report]*. <https://www.asha.org/policy/tr2003-00137/>
- American Speech Language Hearing Association. (2021B). *Collaboration and Teaming*. <https://www.asha.org/practice-portal/clinical-topics/intellectual->

- disability/collaboration-and-teaming/#:~:text=Consistent with the World Health,and families whom we serve.
- Blaustein, S. H., Horbacewicz, J. S., Lopez, A., Middleton, S. M., Molinsky, R., & Russo, S. (2017). *A collaborative model for interdisciplinary education in speech-language pathology*. American Speech Language Hearing Association. <https://www.asha.org/siteassets/uploadedFiles/A-Collaborative-Model-for-Interdisciplinary-Education-in-Speech-Language-Pathology.pdf>
- Brain Injury Association of America. (2020). *What is the difference between an acquired brain injury and a traumatic brain injury?* <https://www.biausa.org/brain-injury/about-brain-injury/nbiic/what-is-the-difference-between-an-acquired-brain-injury-and-a-traumatic-brain-injury>
- Commission on Accreditation in Physical Therapy Education. (2021). *Accredited PT & PTA Programs Directory*. American Physical Therapy Association. <https://aptaapps.apta.org//accreditedschoolsdirectory/capedirectory.aspx>
- Clarke, D. J. (2013). The role of multidisciplinary team care in stroke rehabilitation. *Progress in Neurology and Psychiatry, 17*(4), 5-8.
- Curran, V., Hollett, A., Casimiro, L. M., Mccarthy, P., Banfield, V., Hall, P., Lackie, K., Oandasan, I., Simmons, B., & Wagner, S. (2011). Development and validation of the interprofessional collaborator assessment rubric (ICAR). *Journal of Interprofessional Care, 25*(5), 339-344.
- Davies, M. L., Schonder, K. S., Meyer, S. M., & Hall, D. L. (2015). Changes in student performance and confidence with a standardized patient and standardized colleague interprofessional activity. *American Journal of Pharmaceutical Education, 79*(5) 1-7.
- Dominguez, D., Fike, D., Maclaughlin, E., & Zorek, J. (2015). A comparison of the validity of two instruments assessing health professional student perceptions of interprofessional education and practice. *Journal of Interprofessional Care, 29*(2), 144-149.
- Duncun, P. W., Zorowitz, R., Bates, B., Choi, J. Y., Glasberg, J. J., & Graham, G. D. (2005). Management of adult stroke rehabilitation care: a clinical practice guideline. *Stroke, 36*, e100-43.
- Edwards, C. M., Newell, J. M., Rich, D. W., & Hitchcock, L. I. (2015). Teaching interprofessional practice: an exploratory course assignment in social work and speech language pathology. *Journal of Teaching in Social Work, 35*(5), 529-543.
- Gillen, G. (2008). *Cognitive and perceptual rehabilitation: Optimizing function*. Elsevier Health Sciences.

- Ghassemi, A. E., & Fabus, R. (2017). An interprofessional education pilot study for nursing and speech-language pathology students. *Iranian Journal of Nursing and Midwifery Research*, 22(6), 497.
- Goldberg, L. R. (2015). The importance of interprofessional education for students in communication sciences and disorders. *Communication Disorders Quarterly*, 36(2), 121-125.
- Graham, L. A. (2013). *Organization of rehabilitation services*. In Handbook of clinical neurology (Vol. 110, pp. 113-120). Elsevier.
- Grand Valley State University. (2021, January 27). *Midwest Interprofessional Practice, Education, and Research Center*. <https://www.gvsu.edu/miperc/>
- Gruss, V., & Hasnain, M. (2020). Building the future geriatrics workforce through transformative interprofessional education and community-engaged experiential learning. *Journal of Interprofessional Education & Practice*, 22, 1-8
- Gresham G.E., Duncan, P.W., Stason, W.B., et al. (1995). *Post-Stroke Rehabilitation. Clinical Practice Guideline, No. 16*. Rockville, Md: US Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research; <https://ntrl.ntis.gov/NTRL/dashboard/searchResults/titleDetail/PB95226890.xhtml>
- Hasnain, M., Gruss, V., Keehn, M., Peterson, E., Valenta, A.L., & Kottorp, A. (2017). Development and validation of a tool to assess self-efficacy for competence in interprofessional collaborative practice. *Journal of Interprofessional Care*. 31(2), 255-262. doi: 10.1080/13561820.2016.
- Health Professions Accreditors Collaborative. (2019). *Guidance on developing quality interprofessional education for the health professions*. Chicago, IL: Health Professions Accreditors Collaborative.
- Hong, S. B. (2014). Inter-professional collaboration: Early childhood educators and medical therapist working within a collaboration. *Journal of Education and Training Studies*, 3(1), 135-145.
- IOM (Institute of Medicine). 2015. *Measuring the impact of interprofessional education on collaborative practice and patient outcomes*. Washington, DC: The National Academies Press
- Interprofessional Education Collaborative. (2016). *Core competencies for interprofessional collaborative practice: 2016 update*. Washington, DC: Interprofessional Education Collaborative.
- Lairamore, C., George-Paschal, L., McCullough, K., Grantham, M., & Head, D. (2013). A case-based interprofessional education forum increases health students' perceptions of collaboration. *Medical Science Educator*, 23(3), 472-481.

- Lie, D. A., Fung, C. C., Trial, J., & Lohenry, K. (2013). A comparison of two scales for assessing health professional students' attitude toward interprofessional learning. *Medical Education Online, 18*(1), 21885.
- Luecht, R. M., Madsen, M. K., Taugher, M. P., & Petterson, B. J. (1990). Assessing professional perceptions: Design and validation of an interdisciplinary education perception scale. *Journal of Allied Health, 19*(2), 181-191.
- Ludwig, D. A., Pawl, B., McGraw, S. L., & Baird, K. (2019). A model of interprofessional education in clinical placements for speech-language pathology and dietetic students. *Perspectives of the ASHA Special Interest Groups, 4*(2), 279-285.
- MacDonald, C., Archibald, D., Trumpower, D., Casimiro, L., Cragg, B., & Jelly, W. (2010). Designing and operationalizing a toolkit of bilingual interprofessional education assessment instruments. *Journal of Research in Interprofessional Practice and Education, 1*(3), 305-316.
- McFadyen, A. K., Webster, V. S., Maclaren, W. M., & O'Neill, M. A. (2010). Interprofessional attitudes and perceptions: Results from a longitudinal controlled trial of pre-registration health and social care students in Scotland. *Journal of Interprofessional Care, 24*(5), 549-564.  
<https://doi.org/10.3109/13561820903520369>
- McFadyen, A., Maclaren, W., & Webster, V. (2007). The Interdisciplinary Education Perception Scale (IEPS): An alternative remodeled sub-scale structure and its reliability. *Journal of Interprofessional Care, 21*(4), 433-443.
- McFadyen, A., Webster, V., & Maclaren, W. (2006). The test-retest reliability of a revised version of the Readiness for Interprofessional Learning Scale (RIPLS). *Journal of Interprofessional Care, 20*(6), 633-639.
- McFadyen, A., Webster, V., Strachan, K., Figgins, E., Brown, H., & McKechnie, J. (2005). The Readiness for Interprofessional Learning Scale: A possible more stable sub-scale model for the original version of RIPLS. *Journal of Interprofessional Care, 19*(6), 595-603.
- Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes.* (2015). Committee on Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes; Board on Global Health; Institute of Medicine.  
<https://www.ncbi.nlm.nih.gov/books/NBK338360/>
- Miller, E. L., Murray, L., Richards, L., Zorowitz, R. D., Bakas, T., Clark, P., & Billinger, S. A. (2010). Comprehensive overview of nursing and interdisciplinary rehabilitation care of the stroke patient: a scientific statement from the American Heart Association. *Stroke, 41*(10), 2402-2448.

- NIH Stroke Scale International*. (1999). <http://www.nihstrokescale.org/>
- Norris, J., Lassche, M., Joan, C., Eaton, J., Guo, J., Pett, M., & Blumenthal, D. (2015). The Development and Validation of the Interprofessional Attitudes Scale: Assessing the Interprofessional Attitudes of Students in the Health Professions. *Academic Medicine*, *90*:1394-1400.
- Orchard, C. A., King, G. A., Khalili, H., & Bezzina, M. B. (2012). Assessment of Interprofessional Team Collaboration Scale (AITCS): Development and testing of the instrument. *Journal of Continuing Education in the Health Professions*, *32*(1), 58-67.
- Orchard, C., Mahler, C., & Khalili, H. (2021). Assessment of the Interprofessional Team Collaboration Scale for Students—AITCS-II (Student): Development and testing. *Journal of Allied Health*, *50*(1), 1E-7E.
- Orchard, C., Pederson, L. L., Read, E., Mahler, C., & Laschinger, H. (2018). Assessment of Interprofessional Team Collaboration Scale (AITCS): Further testing and instrument revision. *Journal of Continuing Education in the Health Professions*, *38*(1), 11-18.
- Parsell, G., & Bligh, J. (1999). The development of a questionnaire to assess the readiness of healthcare students for interprofessional learning (RIPLS). *Medical Education*, *33*(2), 95-100.
- Pechak, C., Summers, C., Schoen, B., Padilla, M., Lara, P., Velasco, J., & Capshaw, S. (2018). Development and preliminary assessment of interprofessional education focused on vulnerable populations. *Journal of Allied Health*, *47*(3), 75E-81E.
- Peranich, L., Reynolds, K. B., O'Brien, S. P., Bosch, J., & Cranfill, T. The Roles of Occupational Therapy, Physical Therapy, and Speech/Language Pathology in Primary Care (2010). *Occupational Science and Occupational Therapy Faculty and Staff Research. 1*. [http://encompass.eku.edu/ot\\_fsresearch/1](http://encompass.eku.edu/ot_fsresearch/1)
- Riskiyana, R., Claramita, M., & Rahayu, G. R. (2018). Objectively measured interprofessional education outcome and factors that enhance program effectiveness: A systematic review. *Nurse Education Today*, *66*, 73-78.
- Schmitz, C.C., Radosevich, D.M., Jardine, P.J., MacDonald, C.J., Trumpower, D. & Archibald, D. (2017). The interprofessional Collaborative Competency Attainment Survey (ICCAS): A replication validation study. *Journal of Interprofessional Care*. *31*(1), 28-34.
- University of Wisconsin-Eau Claire 2020 – 2021 Graduate Catalog*. (n.d.). <https://catalog.uwec.edu/graduate/programs/communication-sciences-disorders/communication-sciences-disorders-residential-ms/>

- University of Wisconsin-La Crosse - 2019-2020 Catalog.* (n.d.).  
<http://catalog.uwlax.edu/graduate/coursedescriptions/pts/>
- University of Wisconsin-La Crosse - 2019-2020 Catalog.* (n.d.).  
<http://catalog.uwlax.edu/graduate/programrequirements/occupationaltherapy/occupational-therapy-ms/#programrequirementstext>
- Weiss, K.B., Passiment, M., Riordan, L., & Wagner, R. (2019). *Achieving optimal interprofessional clinical learning environment: Proceedings from an NCICLE Symposium*. National Collaborative for Improving the Clinical Learning Environment IP-CLE Report Work Group. <http://ncicle.org>.  
Doi:10.33385/NCICLE.0002
- Willard-Grace, R., Hessler, D., Rogers, E., Dubé, K., Bodenheimer, T., & Grumbach, K. (2014). Team structure and culture are associated with lower burnout in primary care. *The Journal of the American Board of Family Medicine*, 27(2), 229-238.
- World Health Organization. (2010). *Framework for action on interprofessional education & collaboration practice*. Health Professions Networks Nursing & Midwifery Human Resources for Health.  
[https://apps.who.int/iris/bitstream/handle/10665/70185/WHO\\_HRH\\_HP\\_N\\_10.3\\_eng.pdf;jsessionid=FE83040388AC9683BEFBDC0571A406F1?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/70185/WHO_HRH_HP_N_10.3_eng.pdf;jsessionid=FE83040388AC9683BEFBDC0571A406F1?sequence=1)

## **Appendix A - The IPEC Core Competencies (IPEC, 2016)**

### **IPEC Core Competencies for Interprofessional Collaborative Practice**

*Work with individuals of other professions to maintain a climate of mutual respect and shared values. (Values/Ethics for Interprofessional Practice)*

#### **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 other health professions and the impact these factors can have on health outcomes.

**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.

*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. (Roles/Responsibilities)*

**Roles/Responsibilities Sub-competencies:**

**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 needs 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 within 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.

*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 of disease.*

*(Interprofessional Communication)*

**Interprofessional Communication Sub-competencies:**

**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 (University of Toronto, 2008).

**CC8:** Communicate the importance of teamwork in patient-centered care and population health programs and policies.

*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. (Teams and Teamwork)*

**Team and Teamwork Sub-competencies:**

**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 teamwork.

**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.

**Appendix B – IPECC-SET Survey (Pre and Post)**

- Which program are you in?
  - PT
  - OT
  - SLP
- Are you scheduled to participate in Lab 1 (7:45-9:45) or Lab 2 (9:55-11:55)?
  - Lab 1
  - Lab 2

For the following questions, please rate how confident you are that you can demonstrate the skills below. A slider bar (0-100) will appear to mark your selected rating. Higher ratings indicate higher confidence.

Section A: Please rate how confident you are that you can demonstrate the skills below. A slider bar (0-100) will appear to mark your selected rating. Higher ratings indicate higher confidence.

- Work in cooperation with those who receive care, those who provide care, and other who contribute to or support the delivery of prevention and health services (VE5)
- Communicate consistently the importance of teamwork in patient-centered and community-focused care (CC8)
- Manage ethical dilemmas specific to interprofessional patient/population centered care situations (VE8)
- Place the interests of patients and populations at the center of interprofessional health care delivery (VE1)
- Perform effectively on teams and in different team roles in a variety of setting (TT11)
- Engage other health professionals - appropriate to the specific care situation - in shared patient-centered problem-solving (TT3)
- Recognize how one's own uniqueness, including experience level, expertise, culture, power, and hierarchy within the healthcare team, contributes to effective communication, conflict resolution, and positive interprofessional working relationships (CC7)
- Express one's knowledge, and opinions to team members involved in patient care with confidence, clarity, and respect, working to ensure common understanding of information and treatment and care decisions (CC3)

- Give timely, sensitive, instructive feedback to others about their performance on the team, responding respectfully as a team member to feedback from others (CC5)
- Reflect on individual and team performance for individual, as well as team, performance improvement (TT8)

Section B: Please rate how confident you are that you can demonstrate the skills below. A slider bar (0-100) will appear to mark your selected rating. Higher ratings indicate higher confidence.

- Use process improvement strategies to increase the effectiveness of interprofessional teamwork and team-based care (TT9)
- Describe the process of team development and the roles and practices of effective teams (TT1)
- Use respectful language appropriate for a given difficult situation, crucial conversation, or interprofessional conflict (CC6)
- Forge interdependent relationships with other professions to improve care and advance learning (RR7)
- Choose effective communication tools and techniques, including information systems and communication technologies, to facilitate discussions and interactions that enhance team function (CC1)
- Engage self and others to constructively manage disagreements about values, roles, goals, and actions that arise among healthcare professionals and with patients and families (TT6)
- Use unique and complementary abilities of all members of the team to optimize patient care (RR9)
- Engage in continuous professional and interprofessional development to enhance team performance (RR8)
- Listen actively, and encourage ideas and opinions of other team members (CC4)
- Demonstrate high standards of ethical conduct and quality of care in one's contributions to team-based care (VE7)

Section C: Please rate how confident you are that you can demonstrate the skills below. A slider bar (0-100) will appear to mark your selected rating. Higher ratings indicate higher confidence.

- Recognize one's limitations in skills, knowledge, and abilities (RR2)

- Respect the unique cultures, values, roles/responsibilities, and expertise of other health professions (VE4)
- Act with honesty and integrity in relationships with patients, families, and other team members (VE9)
- Communicate one's roles and responsibilities clearly to patients, families, and other professionals (RR1)
- Embrace the cultural diversity and individual differences that characterize patients, populations, and the health care team (VE3)
- Apply leadership practices the support collaborative practice and team effectiveness (TT5)
- Use the full scope of knowledge, skills, and abilities of available health professionals and healthcare workers to provide care that is safe, timely, efficient, effective, and equitable (RR5)
- Organize and communicate information with patients, families, and healthcare team members in a form that is understandable, avoiding discipline-specific terminology when possible (CC2)
- Share accountability with other professions, patients, and communities for outcomes relevant to prevention and health care (TT7)

Section D: Please rate how confident you are that you can demonstrate the skills below. A slider bar (0-100) will appear to mark your selected rating. Higher ratings indicate higher confidence.

- Communicate with team members to clarify each member's responsibility in executing components of a treatment plan or public health intervention (RR6)
- Develop consensus on the ethical principles to guide all aspects of patient care and teamwork (TT2)
- Develop a trusting relationship with patients, families, and other team members (VE6)
- Integrate the knowledge and experience of other professions - appropriate to the specific care situation - to inform care decisions, while respecting patient and community values and priorities/preferences for care (TT4)
- Explain the roles and responsibilities of other care providers and how the team works together to provide care (RR4)
- Maintain competence in one's own profession appropriate to scope of practice (VE10)
- Use available evidence to inform effective teamwork and team-based practices (TT10)

- Respect the dignity and privacy of patients while maintaining confidentiality in the delivery of team-based care (VE2)
- Engage diverse healthcare professionals who complement one's own professional expertise, as well as associated resources, to develop strategies to meet specific patient care needs (RR3)

**Post-test**

*All questions were used verbatim from the pre-test, with the following additional questions added:*

- Did you participate in person (on the UW-La Crosse campus) or virtually (through Zoom)?
  - In-person
  - Virtually
- Did you act as the patient for one round of the evaluation?
  - First round
  - Second round
  - Did not act as the patient

## Appendix C – Acute Discharge Note

### PA Discharge Note

Patient Name: Edna J. Brown

MR# 9843-9976523

Admit Date:

Discharge Date:

Attending Physician: Mark Jones, MD

Physician Assistant: Sally Smith, PA-C

Consulting Physician: Paul Logan, MD from Neurology

Admit Diagnosis: Acute Ischemic Stroke

Fracture – right scaphoid

Coronary Artery Disease s/p stenting

Hypertension

Heart Failure

Chronic Obstructive Pulmonary Disease History of compression fracture T10

Discharge Diagnosis: Acute Ischemic Stroke

Diabetes Mellitus Type II

Coronary Artery Disease s/p stenting

Fracture – right scaphoid

Hypertension

Heart Failure

Chronic Obstructive Pulmonary Disease

History of compression fracture T10

Hospital Course:

Patient is a 68-year-old female admitted through the ED after suffering an acute ischemic stroke. Patient's husband had found her on the floor unable to move her right side. Upon arrival, the patient was found to have significant weakness of her right side and difficulty speaking. CT demonstrated ischemic infarct in the left middle cerebral artery. Once it had been confirmed that no contraindications were present, TPA therapy was initiated as per stroke protocol. Patient was then admitted to acute care and a neurology consult obtained by Dr. Paul Logan. Her CBC and CMP in the ED revealed labs within normal range except for a glucose of 225. HgbA1C was then ordered, and the result was 7.2.

Therefore, the patient also received a new diagnosis of DM II. Patient was further evaluated during the next few days due to her stroke and significant PMH. Diagnostic studies were ordered. A carotid dopplers revealed 80% reduction of flow in the left

internal carotid. Negative doppler of the lower extremities. Echocardiogram showed EF of 45%, MRI showed hyperintense area consistent with a thrombotic event. Consults were obtained from Physical Therapy, Occupational Therapy, Speech Pathology, and Social Work. The patient improved over the next several days and is ready to transfer to acute care to inpatient rehabilitation. Patient is stable upon discharge. Our service will continue to see patient, as necessary.

## NURSING

### ACUTE CARE DISCHARGE

Confidential Record: Information contained will not be released except when you authorize us to do so

**NAME:** Brown, Edna J

**D**

**ATE:**

**X**

X/XX/2014

Last, First, MI

MR# 9843-9976523

**DOB:** 10/11/1945 **AGE:** 68

**Married** X, **Divorced** \_\_\_\_, **Widowed** \_\_\_\_

**Single** \_\_\_\_, **Life Partner** \_\_\_\_

**Medical Insurance:** Medicare; Blue Cross/Blue Shield

**Dental Insurance:** None

**Monthly Income:** \$2200 Social Security and state payments for foster care of granddaughter

**Are you currently being seen by a physician:** Yes - Dr. Who

#### CHIEF COMPLAINT

**Describe briefly your present medical problems and symptoms:** Husband states: "She fell and when I got her to wake, she couldn't move her right arm or leg or talk right."

**Pain rating (1-10):** 7 – right arm

<b>Patient's goals for discharge:</b> Return home
<b>PAST MEDICAL HISTORY</b>
Surgeries/Hospitalizations (women exclude normal deliveries): Heart stents, 2003; Compression fracture T10, 2006; Kyphoplasty, 2006
<b>List any other serious illnesses or injuries you have had:</b> Hypertension; Congestive Heart Failure; COPD

<b>FAMILY HISTORY</b>				
Family History	Year of Birth	Illnesses	Age at Death	Cause of Death
Father	1920	HTN	60	Farm accident
Mother	1921	Osteoporosis, HTN	88	Stroke
Brothers/Sisters				
#1 F	1939	Breast CA		
#2 M	1942	HTN		
#3 M or F				
Children				
#1 M	1959	HTN		
#2 F	1961			
#3 F	1966			

**Check if you or any close blood relatives (other than those mentioned above) have or had any of the following:**

<b>Self Family (who)</b>	<b>Self Family (who)</b>	<b>Self (who)</b>	<b>Family</b>
X Heart Disease	<input type="checkbox"/> Unusual bleeding after surgery	<input type="checkbox"/> Depression/Nervous Breakdown	
X Stroke (current)	or dental work	X Alcoholism	Uncle
X High blood pressure	X Asthma    Son	<input type="checkbox"/> Migraine headaches	
X High cholesterol	<input type="checkbox"/> Stomach or intestinal problems	X Arthritis	Brother
X Diabetes	<input type="checkbox"/> Thyroid disease	<input type="checkbox"/> Kidney disease	
X Cancer/Tumor daughter	<input type="checkbox"/> Epilepsy	<input type="checkbox"/> HIV Infection	

<b>SOCIAL HISTORY</b>	
<b>Occupation:</b> Retired Salesclerk	
<b>What are your biggest life stressors at this time:</b> “Go home, can I.” “No children here.” “Granddaughter.”	
<b>What do you do for recreation/relaxation/hobbies?</b> Travel to see grandchildren. One grandchild lives in the home.	
<b>Do you live by yourself?</b> No, husband, Frank, and 5-yr-old granddaughter	
<b>Do you have stairs where you live?</b> 3 steps from garage	
<b>Habits/Risk Factors:</b> Tobacco use: X Age started 16    Age Stopped 50 <input type="checkbox"/> Cigarettes 1 pk/day    Cigars ____ Pipe ____ <input type="checkbox"/> Smokeless tobacco/snuff How long: _____ How much: _____	Coffee/Tea/Soda X Cup per day 2 X Caffeinated <input type="checkbox"/> Decaffeinated

<p>Alcohol use:</p> <p><input type="checkbox"/> None</p> <p><input checked="" type="checkbox"/> Seldom</p> <p><input type="checkbox"/> Regularly, amount/how often:</p> <p><input type="checkbox"/> Occasionally excessive</p> <p><input type="checkbox"/> Have sought help</p>	<p>Drug use:</p> <p><input checked="" type="checkbox"/> None</p> <p><input type="checkbox"/> Seldom</p> <p><input type="checkbox"/> Regularly</p> <p><input type="checkbox"/> Occasionally excessive</p> <p><input type="checkbox"/> Have sought help</p>
<p>Safety:</p> <p><input checked="" type="checkbox"/> Use seat belts in vehicles</p> <p><input checked="" type="checkbox"/> Carbon monoxide detectors in home</p> <p><input type="checkbox"/> Home safety evaluation completed by OT,PT, or other: Smoke detectors</p>	<p>Exercise:</p> <p><input type="checkbox"/> Exercise regularly</p> <p><input type="checkbox"/> _____ times per week</p> <p><input checked="" type="checkbox"/> No regular exercise</p>

<p><b>REVIEW OF SYSTEMS:</b> Please check any conditions you are experiencing or have experienced.</p>	
<p>Constitutional:</p> <p><input type="checkbox"/> Unexplained weight loss</p> <p><input checked="" type="checkbox"/> Change in appetite</p> <p><input type="checkbox"/> Sleeping difficulty</p> <p><input type="checkbox"/> Fever/sweats</p> <p><input checked="" type="checkbox"/> Loss of energy</p>	<p>Genitourinary: Foley cath placed 11/30/14</p> <p><input type="checkbox"/> Burning or pain with urination</p> <p><input type="checkbox"/> Increased frequency of urination</p> <p><input type="checkbox"/> How often do you get up at night to urinate? _____ times</p> <p><input type="checkbox"/> Unable to control bladder</p> <p><input type="checkbox"/> Blood in urine</p> <p><input type="checkbox"/> Unable to start stream or weak stream</p> <p><input type="checkbox"/> Any venereal/sexually transmitted disease</p> <p><input type="checkbox"/> Kidney stones</p>

<p>Skin:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Rashes or changes in color</li> <li><input type="checkbox"/> Persistent itching</li> <li><input type="checkbox"/> Moles that have changed</li> <li><input type="checkbox"/> Bruise easily</li> <li><input checked="" type="checkbox"/> Sores</li> </ul> <p>Location: <u>Rt outer malleolus R/T</u></p> <p><u>AFO</u></p> <p>Healing : <u>yes</u></p> <p>Previously: _____</p>	<p>Musculoskeletal: Rt-sided weakness</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Problems with strength</li> <li><input checked="" type="checkbox"/> Problems reaching overhead</li> <li><input checked="" type="checkbox"/> Problems picking things up from floor</li> <li><input checked="" type="checkbox"/> Pain in bones or joints</li> <li><input type="checkbox"/> Muscle pain</li> <li><input type="checkbox"/> Joints that swell</li> <li><input type="checkbox"/> Phlebitis or inflamed leg veins</li> </ul>
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<p>Eyes:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Loss of vision</li> <li><input type="checkbox"/> Blurring or double vision</li> <li><input type="checkbox"/> Eye pain</li> <li><input checked="" type="checkbox"/> Wears glasses</li> </ul>	<p>Endocrine:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Thyroid problems</li> </ul>
<p>Ears, Nose and Throat (ENT)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Hearing loss</li> <li><input type="checkbox"/> Ringing in ears</li> <li><input type="checkbox"/> Ear Pain</li> <li><input type="checkbox"/> Frequent nosebleeds</li> <li><input type="checkbox"/> Sinus trouble</li> <li><input type="checkbox"/> Constant nasal congestion or runniness</li> <li><input type="checkbox"/> Persistent sore throat</li> </ul>	<p>Gastrointestinal (G)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Nausea/vomiting</li> <li><input type="checkbox"/> Vomited blood or “coffee ground” material</li> <li><input checked="" type="checkbox"/> Heartburn or indigestion</li> <li><input type="checkbox"/> Abdominal pain</li> <li><input type="checkbox"/> Constipation or diarrhea</li> <li><input type="checkbox"/> Bloody or black bowel movement</li> <li><input type="checkbox"/> Changes in bowel movements</li> </ul>

<p><input checked="" type="checkbox"/> Voice changes or hoarseness</p> <p><input checked="" type="checkbox"/> Trouble swallowing</p>	<p><input type="checkbox"/> Pain during or after bowel movement</p> <p>yellow jaundice</p> <p><input checked="" type="checkbox"/> Hemorrhoids</p>
<p>Respiratory:</p> <p><input checked="" type="checkbox"/> Chronic cough</p> <p><input type="checkbox"/> Wheezing</p> <p><input type="checkbox"/> Blood in sputum/phlegm</p> <p><input type="checkbox"/> Exposure to TB</p> <p><input type="checkbox"/> Positive TB Test</p> <p><input checked="" type="checkbox"/> Shortness of breath</p> <p>    <input checked="" type="checkbox"/> Doing your usual work</p> <p>    ___ Awakens you at night</p> <p>    ___ Causes you to cough</p> <p>    ___ Accompanied by wheezing</p>	<p>Cardiovascular:</p> <p><input type="checkbox"/> Pain, tightness or heaviness in your chest</p> <p>    ___ When exerting yourself</p> <p>    ___ When upset or excited</p> <p>    ___ Radiates down the arm</p> <p>    ___ Disappears if you rest</p> <p><input type="checkbox"/> Rapid, slow, or irregular pulse</p> <p><input checked="" type="checkbox"/> Sleep on more than one pillow</p> <p><input type="checkbox"/> Rheumatic fever/heart murmur</p> <p><input type="checkbox"/> Calf pain when walking</p> <p><input checked="" type="checkbox"/> Ankle swelling</p>
<p>Neurologic:</p> <p><input type="checkbox"/> Dizzy spells</p> <p><input type="checkbox"/> Recurrent headaches</p> <p><input type="checkbox"/> Memory loss</p> <p><input type="checkbox"/> Seizures or convulsions</p> <p><input type="checkbox"/> Blindness of one eye</p> <p><input type="checkbox"/> Weakness in any part of your body</p> <p>    <input checked="" type="checkbox"/> Location: Rt. arm and leg</p> <p><input type="checkbox"/> Numbness in any part of your body</p> <p>    <input checked="" type="checkbox"/> Location: rt. fingers</p>	<p>Emotional:</p> <p><input type="checkbox"/> Feel nervous often</p> <p><input checked="" type="checkbox"/> Feel “down in the dumps”</p> <p><input checked="" type="checkbox"/> Worry a lot</p> <p><input checked="" type="checkbox"/> Loss of interests</p> <p><input checked="" type="checkbox"/> Loss of energy or ambition</p> <p><input type="checkbox"/> Considered suicide</p>

<p>Other:</p> <p><input checked="" type="checkbox"/> Anemia</p>	<p>Women:</p> <p><input checked="" type="checkbox"/> Last period <u>1997</u></p> <p><input checked="" type="checkbox"/> Last Pap smear <u>2010</u></p> <p><input checked="" type="checkbox"/> Last Mammogram <u>2010</u></p> <p><input type="checkbox"/> Difficulties with periods</p> <p><input type="checkbox"/> Recent vaginal discharge</p> <p><input type="checkbox"/> Current method of birth control</p> <hr/> <p><input type="checkbox"/> Number of pregnancies <u>4</u></p> <p><input type="checkbox"/> Number of miscarriages <u>1</u></p> <p><input type="checkbox"/> Number of live births <u>3</u></p> <p><input type="checkbox"/> Bleeding after menopause</p> <p><input checked="" type="checkbox"/> Hot flashes</p> <p><input type="checkbox"/> Breast lump</p> <p><input type="checkbox"/> Breast pain</p>
<b>PREVENTIVE MEDICINE</b>	
<p>Immunizations:</p> <p>I had my last vaccine in (please enter year): <u>2010</u></p> <p><input type="checkbox"/> Tetanus <u>Don't know</u></p> <p><input checked="" type="checkbox"/> Pneumonia <u>3/2014</u></p> <p><input type="checkbox"/> Hepatitis A _____</p> <p><input type="checkbox"/> Hepatitis B _____</p> <p><input checked="" type="checkbox"/> Flu <u>10/2014</u></p> <p><input type="checkbox"/> Do not know</p>	<p>Screening Exams:</p> <p>I had the following screening exams in (please enter year):</p> <p><input type="checkbox"/> Bone density _____</p> <p><input type="checkbox"/> Colonoscopy/color cancer screening</p> <hr/> <p><input type="checkbox"/> Prostate cancer screening (men only)</p> <hr/> <p><input checked="" type="checkbox"/> Do not know</p>

<p>Dental:</p> <p>Date of last exam: <u>Long time ago; don't know</u></p> <p><input type="checkbox"/> Pain or other problems in mouth at this time</p> <p><input checked="" type="checkbox"/> Difficulty, speaking, chewing, or swallowing</p> <p><input type="checkbox"/> Limit types of food you eat because of problems with teeth or dentures</p> <p><input type="checkbox"/> Mouth pain due to sensitivity to sweets, hot or cold</p> <p style="padding-left: 20px;">Temperatures, or biting or chewing</p> <p><input type="checkbox"/> Lumps or sores in mouth</p> <p><input type="checkbox"/> Bleeding gums</p>	<p>Risk for Falls:</p> <p><input checked="" type="checkbox"/> Have you fallen in the last 6 months</p> <p style="padding-left: 40px;">Number of times: <u>1</u></p> <p><input checked="" type="checkbox"/> Trouble with balance</p> <p><input type="checkbox"/> Dizziness:</p> <p style="padding-left: 40px;"><input type="checkbox"/> Sitting</p> <p style="padding-left: 40px;"><input type="checkbox"/> Standing</p> <p style="padding-left: 40px;"><input type="checkbox"/> Walking</p> <p><input checked="" type="checkbox"/> Uses a cane or walker</p> <p style="padding-left: 40px;">Date trained: _____</p> <p style="padding-left: 40px;">Where trained: _____</p> <p><input checked="" type="checkbox"/> Trouble getting in or out of bed</p> <p><input checked="" type="checkbox"/> Trouble getting in or out of a chair</p>
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<b>MEDICATIONS</b>				
Prescription Medications, OTC Drugs, Herbal Preparations	Dose or Strength	How often do you take this medication?	How long have you been taking this medication?	What do you take this medication for?
Lasix	40 mg	Daily	2002	Water pill
Digoxin	125 mcg	Daily	2003	Heart
Lortab	5/325	Q 4-6 hr. prn	Long time	Back pain
K Dur	10 meq	BID	2002	Don't know
Avapro	150 mg	Daily	2002	Blood pressure
Coated aspirin	325 mg	Daily	2009	Heart

Lipitor	40 mg	Daily	2009	High Cholesterol
Protonix	40 mg	Daily	2009	Stomach
Glucophage	500 mg	BID	2005	Diabetes

**Medication allergies:** NKA

**Other allergies:** None

**Other Findings:** Edna Brown is a 68-year-old white female who was admitted 5 days ago with a left Middle Cerebral Artery infarct resulting in right sided weakness, aphasia, and dysphagia. She fractured her right wrist when she fell so she has a cast on her rt. hand and forearm. Rt fingers have brisk cap refill, warm et pink without numbness or tingling. She is alert and oriented x 3. Rt arm and leg are weak. She is right-handed. Her lungs are coarse. She has a non-productive cough. She has DOE. Apical pulse is regular at 74. Abdomen is soft and non-distended with active bowel sounds. Her last BM was yesterday, soft formed, brown. She has a 16 FR foley catheter that was inserted on admission. She has BLE non-pitting edema and also edema in her right fingers. She has a stage II ulcer on her rt outer malleolus, circular, approximately 1.5 cm in size thought to be related to her AFO. It is covered by Duoderm. Oral mucosa is pink, intact et dry. She is able to have thin liquids with meals but needs reminders to take breaks and swallow twice. Has been eating 50 to 75% of trays. Has been taking most pills crushed in applesauce. She is often withdrawn with little eye contact or interaction. Expresses fear that she will not be able to care for herself independently at home. Teary at times. Was started on Zoloft 2 days ago for possible depression. Was raised Catholic, but currently is not going to any church. 2:1 transfer. Has PT, OT, and Speech.

She has a history of Type 2 Diabetes . She was initially being covered by sliding scale insulin but is now back on her Glucophage. She demonstrates some emotional lability and is often teary. Her husband thinks it's because it's overwhelming for her with the stroke and wanting to be home.

<b>Weight:</b> 150 lbs.	<b>Height:</b> 66 Inches	<b>Pulse:</b> 72 R
<b>Blood Pressure:</b> 150/82		<b>Respiration</b>
<b>rate:</b> 16		
<b>Temperature:</b> 98.6 F		

**LABORATORY REPORT**PATIENT NAME: Edna J. BrownRECORD #: 9843-9976523

A

GE: 68

Date: xx/xx/2014 0500

**CBC**

<b>TEST ORDERED</b>	<b>RESULT</b>	<b>NORMAL RANGE</b>
WBC	6.2 K/UL	4.3-10.9
RBC	4.34 M/uL	4.10-5.20
HGB	10.0 gm/dl	13.0-17.0
HCT	28.0%	35.0-45.0
MCV	89.9 Fl	80.0-98.0
MCH	31.6	27.3-32.7
MCHC	33.5%	31.0-36.0
Platelet	320 K/UL	140-420
Serum Albumin	1.9 gm/dl	3.7-5.6
Prealbumin	18 mg/dl	16.0-35.0
Glucose	226	70-110
Hgb A1c	7.2	4- 5.9
Serum Creatinine	1.3	<1.5
Sodium (NA+)	138 mEq/L	135-145
Potassium (K+)	3.2 mEq/L	3.5-5.0
INR	0.9	1- 2
PTT	33	25 - 35
Glucose (fasting)	105 mEq/L	<110
Digoxin level	1.5 ng/mL	0.8-2.5 ng/mL

**FINGERSTICK BLOOD****GLUCOSE**

0730	1130	1730	2100		
114	256	325	301		

**TEST ORDERED xx/xx/2014**

**Head CT:** Impression: Large area of hyperdensity in area of left middle cerebral artery consistent with ischemic infarct.

**Carotid Doppler:**

Impression: There is narrowing of the left internal carotid artery with an 80 % reduction in flow. Right internal carotid artery shows 30% reduction in flow.

**BLE Doppler:**

Impression: No irregularities in flow noted in either leg. Normal bilateral lower extremity Doppler.

**ECHO: xx/xx/2014**

Impression: Mild stenosis (1.3 cm<sup>2</sup>) of aortic valve. Ejection fraction of 45 %.

**Rt Wrist: xx/xx/2014**

Impression: Simple fracture of the right scaphoid.

**FSA: xx/xx/2014**

Impression: Laryngeal penetration with consecutive swallows of thin liquids and a minimally delayed swallow reflex.

**MRI xx/xx/2014**

Impression: Hyperintense area, 3mm x 4 mm in Broca's area consistent with a thrombotic stroke.

**EKG xx/xx/2014 R/O Afib**

Normal Sinus Rhythm

## Physical Therapy Discharge Summary

Patient Name: Edna J. Brown  
Record #: 9843-9976523  
Start of Care Date: Three days ago  
Discharge Date: Today  
Number of Session: 4

### Precautions

Non-weight bearing for right hand or forearm.

### Subjective

Patient is a 68-year-old female who experienced an ischemic stroke affecting the left middle cerebral artery five days ago. The patient's husband reports walking into the family room and finding her on the ground. The patient could not speak and had difficulty moving her right arm and leg. Patient was taken to the emergency department where a head CT scan revealed a blockage in the left middle cerebral artery. The patient also suffered a right fractured scaphoid during the fall that was treated with casting.

Prior to admission patient tended to be inactive. She liked to visit with friends and keep up with housework. Patient was a community ambulatory and drove a car without restrictions. Her 5-year-old granddaughter lives in the home.

Throughout therapy sessions patient had difficulty speaking due to expressive aphasia. Due to homonymous hemianopsia, therapist had to stand on left side of patient or give cues to get patient to turn head to the right. Patient was able to follow commands and appeared to understand all communications. Most of history was obtained from patient's husband. Husband reports they live in a multilevel house with three steps into the house from garage with a railing on the right side going up the steps. There are 14 steps up to the master bedroom and full bath. One room on the first floor could be converted to a bedroom as needed. The husband is unsure if a wheelchair will fit in the bathroom due to the age of the home.

Patient had a flat affect during all therapy sessions. Husband reported that the patient was not acting like herself over the last month. Her family doctor stated she might have depression. No interventions were implemented for the depression. Therapist is unsure of how much the aphasia is affecting patient's behavior versus underlying depression.

Patient currently has a Foley catheter for bladder emptying. Patient appears to have control of bowels at this time. She had one episode of fecal incontinence, but this was because difficulty with nursing staff understanding her. After bowel program initiated, no further problems.

### Objective

The four sessions of physical therapy focused on transfers, gait training, facilitation of activity on the right side of the body, and patient and family education. Listed below is patient's performance during last session.

HR 80 bpm; RR 17, BP 120/75, and SaO<sub>2</sub> 99 at rest. Orthostatic hypotension experienced during initial examination during transfers (BP decreases to 100/60), but no further incidents.

Stage 2 pressure ulcer on right lateral malleolus from wearing an AFO. AFO was left on by mistake for over 12 hours.

*Transfers:* Bed mobility – moderate assistance

Supine to sit – maximum assistance

Sit to stand – moderate assistance

Stand pivot transfer from w/c to/from bed – moderate assistance

*Gait:* Ambulates 10 meters in 80 seconds (0.125 m/s), minimal assistance of one for safety and assistance from another therapist for proper placement of right lower extremity. Use of front wheeled walker with platform on the right side to protect right wrist. During stance phase on right, demonstrates a Trendelenburg pattern, decreased weight bearing, and hyperextension of knee. During swing phase on right, demonstrates decreased hip flex and foot drop. Patient is SOB after the 25-foot walk.

*ROM:* WNL AROM on left arm and leg. Right UE AROM: Patient has approximately 60 degrees of abduction and flexion in sitting position. Patient flex elbow approximately 30 degrees. Demonstrates synergistic movement in right upper extremity during elbow ROM testing. Unable to test motion in wrist or fingers due to cast. Right LE AROM: WFL except ankle dorsiflexion which demonstrates no active motion. PROM on right upper and lower extremity WFL.

*Strength:* Strength on left side of body ranges from 4-4+/5. Patient unable to take any resistance during muscle testing on right UE. Right shoulder abduction and flexion 2-/5. Right elbow flexion and extension 2/5. Right hip flexion 3+/5, knee extension 3+/5, knee flexion 3/5, dorsiflexion 1/5, plantar flexion 3/5.

*Tone/Spasticity:* Modified Ashworth Scale = 2 right biceps, 1+ right plantar flexors

*Sensation:* Proprioception absent at the right great toe, impaired at the ankle and knee. Absent at right thumb, impaired at wrist, intact at elbow and shoulder. Sharp/dull sensation intact throughout the right upper and lower extremity.

*Pain:* With PROM on right shoulder past 110 degrees, patient appears to be in pain. Patient unable to give a number. Spouse reports that evening nursing assistant was rough on patient last night when changing her bed.

*Balance:* Patient is able to maintain sitting static balance with SBA. She is unable to reach outside her base of support in sitting. She can stand with CGA while using walker for support. Patient requires minimal assistance to maintain standing balance if no assisted device is provided. Postural assessment scale for stroke patients score (PASS) = 16/36; Berg Balance Scale = 6/56 (see attached sheet for details)

*Education:* Throughout sessions patient was encouraged to use right arm as much as possible. Patient also encouraged to turn head to right and scan room as much as possible.

#### Assessment

Patient currently presents with deficits in right side active ROM and strength. Patient has activity limitations in transfers and gait that are affecting ability to participate in daily activities. Patient would benefit from inpatient rehabilitation to regain function.

#### Plan

Patient will be discharged from the acute care setting. Therapy services will be started again at inpatient rehabilitation.

## Occupational Therapy Discharge Summary

Client Name: Edna J. Brown  
Record #: 9843-9976523  
Start of Care Date: 3 days ago  
Discharge Date from Acute: today  
Number of Session: 3 (1 eval, 2 treatment)

### Precautions

Non-weight bearing through right hand and forearm. Fall precautions.

### Subjective

OT Eval initiated 3 days ago. The client is a 68-year-old Catholic female who experienced an ischemic stroke affecting the left middle cerebral artery on 4 days ago. The client's husband reports walking into the family room and finding her on the ground. The client could not speak and had difficulty moving her right arm and leg. Client was taken to the emergency department where a head CT scan revealed a blockage in the left middle cerebral artery. The client also suffered a right fractured scaphoid during the fall that was treated with casting. The client received TPA for the left MCA blockage which successfully restored bloodflow to the area.

### Occupational Profile

The client is a retired salesclerk. She is married. Her adult children live out of state. Prior to admission, she tended to be inactive. She liked to visit with friends, watch "her shows", and go out to eat. She was able to complete light housework chores independently and was independent in her activities of daily living. Prior to the stroke, she drove, shopped, and walked about in the community without assistance. She likes to play cards and go to the gambling boat. The client lives with her husband in a multi-level home with three steps into the house from the garage with a railing on the right side going up the steps. There are 14 steps up to the master bedroom and full bath. Her 5-year-old granddaughter Kayla also lives in the home.

Throughout therapy sessions, the client had difficulty speaking due to expressive aphasia. Most of the history was obtained from the client's husband. The client demonstrated a flat affect during all therapy sessions. She was tearful at times. The husband reported that the client was not acting like herself over the last month. Her family doctor stated she might have depression.

### Objective

The three sessions of occupational therapy focused on assessment, transfers, sitting balance, and light ADL activities in sitting. Listed below is the client's performance during the last session.

*Bowel/Bladder:* Client currently has a Foley catheter for bladder emptying. Client appears to have control of bowels at this time. Dependent for voiding in the toilet.

*Bed Mobility/Transitional movements:* Scooting side to side- moderate assistance x1  
 Rolling- moderate assistance x1  
 Supine to sit- moderate assistance x1  
 Sit to Stand- moderate assistance x1

*Functional Transfers:* Sitting edge of bed to chair-moderate assistance. X1  
 Toilet transfer-mod assist x1  
 Tub/Shower transfer-max assist x1

*Functional Mobility:* Minimal Assistance from bed to bathroom with FWW (approximately 20 feet),  
 platform on right side. Shortness of breath noted.

*Endurance/Activity Tolerance:* Poor. Client demonstrates mild SOB engaging in light grooming activities with assist. Requires set-up secondary to non-functional right hand. Requires occasional verbal cues for repeated swallows with thin liquids. On mechanical soft diet. Requires frequent verbal cues to finish meals. She frequently stops and requires redirection to the task.

*Oral hygiene:* Moderate Assistance, seated  
*Grooming:* Moderate Assistance, seated  
*Upper Body Dressing:* Maximal Assistance  
*Lower Body Dressing:* Dependent  
*Bathing:* Maximal Assistance  
*Toileting:* Maximal Assistance  
*IADLs:* Client is dependent for all IADL activities.

*Vision/Visual Perception:* Some visual impairment. Patient is having some difficulty with visual scanning within  
 the environment during ADL and grooming tasks.

*Cognition:* Unable to focally assess at this time secondary to aphasia. During treatment sessions, client appears to understand 1 step directions 100% of the time; 2 step directions 80% of the time. She demonstrates motor delay during assisted upper body dressing and oral hygiene/grooming activities and may have a mild apraxia.

*Psychosocial:* Client is slow to engage in activities and demonstrates a flat affect during treatment sessions.

She was tearful during the last session of OT. Her husband stated that his wife used to enjoy listening to country music and cooking for the family in addition to playing cards and going to the gambling boat. She also enjoys collecting frog sculptures.

*ROM:* WNL AROM on left arm and leg.

Right UE AROM: Approximately 60 degrees of shoulder abduction and flexion in sitting position. AROM elbow flexion approximately 30 degrees. Right wrist and fingers not tested secondary to cast.

Right LE AROM: within functional limits except for dorsiflexion-no movement. Pt uses AFO.

*Strength:* Strength on left side of body is within functional limits. Right shoulder abduction and flexion poor strength (2-/5). Right elbow flexion and extension poor strength (2-/5).

*Tone:* Modified Ashworth Scale score 2 right elbow flexors.

*Sensation:* Unable to focally assess secondary to expressive aphasia. Client turns head toward right arm in response to light tapping at the shoulder and elbow. Unable to generally assess wrist and hand secondary to cast.

*Pain:* Client grimaces during RUE AAROM at the shoulder and elbow. She is unable to give a number between 0-10.

*Balance:* Sitting static balance is fair. Dynamic sitting balance is poor. She can stand with minimal assistance while using FWW for support. Standing static and dynamic standing balance not tested at this time.

#### Assessment

Client requires significant assistance to complete ADL activities and is dependent for IADL activities secondary to physical deficits, motor planning difficulties, and probable depression. Client would benefit from inpatient rehabilitation to regain function.

#### Plan

Client will be discharged from the acute care setting. Occupational Therapy services will be started again at inpatient rehabilitation for continued assessment of physical, cognitive, and psychosocial functioning and treatment of ADL and IADL impairments in order to maximize her level of functioning.

## Speech-Language Pathology Acute Care Discharge Summary

Patient Name: Edna J. Brown  
Record #: 9843-9976523  
DOB: 10/11/1941  
Start of Care Date: 3 days ago  
Discharge Date: today  
3 sessions (2 assessment and 1 treatment session)

### Subjective

Pt. is a 68-year-old female who had a left cerebrovascular accident four days ago. The MRI results revealed an infarct near Broca's area. She was referred for an aphasia evaluation and a bedside swallow evaluation. The bedside swallow evaluation revealed possible aspiration risk, therefore a video **fluoroscopic swallowing** exam was also completed. Pt. was alert and compliant during the evaluation and treatment session, however she fatigued easily. Prior to admission pt. tended to be inactive. Pt. is married. Her husband reported she enjoys going out to eat each month with her friends and playing cards one time a month with the same group of friends. They have children who live out of state and a 5-year-old grandchild living at home with them. A review of the nursing notes revealed instances of coughing on liquids and difficulty talking.

### Objective

*Vision/Hearing:* The pt. appeared to have adequate hearing acuity. A hearing screening was not conducted. Pt. requires eyeglasses for reading. Physical therapy evaluation report indicated homonymous hemianopsia and Occupational therapy evaluation report indicated the pt. has difficulty with visual scanning within the environment during ADL and grooming tasks.

*Oral/Facial Examination:* Pt. exhibited symmetrical facial features and did not demonstrate signs of facial weakness. Pt. was able to prolong /ah/ for 15 seconds but was delayed in the initiation of the task. Pt was able to prolong /s/ for 15 seconds with no delay in initiation of the task. Her voluntary cough was also delayed in initiation. Pt. exhibited signs of verbal apraxia during diadochokinetic tasks (i.e., rapid productions puh tuh kuh).

*Swallowing:* During the videofluoroscopic swallowing evaluation, the pt. coughed during and after consecutive swallows of thin liquid (ice water). There were some instances of "wet" vocal quality following consecutive swallows of thin liquid. She was able to chew, organize, and transfer a bolus without signs of premature spillage or oral stasis on a mechanical soft diet. Swallow time was minimally delayed for thin liquid (1.3 seconds

average). She did have some difficulty with fatigue on a regular diet. The video fluoroscopy exam revealed laryngeal penetration with consecutive swallows of a thin liquid and a minimally delayed swallow reflex but no aspiration. Penetrated material was consistently cleared following a cough. Pt. is currently on a mechanical soft diet with thin liquids. It is recommended that she take one sip at a time and avoid consecutive swallows of thin liquids. Pt. is aware of and demonstrates an understanding of this recommendation. However, she has been observed intermittently using consecutive swallows when drinking thin liquids during meals.

*Language:* Portions of the Boston Diagnostic Aphasia Examination Short Form- Revised were administered. Pt. presents with a moderate to severe Broca's aphasia and verbal apraxia.

### **Verbal Expression**

Pt. was able to write one-word responses in a notebook in instances where she could not verbalize what she wanted to express. For example, when pt. was asked for her address, she was not able to verbally respond but was able to write her street name and state. When the pt. was asked to describe a picture she was able to say 'boy' and 'cookie.' Pt. was able to repeat days of the week and count from 1-10 but verbal production was slow and effortful. Pt. was able to repeat monosyllabic words with some distortion. Pt. was unable to repeat two syllable words intelligibly. Pt. was able to verbally name 3 out of 5 objects.

### **Auditory Verbal Comprehension**

Pt. was able to follow two step simple commands. For example, point to the ceiling and the floor. Pt. was unable to consistently follow three step commands. For example, put the pen on the card and put it back. Pt. was able to answer yes/no general knowledge questions (Did the South win the Civil War) but had difficulty comprehending information in a short simple paragraph that was read to her.

### **Reading Comprehension**

Pt. was unable to read aloud. Pt. was able to answer yes/no and multiple-choice questions following reading simple short paragraphs to herself. The pt reported needing to read the paragraph at least three times before attempting to answer questions.

### **Written Expression**

Pt. was able to write her name. She was also able to write the names of objects in 7 out of 10 attempts. She was unable to write short sentences when asked to describe a picture.

### Assessment

Pt. presents with a moderate to severe Broca's aphasia and concomitant verbal apraxia. Pt. has difficulty verbally naming items and answering questions. Expressive communication is currently most efficient when using a picture board or when given a simple multiple-choice question (i.e., Do you want Sprite or Pepsi?). Pt. has some delay in her swallow initiation. Her prognosis is excellent due to her cooperation with treatment, awareness of deficits, and no apparent cognitive or memory deficits.

### Plan

Patient will be discharged from the acute care setting. Therapy services will be started again following patient admission to inpatient rehabilitation. Pt. and her spouse are adamant about her going home as opposed to inpatient rehabilitation.

## **Social Work Discharge Summary**

### Subjective:

Edna Brown is a 68-year-old, woman who was recently admitted to the hospital for a stroke. The patient is a retired retail salesclerk who lives at home with her husband Frank in a two-level home with three steps into the house and 14 to the bedroom and bath. The patient has 3 children who all live out of state. Prior to admission, patient states that she was mostly inactive at home, performing light housework though completely independent with her activities of daily living (ADL's). Patient states that prior to admission she enjoyed playing cards, watching her shows, and going to the gambling boats.

Due to the stroke, and subsequent aphasia, additional information was provided by her husband. He states that, during the past month, the patient has not been acting like herself. He said the patient has been feeling "down in the dumps," she has been worrying a lot, and she has experienced a loss of energy, ambition, and interest in doing things.

Patient does not have advance directives; however, she is receptive to talking with pastoral care to complete them. Patient said she was brought up Catholic; however, she does not attend church on a regular basis and indicates no specific church affiliation at this time. She stated that she wanted to talk to a priest while in the hospital. Patient experiences significant positive support from husband and children, and strong network of neighbors and friends. However, as previously stated, the patient's children all live out of town.

### Objective:

The patient shows symptoms of depression including sadness, feelings of hopelessness, withdrawal, and guilt that she allowed this stroke to happen. She is tearful and anxious

when talking about discharge needs and continuing therapies. In talking with the patient, she expressed apprehension that she would not be able to take care of herself when at home independently. The patient's husband questions medical staff regarding whether they can split the pills that she will need to take because they are on a fixed income and he wasn't sure that Medicare would pay for "all of these drugs."

**Assessment:**

Patient will need additional help in discharge planning, as her plan is to go home and not to a skilled nursing facility. Patient will benefit from a psychiatric consultation to assess the degree of her depression and to prescribe appropriate medication and support services. Patient will need home care, community support, and emotional support due to her pre-existing tendency toward depression and the likelihood that the stroke has increased her depression experience. Patient will also benefit from meeting with pastoral care to learn about and complete advance directives.

**Plan:**

Plan is for patient to return home - her stated preference - and continue with outpatient speech, occupational, and physical therapy services. She and her husband have some reservation about allowing strangers into their home but are willing to try in order for her to recover. In addition, she will follow up with a counselor to receive emotional support, address issues of depression, coordinate the monitoring of depression medication, and discuss changes in her life and relationships with family members that have been precipitated by this stroke. Patient may also benefit from exploring CASI services (Center for Active Seniors Services), connecting with a spiritual community and by a referral to a stroke/illness support group. Referral to CASI, to a stroke support group, and for counseling services can be made at discharge.

**Appendix D – Assessment Outline**

Areas to Cover during Evaluation: <i>Remember you only have a short time to complete</i>	Plan: First Evaluation	Plan: Second Evaluation
Subjective:		
Systems Review:		
Cognition		
CN / Oral motor		
Vision/Hearing		
Speech		
Receptive & Expressive Language		
Swallowing		
Sensation/Pain		
Musculoskeletal (informal ROM/strength)		
Coordination		
Comments:		
Objective:		
Tone		
Grooming		
LB Dressing		
Balance		
Transfers		
Gait		
Comments:		

## Practice Documentation (with information from evaluation)

IRF PAI Activity	Level of Assistance	IRF-PAI or FIM Code with Rationale
Putting on/taking off footwear		
Oral hygiene		
Roll left and right		
Chair/bed-to-chair transfer		
Walk 10 feet		

<b>ADMISSION</b>	
<b>Section GG</b>	<b>Functional Abilities and Goals</b>
<b>GG0130. Self-Care</b> (3-day assessment period)	
Code the patient's usual performance at admission for each activity using the 6-point scale. If activity was not attempted at admission, code the reason. Code the patient's discharge goal(s) using the 6-point scale. Use of codes 07, 09, 10, or 88 is permissible to code discharge goal(s).	
<b>Coding:</b> <b>Safety and Quality of Performance</b> - If helper assistance is required because patient's performance is unsafe or of poor quality, score according to amount of assistance provided. <i>Activities may be completed with or without assistive devices.</i>	
06. <b>Independent</b> - Patient completes the activity by him/herself with no assistance from a helper. 05. <b>Setup or clean-up assistance</b> - Helper sets up or cleans up; patient completes activity. Helper assists only prior to or following the activity. 04. <b>Supervision or touching assistance</b> - Helper provides verbal cues and/or touching/steadying and/or contact guard assistance as patient completes activity. Assistance may be provided throughout the activity or intermittently. 03. <b>Partial/moderate assistance</b> - Helper does LESS THAN HALF the effort. Helper lifts, holds or supports trunk or limbs, but provides less than half the effort. 02. <b>Substantial/maximal assistance</b> - Helper does MORE THAN HALF the effort. Helper lifts or holds trunk or limbs and provides more than half the effort. 01. <b>Dependent</b> - Helper does ALL of the effort. Patient does none of the effort to complete the activity. Or, the assistance of 2 or more helpers is required for the patient to complete the activity.	
<b>If activity was not attempted, code reason:</b> 07. <b>Patient refused</b> 09. <b>Not applicable</b> - Not attempted and the patient did not perform this activity prior to the current illness, exacerbation, or injury. 10. <b>Not attempted due to environmental limitations</b> (e.g., lack of equipment, weather constraints) 88. <b>Not attempted due to medical condition or safety concerns</b>	

<b>FIM<sup>®</sup> Instrument Rating Levels</b>	
7 - Complete Independence (timely, safely) 6 - Modified Independence (device)	<b>No Helper</b>
<b>Modified Dependence</b>	
5 - Supervision 4 - Minimal Assist (Subject = 75%+)	<b>Helper</b>
3 - Moderate Assist (Subject = 50% - 74%)	
<b>Complete Dependence</b>	
2 - Maximal Assist (Subject = 25% - 49%) 1 - Total Assist (Subject < 25%)	

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Did you utilize any information/testing procedures from the NIH-SS? How would you score these items on the NIH-SS?

Student Therapist

Signature/Date \_\_\_\_\_

### **Appendix E – Instructions for Standardized Patient**

#### Acting Considerations:

- In bed with gown on, barefoot
- R Hemiparesis (2/5 shoulder/elbow; lower extremity 4/5; dorsiflexion 1/5)
- R scaphoid fracture which is casted/wrapped—non weight bearing on R hand
- R visual field cut (can't see to the right)
- Broca's aphasia (expressive aphasia)
  - Able to respond to yes/no
  - One-word answers
  - Uses notebook to write one-word answers if needed as an aid
- Flat affect, quiet, tearful
- Tone (2-moderate resistance throughout full range) at R bicep and R plantar flexors)
- Pain with R shoulder (flex >110) and elbow ROM (grimaces with pain but unable to give number or describe pain)
- Dysphagia (NPO for thin liquids at therapy)
- Stage 2 pressure ulcer on Right lateral malleolus
- Sensation impaired: proprioception absent in Right great toe and R thumb; impaired at ankle, knee wrist. All other intact.
- Balance: Min A for standing balance without AD; SBA for seated balance
- Transfers: mod to max for bed mobility; mod A for STS and transfers to/from w/c
- Gait: Very slow speed with minimal endurance (~25 feet); Requires assist to advance RLE and for balance

**Appendix F – Second Debrief Questions**

What did you learn about your own roles in this setting?

What did you learn about the roles of other professionals in this setting?

What did you learn about collaboration with other disciplines that will facilitate future interactions?