

# Clinical Laboratory Science and Physician Assistant Students Interprofessional Education Event; Learning From Each Other

MARYANNE J STEWART, COURTNEY DOTY, RONETTE CHOJNACKI,  
ELIZABETH MCQUILLEN

## ABSTRACT

Interprofessional education is a collaborative learning strategy for professionals and students that enables the expansion of their skills and identities in health care. The primary aim of interprofessional education is to meet the complex demands of patients while decreasing medical errors, thereby delivering better patient outcomes. An interprofessional education session was developed for clinical laboratory science (CLS) and physician assistant (PA) students using patient case scenarios coupled with laboratory testing. Forty-five PA and 15 CLS students participated in this session sharing perspectives and practice knowledge. A modified survey, based on the Team Strategies and Tools to Enhance Performance and Patient Safety, measured attitudes towards working with other healthcare providers, including communication, respect, and ethics. This survey was administered to these student groups before and after the educational session electronically via the learning management system (LMS) Canvas. Thirty-three PA and 13 CLS students completed both pre- and postsurveys. All aspects of patient-centric care and professionalism increased after the session. The greatest significant impact reported was in respectful communication wherein the importance of understanding the work of other healthcare professionals helped decrease information gaps in health care.

**ABBREVIATIONS:** AHRQ - Agency for Healthcare Research and Quality, CLS - clinical laboratory science, DoD - Department of Defense, IPE - interprofessional education, LMS - learning management system, PA - physician assistant, PAS - PA studies, TeamSTEPPS - Team Strategies and Tools to Enhance Performance and Patient Safety.

**INDEX TERMS:** interprofessional education, collaborative learning, patient-centric teams.

*MaryAnne J Stewart, Wayne State University*

*Courtney Doty, Wayne State University*

*Ronette Chojnacki, Wayne State University*

*Elizabeth McQuillen, Wayne State University*

**Address for Correspondence:** *MaryAnne J Stewart, Wayne State University, [gf9807@wayne.edu](mailto:gf9807@wayne.edu)*

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## INTRODUCTION

Healthcare education programs of the past typically focused on their own curriculum and role within the healthcare setting. While this is pertinent to learning their trade, being focused on just the didactic segments may lead to negative stereotypes of other professions. The lack of knowledge or understanding between healthcare personnel can lead to miscommunication and mistrust.<sup>1</sup> Interprofessional education (IPE) has brought, and continues to bring, familiarity within the healthcare disciplines to better serve patients. IPE has gained more acknowledgment and credibility in the last few decades in higher education. In health care, IPE aims for 2 or more professions to collaborate and communicate for improved quality of patient care.<sup>2</sup> Studies show that multiprofessional collaboration aids in the removal of barriers and misconceptions of other professions.<sup>2</sup> IPE provides skills to work effectively with others that help foster positive attitudes and communication between health professions.

The career of a physician assistant (PA) is born on the concept of collaboration. According to the American Medical Association, all 50 states require a physician-PA partnership to varying degrees.<sup>3</sup> While this concept is understood and emphasized in most PA programs, the importance of collaborations with a variety of health-related fields within medicine has not always been available or explored in the PA curriculum.<sup>4</sup> Studies have shown that PA students recognize the importance of IPE and admit to learning about other professional roles during these opportunities.

In the past, interprofessional activities have been well-documented between PA and pharmacy students where this has demonstrated the improvement of patient outcomes and perspectives of interprofessional roles.<sup>5</sup> Little to no research has been done on the collaboration of PA students and clinical laboratory science (CLS) students. Our study aim is the exploration of the suspected gap in IPE between these 2 groups of learners in a collaborative setting.

Clinical laboratory scientists have no direct patient contact role within a healthcare setting. As such, many disciplines are unaware of the rigorous courses CLS students

take and the knowledge they possess that guides practitioners, such as PAs, in the patient's diagnosis and treatment. Weber and Mirza discuss removing educational barriers and "clinical siloing" when CLS students are involved in IPE events with other healthcare practitioners.<sup>6</sup> With healthcare practitioners, such as PAs, it is important to include IPE early in the student's training to understand other healthcare disciplines, improve their outlook, and foster collaboration. IPE events that are successful are those where learners observe others in action.<sup>1</sup> These interprofessional collaborations have resulted in decreased medical errors by resolving conflicts as they arise. Healthcare practitioner student curriculums that provide an environment with IPEs can only benefit the care of patients.<sup>7</sup>

## BACKGROUND

During the winter semester of 2023, first-year CLS and second-year PA students at Wayne State University participated in an IPE session that provided an opportunity to collaborate on 2 patient case studies. The students discussed faculty-developed case studies that included an active laboratory component. The CLS students demonstrated and explained several diagnostic testing techniques pertaining to each case study, while PA students observed and later participated in performing these tests. In turn, the PA students approached the cases from their direct patient care understanding of how to engage their expertise to maximize patient care. The activity goals were to promote and learn from each discipline to improve patient outcomes. The faculty determined the outcomes of the IPE session:

- (1) Understand and respect the roles and responsibilities of other healthcare professions related to patient care;
- (2) Recognize how respecting all team members is vital to effective communication; and
- (3) Acknowledge how a patient-centric team leads to improved medical outcomes.

## METHODS

This project was submitted to the Wayne State University Internal Review Board for exemption status and was approved (2023 075). For this event, a pre- and postsession survey was used based on the Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) information. TeamSTEPPS is a system used by healthcare professionals that was developed by the Department of Defense and the Agency for Healthcare Research and Quality. TeamSTEPPS' goal is improving patient safety and communication among all healthcare professionals.<sup>8</sup> The goal is achieved by increasing cognizance of other healthcare roles and resolving conflicts that arise.

An IPE session was prepared for 60 first-year students: 45 PA students and 15 CLS students. Prior to the event, all students were required to take a presurvey through Wayne State's LMS, Canvas, which assessed the students' attitudes towards working with other healthcare providers, including communication, respect, ethics, and caring.

At the IPE event, the students were divided into 9 groups, each with 5–7 PA and 2 CLS students, respectively. Students were seated facing each other around the tables to promote engagement, specifically, to encourage student participation. The groups were then given 2 different case studies to work through together and perform point-of-care tests.

The first case study involved a 30-year-old woman with complaints of a fever, flank pain, dysuria, and an increase in urination frequency. The point-of-care testing for this patient included a urine dipstick and urine human chorionic gonadotropin test. There were 5 questions selected for each profession to answer after the results were reported. Students were required to discuss all questions and share their knowledge with the other health-related fields of medicine. Example questions based on the PA profession included what the differential diagnosis was and if she were pregnant, what would be the first line antibiotic to utilize. CLS students were asked questions such as if the urinalysis suggested an upper or lower urinary tract infection and what they may see under the microscope, which led to the final diagnosis of acute pyelonephritis.

The second case study involved a 19-year-old male complaining of a sore throat. Pertinent positive physical exam findings included an erythematous pharynx and post-nasal drip but no tonsillar exudates. There was some mild tonsillar enlargement and some mild lymphadenopathy bilaterally. The heart and lung exams were unremarkable. Point-of-care testing in this case included a throat swab that was tested using a rapid group A strep antigen test kit. Example questions for the PA students, in this case study, included discussing the most common causes of pharyngitis, Centor criteria, and treatment options based on the test results. The CLS students were asked questions such as what tests could confirm a positive strep test and name 5 virulence factors that *Streptococcus pyogenes* can possess to evade phagocytosis and/or cell death, which led to the final diagnosis of pharyngitis caused by the bacteria *Streptococcus pyogenes*.

After the event, the students were then required to take a postsurvey in Canvas to see if their attitudes changed after working together. Experts pilot-tested the TeamSTEPPS documentation and format to establish content validity, which displayed internal consistency reliability coefficients in the professionalism, communication, and support subscales.<sup>8</sup> TeamSTEPPS guided the survey questions, which consisted of a 5-point Likert scale. The pre- and post-Likert survey scale and scoring were as follows: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5).

## RESULTS

Forty-five PA and 15 CLS students completed the presurvey. Thirty-three PA and 13 CLS students completed the postsurvey. Data from the 46 participants that completed both the pre- and postsurveys were included in the quantitative analysis. Ten questions were used to evaluate this session, including role understanding, mutual respect, and patient outcomes. Improvements in all 3 sections, after the session, were noted and are reported below. Students who did not complete both pre- and postsurveys and answered, "did not have an opportunity to observe in this environment," were not included in the results. Data were analyzed using IBM SPSS Statistical software. The related samples Wilcoxin signed ranks were used as a scale of agreement as Likert scale responses are ordinal and cannot be normally distributed.

The surveys all met the Cronbach alpha internal consistency minimum of .70 except for the presurvey domain of "Understand and respect the roles and responsibilities of other healthcare professions related to patient care," which was .65; however, the minimum was exceeded for that domain in the posttest (Table 1).

Responses from the first outcome measure ("Understand and respect the roles and responsibilities of other healthcare professions related to patient care") are presented in Table 2. Data for this section of results come from questions based on understanding each profession's roles and contribution to the cases.

The most significant impact from the presurvey to the postsurvey was seen with the PA studies (PAS) group for the item, "I will demonstrate confidence, without

arrogance, while working with members of other health professions." Fifty-seven percent of the PAS group saw gains for that item and 4% saw a loss.

Responses on the second outcome measure ("Recognize how respecting all team members is vital to effective communication") are presented in Table 3. Results for this section come from questions based on respectful communication and listening skills.

The most meaningful change between the pre- and postsurveys is seen with the CLS students, 60% of who gained for "I plan on communicating respectfully with members of other health professions in a way that they understand."

Responses on the third outcome measure ("Acknowledge how a patient-centric team leads to improved medical outcomes") are presented in Table 4. Results for this section are analyzed based on modeling patient-centric teams for better patient outcomes.

The most significant gain was for the PAS group where 55% gained for the item, "I plan on working with members of other health professions to coordinate communication with patients/clients and family members."

## DISCUSSION

Each healthcare discipline brings their own expertise when treating the patient. Through interaction with other healthcare professionals, boundaries can be lessened by gaining trust and understanding.<sup>9</sup> Social capital theory described by Teuwen et al<sup>10</sup> explains how working relationships can develop better outcomes by utilizing IPE events. The one form of social capital is called bridging. These types of relationships transpire in those people who are not familiar with each other and have different types of hierarchy. IPE events can fill the gap between 2 different healthcare disciplines.

Results from this study demonstrate that improvements were made in all 3 categories: respect, communication, and the understanding of how patient-centric teams lead to improved outcomes. Between PAS and CLS collaboration, each field can understand what their roles are. The PAS student can grasp that the CLS testing may take time to complete knowing that quality control must be run to ensure accurate results. The CLS student acknowledges that the PAS student is waiting to treat the patient so timely results are vital.

There were limitations within this study. The study was conducted between only 2 healthcare disciplines at 1 university in the United States. Although all CLS and second-year PA students were involved in the study, the sample size was small and became smaller due to some students not completing both pre- and postsurveys. This study focused on respect, patient ethics, and understanding of another healthcare profession and did not leave room to explore patients' outcomes and other clinical situations that may occur in health care. Further studies

**Table 1.** Cronbach alpha results

Domain	Items	Cronbach $\alpha$
Understand and respect the roles and responsibilities of other healthcare professions as related to patient care.		
Presurvey	4,5,7,8	.65
Postsurvey		.96
Recognize how respecting all team members is vital to effective communication.		
Presurvey	2,3,6	.78
Postsurvey		.94
Acknowledge how a patient-centric team leads to improved medical outcomes.		
Presurvey	1,9,10	.78
Postsurvey		
Total instrument		
Presurvey	10	.79
Postsurvey		.70

**Table 2.** Gains, losses, and ties (in percents) for “Understand and respect the roles and responsibilities of other healthcare professions as related to patient care”

	CLS				PAS			
	N	Gain	Loss	Tie	N	Gain	Loss	Tie
Q4 [Currently/I will] communicate with members of other health professions in a way that they understand without using profession-specific jargon	10	50.0	0	50.0	26	46.2	0	61.5
Q5 [Currently/I will] demonstrate confidence, without arrogance, while working with members of other health professions	10	50.0	20.0	30.0	28	57.1	3.6	39.3
Q7 [Currently/I will] seek to understand the roles and responsibilities of members of other health professions as related to care	12	25.0	33.3	41.7	30	13.3	3.3	83.3
Q8 [Currently/I will] demonstrate the use of empathy for members of other health professions	13	30.8	30.8	38.5	31	25.8	3.2	71.0

**Table 3.** Gains, losses, and ties (in percents) for “Recognize how respecting all team members is vital to effective communication”

	CLS				PAS			
	N	Gain	Loss	Tie	N	Gain	Loss	Tie
Q2 [Currently/Plan on] using active listening skills with members of other health professions	10	50.0	10.0	40.0	30	33.3	6.7	60.0
Q3 [Currently/Plan on] communicating respectfully with members of other health professions in a way that they understand	10	60.0	10.0	30.0	29	27.6	3.4	69.0
Q6 [Currently/I recognize] that other health professions may have their distinct cultures and values, and I will show respect for these	13	23.1	30.8	46.2	29	10.3	6.9	82.8

**Table 4.** Gains, losses, and ties (in percents) for “Acknowledge how a patient-centric team leads to improved medical outcomes”

	CLS				PAS			
	N	Gain	Loss	Tie	N	Gain	Loss	Tie
Q1 [Currently/Plan on] working with members of other health professions to coordinate communication with patients/clients and family members	6	33.3	0	66.7	22	54.5	4.5	40.9
Q9 [Currently/I will] model other health professionals’ compassion towards patients/clients, families and caregivers	13	30.8	15.4	53.8	26	39.3	0	60.7
Q10 [Currently/I will] work collaboratively with members of other health professions to resolve conflicts that arise in the context of caring for patients/clients	8	37.5	12.5	50.0	20	45.0	0	55.0

should be conducted with other healthcare disciplines and multiple case scenarios to improve healthcare relations, communication, and collaboration for better patient outcomes.

## CONCLUSION

As students continue to learn and grow in their respective programs, understanding the importance and work of other healthcare professionals helps eliminate communication gaps in healthcare. Medical providers, in collaboration with

laboratory professionals, carry out an individualized plan of care to enhance a patient’s health condition. IPE creates opportunities for growth and improvement in health care and maximizes the skills of all healthcare professionals while blending their complementary roles.

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