

## Designing a Novel Interprofessional and Inter-University Education Session for Healthcare Trainees to Improve Interprofessional Practice

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### **Abstract**

*Interprofessional education is widely acknowledged as critical for training successful clinicians, however logistical challenges often interfere with its implementation. The aim of this paper is to describe the procedures developed to enable students in different health professional programs in different geographic regions within the same country to learn about each other's professions and apply this knowledge to optimize outcomes for patients.*

*Principles from the Rehabilitation Treatment Specification System and Universal Design for Learning were combined to design an efficient and effective virtual approach to achieving interprofessional knowledge and collaborative skill outcomes. Application of these principles resulted in a 3-stage approach combining synchronous and asynchronous learning as well as didactic and problem-based learning. This paper describes the design and implementation for speech-language pathology and pharmacy students learning about swallowing disorders, but the procedures are applicable to a broad range of professions and academic content when interprofessional education is the goal.*

**Keywords:** *Interprofessional education; virtual learning; health professions education; problem-based learning; speech-language pathology; pharmacy.*

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## **1. Introduction**

To address the complexity of modern healthcare, it is no longer acceptable to educate health professionals in silos. Adverse patient outcomes and increased health expenditures are a result of fractured health systems, miscommunication, and poor collaboration among health professionals (World Health Organization [WHO], 2010). The “Framework for Action on Interprofessional Education & Collaborative Practice” (WHO, 2010) emphasizes the importance of implementing innovative approaches to teaching and highlights how interprofessional education (IPE) allows students to develop the appropriate skills to become “collaborative practice-ready” healthcare providers. While there are many published collections of IPE competencies (e.g., Canadian Interprofessional Health Collaborative [CIHC], 2010; Interprofessional Education Collaboration [IPEC], 2016), there are two overarching objectives reflected in all: 1) learning about other professions to know when to collaborate and 2) learning with other professions to know how to collaborate.

IPE requires progressively complex learning activities to be contextually relevant, interactive, experiential, and reflective (D’Eon, 2005; McKee, D’Eon, & Trinder, 2013). Outcomes of IPE that meet these criteria include shared leadership, collaboration, communication, and respect for the roles and responsibilities of other health professionals (IPEC, 2016; Guraya & Barr, 2018; van Diggele, Roberts, Burgess & Mellis, 2020). However, logistical challenges such as scheduling and coordinated planning limit the feasibility of implementation (Ward, Zagoloff, Rieck & Robiner 2018), resulting in missed opportunities for meaningful interprofessional training that would enhance the quality of patient care, especially for patients with complex presentations.

One example of a complex medical condition where interprofessional training could enhance efficiency and effectiveness of patient care is swallowing difficulties, also known as dysphagia. Several studies have suggested that at least 40% of patients in acute care present with dysphagia (e.g., Altman, Yu & Schaefer, 2010; Crary, Humphrey, Carnaby-Mann, Sambandam, Miller, & Silliman, 2013; Peñalva-Arigitá, Prats, Lecha, Sansano, & Vila, 2019). If poorly managed, dysphagia can lead to malnutrition, pneumonia and, in some cases, mortality (Carrión, Cabré, Monteis, Roca, Palomera, Serra-Prat, Rofes, & Clavé, 2015; Clavé, Rofes, Carrión, Ortega, Cabré, Serra-Prat, & Arreola, 2012), as well as increased hospital costs, length of stay, and risk of readmission (Attrill, White, Murray, Hammond, & Doeltgen, 2018; Patel, Krishnaswami, Steger, Conover, Vaezi, Ciucci, & Francis, 2018). Through interprofessional collaboration, speech-language pathologists ensure patients are swallowing safely and efficiently, occupational therapists ensure patients have the fine motor skills to self-feed, and dietitians ensure patients are receiving the nutrients they require to thrive. Importantly, pharmacists can also ensure optimal patient outcomes, given their expertise in pharmaceuticals, pharmacology, pharmacokinetics, and medication management strategies. Unfortunately, collaboration between pharmacy and speech-language pathology

students is limited. There are just 12 speech-language pathology and 10 pharmacy programs across all of Canada, with only half being co-located in the same university.

In the fall of 2021, the Pharmacy program at the University of Manitoba in Winnipeg, Manitoba (Canada) partnered with the Speech-Language Pathology (SLP) program at McMaster University in Hamilton, Ontario (Canada) to design and carry out a novel interprofessional and inter-university event. McMaster University does not have a Pharmacy program and the University of Manitoba does not have an SLP program. The goal of the event was to teach students about dysphagia, drug delivery, and the impact they may have on one another. The aim of this paper is to describe the procedures developed to enable students in pharmacy and speech-language pathology programs in different geographic regions to learn about each other's professions and apply this knowledge to optimize outcomes for patients with dysphagia. The IPE event was named "A Tough Pill to Swallow: Dysphagia Management for SLP and Pharmacy Students." While this paper explains the creation of an IPE event specific to pharmacy and speech-language pathology students, the procedures described are applicable to a broad range of professions and academic content when interprofessional education is the goal.

## **2. Methods - Defining Interprofessional Learner Outcomes**

The four authors, two faculty from each program, met to discuss the limitations in current instructional content on dysphagia and medication delivery effects, as well as optimal timing of providing this content. Both primary goals of interprofessional training (learning about the other profession to know when to collaborate and learning with the other profession to know how to collaborate) were deemed important to include. For the SLP program, the optimal timing was identified as early in the final year of the two-year Master of Science program, when students had learned how to assess and treat dysphagia but were just embarking on applying this knowledge in more advanced contexts. For the Pharmacy program, the optimal timing was identified as early in the third year of the four-year Doctor of Pharmacy program, when students have knowledge on the pharmacodynamic and pharmacokinetic drug properties and clinical skills for complex application-based learning. Course schedules were compared to find a week agreeable to each program.

Learner outcomes were categorized as Knowledge Outcomes when they achieved learning about dysphagia, medication delivery, and the roles of each profession. In contrast, Skill Outcomes involved collaborating to enhance care for a patient with dysphagia. Both sets of outcomes were defined in behavioural terms and were equally applicable to students in both programs. The Knowledge Outcomes were to describe various dysphagia management recommendations, describe various methods of medication delivery, explain how delivery methods impact drug effectiveness, and explain how diet texture modification and

medication delivery methods impact each other. The Skill Outcomes were to identify opportunities for and benefits of collaboration between SLP and Pharmacy to optimize a given patient's health and wellbeing, prepare medical chart notes (one for each profession) for a given patient describing the analysis and recommendations that reflect the result of collaborative decision-making, and describe the group process skills required to achieve effective information sharing and problem-solving in patient care discussions.

### **3. Methods - Mapping Instructional Methods onto Learner Outcomes**

Principles from the Rehabilitation Treatment Specification System (RTSS; Hart, Dijkers, Whyte, Turkstra, Zanca, Packel, Van Stan, Ferraro, & Chen, 2019) were used to map the instructional methods onto target learner outcomes. The RTSS emphasizes the importance of instructional “ingredients” matching the desired learning outcomes, such that if changes in Knowledge are required, ingredients include descriptions and explanations, whereas if changes in Skill are required, ingredients include practice. Therefore, didactic instructional methods were selected to achieve the Knowledge Outcomes while problem-based learning methods (Neufeld & Barrows, 1974) were selected to achieve the Skill Outcomes.

In addition, principles from Universal Design for Learning (Center for Applied Special Technology [CAST], 2018) were used to ensure a sufficient variety of instructional approaches were included to support students with varied learning preferences in accessing knowledge via different routes (e.g., didactic vs problem-based) and in having different modalities through which to share their knowledge (e.g., written vs spoken).

The University of Manitoba and McMaster University are separated by more than 2,000 kilometres and one time zone. Fortunately, the coronavirus pandemic had vastly increased the accessibility of and comfort with virtual learning, so the IPE event was completed 100% virtually on the Zoom platform. There were three distinct stages to the IPE event, each one progressively building upon knowledge and skill. Approximately two weeks before the IPE event, students were provided a handout describing the requirements at each stage.

#### ***3.1. Stage 1: Profession-Specific Content Delivered Asynchronously***

Recognizing that each professional group needed an introduction to the basics of the other's knowledge on the topics of dysphagia and medication delivery effects, a 30-minute recorded lecture was prepared for each student group. The Pharmacy program prepared a lecture for the SLP students on the role of a pharmacist, the pharmacist's scope of practice in Canada, and collaboration opportunities. The SLP program prepared a lecture for the pharmacy students that provided an introduction to normal swallowing and the role of speech-language pathologists in dysphagia management. Both lectures were posted on each university's

respective Learning Management System one week before the IPE event so that students could watch them asynchronously at times that suited their schedules.

During this time, the programs pre-arranged the 82 students into ten groups, with the group composition ratio based on the relative number of students in each program.

### ***3.2. Stage 2: Interprofessional Content Delivered Synchronously***

A 1.5-hour synchronous interprofessional lecture was delivered virtually for all students. Instructors from the SLP and Pharmacy programs collaborated on preparing the content. This lecture built upon the knowledge delivered within the asynchronous lectures, with a focus on the role of each profession when managing patients diagnosed with dysphagia, and included relevant research to support evidence-based practice. Highlights from SLP included swallowing assessments, diet texture modification recommendations, and a review of thickened fluids. Pharmacy discussed types of medication dosage forms and their characteristics, emphasized how product manipulation could alter drug delivery and affect patient safety, and proposed a step-by-step process to assess medication management in the patient with dysphagia. The Knowledge Outcomes were reviewed at the end of the didactic portion and students were encouraged to ask questions to ensure the outcomes were achieved.

Upon completion of the lecture and question/answer period, problem-based learning cases were released to the students. Two cases were prepared, with five of the groups assigned to each case. Each profession was assigned homework relating to the case to complete prior to Stage 3. The SLP students were required to interpret the dysphagia assessment results and generate recommendations for appropriate diet modifications and the Pharmacy students were required to review the medication list and consider strategies which could be implemented to ensure appropriate drug delivery for different diet texture constraints.

### ***3.3. Stage 3: Small Group, Problem-Based Learning***

Each of the two cases reflected a different patient population and clinical needs but followed the same template: description of the patient and reason for admission, medical history, pre-admission medications, new medications since admission, and dysphagia assessment results. Both Case A and Case B asked the interprofessional student groups to achieve the same Skill Outcomes, described earlier.

This stage of the IPE event occurred two days after the didactic component. On arrival to the virtual classroom, students were sorted into their small groups and given one hour to discuss the case and document their Skill Outcomes on a shared Google Doc. One Google Doc was prepared for each case, with separate sections for each group to document their results, allowing students with the same case to benefit from other groups' learning. Students were encouraged to use the Help function in the virtual classroom to ask for an instructor to join their group if they had questions, but instructors also rotated through the groups to check in

on their progress. Just over halfway through the small group time, each group was informed of which of the learner outcome results they would be required to present to the large group.

One hour was then allocated for the ten groups to join together as a large group. Four groups (two per case) were assigned to share their findings for the first Skill Outcome (collaboration opportunities). Another four groups were assigned to discuss the second Skill Outcome (chart notes). The two remaining groups (one for each case) spoke to the final Skill Outcome (group process skills). All groups elected representatives from each profession to share their learning to ensure both perspectives were highlighted. Instructors provided input as needed. A final question and answer segment and concluding remarks wrapped up the large group session.

Upon completion of this final segment of the IPE event, informal feedback was solicited to determine student perceptions and learnings from the IPE event. The instructors then met to discuss feedback and plan for the refinement of activities for the following year.

#### **4. Results and Discussion**

The design and implementation procedures for “A Tough Pill to Swallow: Dysphagia Management for SLP and Pharmacy Students” were feasible and resulted in positive feedback from students. The instructors recommend the RTSS- (Hart et al. 2019) and CAST-inspired (CAST, 2018) procedures described in this paper for any programs wishing to collaborate on implementing a virtual IPE event. The procedures were time-efficient during both the development and implementation phases. They also resulted in effective and efficient achievement of all desired Knowledge and Skill Outcomes. This was evidenced via the students’ written work documented in the Google Docs, their oral presentations to the large group at the end of the small group discussions, and the feedback provided immediately post IPE event (van Diggele et al., 2020).

Feedback from the students suggested that they enjoyed the structure of the event, including the staged process and multiple learning modalities (e.g., synchronous and asynchronous components; individual, small group, and large group activities; didactic and problem-based components). Many students described the significance of the learning event as they prepared to embark upon their careers, commenting that they had not understood the critical importance of collaboration between SLP and pharmacy prior to the event. Students also indicated that they now felt comfortable reaching out to initiate collaboration with the other profession and that they understood the tremendous value even a short conversation could have on ensuring optimal management of their patients’ health and wellbeing.

Some suggestions were made to further improve the event for subsequent years. Students recommended a smaller group size to ease interaction in the virtual platform. They also indicated a preference for each group to have its own Google Doc, rather than its own section

within one larger Google Doc, to reduce distraction while documenting their outcomes. Finally, refinements to how information was shared in the large group were suggested to improve the clarity of discussion across the two cases. The instructors additionally decided to review the content provided across each of the three stages, in the context of what was observed from the group discussions and presentations, to ensure duplication is minimized while progressive scaffolding of content is reinforced. With feasibility of the methods confirmed, the next iteration of this IPE event will use the extended version of Kirkpatrick's classic educational outcomes model (Reeves, Fletcher, Barr, Birch, Boet, Davies, McFadyen, Rivera, & Kitto, 2016) to develop a pre- and post-online survey of perceptions of IPE and implementation of collaboration skills, as well as any differences between the undergraduate Pharmacy and graduate SLP student experiences.

## 5. Conclusion

This paper describes procedures developed to enable students in different health professional programs in different geographic regions within the same country to learn about each other's professions and apply this knowledge to optimize outcomes for patients. A series of procedures to address typical logistical challenges, such as time and space issues, while adhering to effective pedagogical approaches, were also presented. A 3-stage approach involving synchronous and asynchronous learning, as well as problem-based learning, increased engagement by allowing students with varied learning preferences to fully participate, and provided multiple opportunities for the instructors to confirm attainment of all Knowledge and Skill Outcomes. A limitation of these procedures is that formal feedback was not solicited from the students. However, this same model can be applied across disciplines to demonstrate and highlight the importance of interprofessional collaboration. Future research will capture formal pre- and post-data to evaluate changes in interprofessional knowledge and skill.

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