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Fostering Interprofessional Education During Required Clerkships for Medical Students Across Regional Campuses

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Abstract

It remains complex and challenging to deliver interprofessional education at medical schools with geographically distributed campuses. Indiana University School of Medicine (IUSM) expanded its interprofessional education directly into clinical training by implementing a simple exercise in required clerkships on all nine of its campuses and with various health system partners that achieves the goals of interprofessional education and in which students find value.

Methods

Between the academic years 2022-2023 and 2023-2024, IUSM medical students on every campus and across health systems, interviewed and reflected on the role of one healthcare professional involved in the care of a patient during each required clinical rotation. They interviewed different healthcare professionals and/or healthcare professions students to gain broad exposure and perspectives.

Results

All IUSM students on all its campuses interacted with a variety of healthcare professionals during their 3rd and 4th year clinical rotations statewide (n=6357 encounters). Across all campuses, 88% of interactions occurred with healthcare professionals rather than healthcare professions students. Statewide, between 84% and 95% of students reported that they 'Strongly Agreed/Agreed' that the experience contributed to the development of their interprofessional collaboration skills and knowledge, and that they found the assignment valuable.

Conclusion

Our interprofessional assignment offers medical schools with multiple campuses a promising solution to the challenges of delivering high-quality, and meaningful interprofessional education. It requires minimal to no resources, ensures comparability, and helps prepare students for real-world teamwork.

Introduction

Delivering interprofessional education (IPE) to medical students continues to be important yet challenging. The complexities involved with delivering interprofessional education are particularly true at schools with regional medical campuses. There are different configurations of regional medical campuses with variations in the clinical environments, educational resources, and available healthcare

professionals, which creates even more complexity, particularly when aiming to achieve comparability of experiences across regional medical campuses. US and Canadian medical schools with a single campus are still challenged because of differences in daily schedules, academic calendars, differing priorities, and curricular structures among different health professions programs. At schools with geographically dispersed campuses, the complexities increase significantly. Regional campuses often have less IPE infrastructure and fewer students in other health

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professions. The careful coordination and staffing that is needed may be costly¹⁻⁹. While planned IPE events may ease the organization of such activities, they shortchange students' experiences since they typically are not organic experiences in clinical settings. Likewise, neither pre-clerkship shadowing experiences nor isolated exercises within certain clerkships provide for a true interprofessional experience, nor do they typically span the curriculum longitudinally¹⁰⁻²⁰.

Indiana University School of Medicine (IUSM), the largest allopathic medical school in the United States, is a nine-campus system across the state of Indiana that delivers all four years of medical school on all campuses to approximately 365 students per class. The IPE curriculum at IUSM is delivered in collaboration with IUSM's Interprofessional Practice and Education Center as a required longitudinal, hybrid curriculum that is embedded in or running parallel to the core medical education curriculum. In the pre-clinical phase, content incorporating the core Interprofessional Education Collaborative competencies exists in two different courses: Health Systems Science 1 and Health Systems Science 2. Each campus delivers this curriculum online in a hybrid fashion with both online and in-person components. In the clinical phase, content incorporating the core Interprofessional Education Collaborative competencies exists outside of any required courses and is completed by the students both in person and virtually, either at the end of the Year 2 curriculum or prior to the start of the transitions course, at the beginning of Year 3. Placement of this curriculum outside of any required course or clerkship during the clinical phase has largely been due to the scheduling complexities associated with embedding IPE into the clinical curricula across IUSM's statewide system, and the scheduling complexities and examinations of the other healthcare professions programs. Creating traditional interprofessional opportunities on each campus requires forming partnerships with other universities, institutions, programs, and professionals in their local communities, and synchronizing academic calendars across the healthcare professions programs.

During the academic years spanning 2022-2024, IUSM implemented a simple IPE exercise to expand IPE into clinical clerkships on all its campuses. With this approach to integrating IPE across the core education program systemwide, IUSM hoped to deliver an authentic interprofessional educational experience on all campuses with minimal administrative burden that is replicable and provides a comparable experience. It would expose students to multiple healthcare professionals and foster an understanding of how different professionals contribute to patient care. The exercise would also help students understand and appreciate how interprofessional care benefits patients and improve their confidence in engaging with other professionals on the healthcare team.

Methods

During the academic years 2022-2023 and 2023-2024, all 3rd and 4th IUSM medical students completed an IPE exercise in each of their required clerkships, regardless of campus location and local health system partner. These were Family Medicine, Internal Medicine, Neurology, Obstetrics and Gynecology, Pediatrics, Psychiatry, Surgery, Anesthesia in the 3rd year, and Emergency Medicine in the 4th year.

Once per clerkship, each student was assigned the required IPE questionnaire in the learning management system. Students were provided with a downloadable version of the assignment to take with them on their clinical rotations that included a list of the assignment requirements and possible questions to ask the other healthcare professional. During each clerkship, each student interviewed and reflected on the role of a healthcare team member involved in the care of one of the student's patients and submitted their responses using the quiz feature via a pass/fail assignment. Students asked about the shared patient, including determining the most important issues from the other healthcare professional's perspective, as well as the findings and recommendations made for the patient. They also learned personal information, such as the team member's education, motivations, and scope of practice. Students interviewed team members from different healthcare professions each clerkship to gain broad exposure and perspectives.

Following each interview, students answered 15 questions, including six to evaluate the exercise (Figure 1). They also completed a brief reflection on how they thought the healthcare professional improved patient care, the patient experience, and/or potential patient outcomes. The estimated time to complete the written assignment was 10 minutes. The final submissions were uploaded to IUSM's learning management system (LMS) for review by the statewide clerkship teams.

The assignment data analyzed consisted of results for the two years from May 2022, through April 2024. The assignment data was extracted from the LMS, de-identified, and collated in Microsoft Excel®. Data was analyzed and visualized in Microsoft Excel® and Microsoft Power BI®.

Results

All IUSM students on all nine campuses interacted with a variety of healthcare professionals during their 3rd and 4th year clinical rotations statewide (N=6357; 100%) (Table 1). More interactions with other healthcare professionals occurred at the Indianapolis campus (N=4260; 67%), due to the larger volume of students at that campus. The healthcare professionals that students interacted with the most across all campuses were nurses (LPNs or RNs) (N=1306; 21%), except for the Muncie campus. The healthcare professionals with the second and third highest interactions varied across campuses. Despite these minor variations, students on all campuses interacted with a variety of healthcare professionals (Table 1).

Students on all campuses had opportunities to engage with healthcare professionals closely aligned with specific specialties while on each clerkship (Tables 2-10). For example, the healthcare professionals with the highest interaction with students while on their Family Medicine clerkships were medical assistants (N=407; 56%) (Table 2). On Psychiatry clerkships, the healthcare professionals with the highest interaction with students were social workers (N=304; 42%) (Table 7). Across Tables 2-10 there are some differences in the number of students who completed their clerkships at each campus. These differences are the result of normal variations in the number of students due to students going on leaves of absence, remediation, and students completing some clerkships away from their home campuses. Across all campuses statewide, students interacted the most frequently with nurses (LPNs or RNs) (N=1306; 21%) (Table 1); however, nurses were not the professionals with the highest interactions for each clinical rotation (Tables 2-10).

Family Medicine Clerkship										
Healthcare Professional	Indianapolis	Bloomington	Evanville	Fort Wayne	Muncie	Northwest-Gary	South Bend	Terre Haute	West Lafayette	Healthcare Professional Total
Medical Assistant (MA)	198 (67%)	18 (4%)	41 (40%)	23 (38%)	22 (38%)	20 (35%)	11 (37%)	10 (22%)	28 (29%)	407 (56%)
Nurse – LPN or RN	48 (16%)	10 (2%)	26 (25%)	10 (17%)	0	2 (3%)	10 (35%)	1	2 (2%)	112 (16%)
Nurse Practitioner (NP)	22 (7%)	1 (2%)	8 (8%)	6 (10%)	2 (3%)	5 (9%)	4 (15%)	2 (5%)	1 (1%)	58 (8%)
Pharmacist	25 (8%)	6 (1%)	0	1 (2%)	0	6 (10%)	2 (7%)	5 (11%)	5 (5%)	55 (8%)
Physician's Assistant (PA)	14 (4%)	1 (2%)	1 (1%)	2 (4%)	0	0	1 (3%)	1 (2%)	0	20 (3%)
Social Worker	10 (3%)	0	4 (4%)	1 (2%)	0	1 (2%)	1 (3%)	2 (4%)	0	19 (3%)
Other	5 (1%)	0	1 (1%)	1 (2%)	2 (3%)	1 (2%)	1 (3%)	2 (4%)	0	13 (2%)
Medical Interpreter	3 (1%)	0	4 (4%)	0	0	0	0	1 (2%)	0	8 (1%)
Technician	5 (1%)	0	0	0	0	0	1 (3%)	1 (2%)	0	7 (1%)
Dietician	3 (1%)	0	0	1 (2%)	0	1 (2%)	1 (3%)	1 (2%)	0	6 (1%)
Chaplain	3 (1%)	0	0	1 (2%)	0	0	0	0	0	4 (1%)
Psychologist	1 (<1%)	0	0	0	1 (2%)	1 (2%)	0	1 (2%)	0	4 (1%)
Physical Therapist	3 (1%)	0	0	0	0	0	0	0	0	3 (<1%)
Behavioral Therapist	0	0	1 (1%)	0	0	0	0	2 (4%)	0	3 (<1%)
Patient care assistant	1 (<1%)	0	1 (1%)	0	0	0	0	0	0	2 (<1%)
Lactation Consultant	0	0	1 (1%)	0	0	1 (2%)	0	0	0	2 (<1%)
Anesthetist – CAA or CRNA	1 (<1%)	0	0	0	0	0	0	0	0	1 (<1%)
Dentist	1 (<1%)	0	0	0	0	0	0	0	0	1 (<1%)
Occupational Therapist (OT)	1 (<1%)	0	0	0	0	0	0	0	0	1 (<1%)
Podiatrist	1 (<1%)	0	0	0	0	0	0	0	0	1 (<1%)
Campus Total	338 (100%)	32 (100%)	92 (100%)	46 (100%)	27 (100%)	38 (100%)	76 (100%)	46 (100%)	32 (100%)	727 (100%)

Table 2 This table presents the count and percentage of interactions with various healthcare professionals of each campus while on the Family Medicine Clerkship. The data is organized in descending order, from highest to least interactions. For each campus, the columns display the count and percentage of interactions with each healthcare professional type. Any healthcare professionals with zero interactions across all campuses were not included in the table. The 'Healthcare Professional Total' column on the right provides the overall count and percentage of interactions with each healthcare professional across all campuses for the Family Medicine Clerkship. The 'Campus Total' column on the bottom provides the total count and percentage of interactions at each campus. For each campus, the healthcare professional with the highest interactions is highlighted in royal blue, followed by the second-highest interaction in yellow, and the third-highest interaction in dark gray.

Type of healthcare professional	Indianapolis	Bloomington	Evanville	Fort Wayne	Muncie	Northwest-Gary	South Bend	Terre Haute	West Lafayette	Total
Nurse – LPN or RN	482 (11%)	21 (6%)	25 (25%)	29 (48%)	7 (4%)	7 (6%)	12 (15%)	14 (17%)	14 (7%)	576 (9%)
Pharmacist	275 (7%)	23 (6%)	63 (63%)	30 (50%)	44 (73%)	30 (53%)	62 (81%)	18 (22%)	31 (15%)	374 (6%)
Social Worker	328 (8%)	17 (5%)	144 (144%)	10 (17%)	10 (17%)	23 (39%)	16 (20%)	16 (20%)	16 (8%)	515 (8%)
Nurse Practitioner (NP)	321 (8%)	13 (4%)	43 (43%)	23 (39%)	21 (35%)	25 (39%)	33 (43%)	9 (11%)	9 (5%)	509 (7%)
Surgical scrub technician	266 (6%)	28 (8%)	8 (8%)	21 (35%)	10 (17%)	7 (4%)	25 (32%)	14 (18%)	16 (8%)	395 (6%)
Physician's Assistant (PA)	218 (5%)	23 (6%)	17 (17%)	9 (15%)	14 (23%)	17 (28%)	40 (52%)	5 (6%)	5 (3%)	366 (5%)
Anesthetist – CAA or CRNA	198 (5%)	2 (1%)	24 (24%)	14 (23%)	13 (22%)	19 (32%)	28 (36%)	22 (28%)	13 (6%)	332 (5%)
Technician	199 (5%)	9 (3%)	15 (15%)	17 (29%)	2 (3%)	12 (20%)	26 (34%)	14 (18%)	15 (7%)	309 (4%)
Dietician	151 (4%)	3 (1%)	4 (4%)	5 (8%)	1 (2%)	4 (7%)	7 (9%)	6 (8%)	1 (1%)	178 (2%)
Respiratory Therapist	103 (3%)	12 (3%)	8 (8%)	5 (8%)	3 (5%)	5 (8%)	5 (6%)	5 (6%)	10 (5%)	150 (2%)
Physical Therapist	112 (3%)	2 (1%)	4 (4%)	3 (5%)	2 (3%)	5 (8%)	2 (3%)	2 (3%)	4 (2%)	136 (2%)
Other	79 (2%)	8 (2%)	7 (7%)	4 (7%)	3 (5%)	9 (15%)	9 (12%)	6 (8%)	1 (1%)	124 (2%)
Midwife	56 (1%)	13 (3%)	0 (0%)	1 (2%)	3 (5%)	4 (7%)	7 (9%)	1 (1%)	2 (1%)	97 (1%)
Psychologist	72 (2%)	2 (1%)	0 (0%)	1 (2%)	1 (2%)	1 (2%)	2 (3%)	7 (9%)	3 (2%)	90 (1%)
Speech Pathologist	65 (2%)	1 (1%)	2 (2%)	3 (5%)	1 (2%)	1 (2%)	10 (13%)	0 (0%)	3 (2%)	85 (1%)
Chaplain	64 (2%)	0 (0%)	3 (3%)	5 (8%)	2 (3%)	1 (2%)	1 (2%)	0 (0%)	0 (0%)	77 (1%)
Behavioral Therapist	27 (1%)	2 (1%)	7 (7%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	2 (3%)	0 (0%)	60 (1%)
Emergency Medical Technician	34 (1%)	7 (2%)	3 (3%)	3 (5%)	2 (3%)	2 (3%)	2 (3%)	1 (1%)	1 (1%)	57 (1%)
Medical Interpreter	44 (1%)	0 (0%)	5 (5%)	0 (0%)	0 (0%)	1 (2%)	3 (4%)	1 (1%)	1 (1%)	55 (1%)
Operating room assistant	42 (1%)	1 (1%)	3 (3%)	2 (3%)	0 (0%)	0 (0%)	2 (3%)	2 (3%)	0 (0%)	55 (1%)
Genetic Counselor	46 (1%)	0 (0%)	2 (2%)	0 (0%)	0 (0%)	0 (0%)	4 (5%)	0 (0%)	1 (1%)	53 (1%)
Lactation Consultant	36 (1%)	5 (1%)	1 (1%)	2 (3%)	1 (2%)	4 (7%)	1 (1%)	2 (3%)	0 (0%)	51 (1%)
CRNA (Life Specialist)	46 (1%)	0 (0%)	3 (3%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	0 (0%)	0 (0%)	50 (1%)
Patient care assistant	27 (1%)	3 (1%)	6 (6%)	2 (3%)	0 (0%)	1 (2%)	0 (0%)	1 (1%)	0 (0%)	40 (1%)
Occupational Therapist (OT)	32 (1%)	2 (1%)	2 (2%)	0 (0%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	37 (1%)
Genist	31 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	1 (1%)	0 (0%)	0 (0%)	33 (1%)
Doula	31 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	0 (0%)	0 (0%)	32 (1%)
Ophthalmologist	5 (1%)	0 (0%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	0 (0%)	0 (0%)	10 (1%)
Podiatrist	3 (1%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	5 (1%)
Total	4260 (67%)	246 (76%)	414 (414%)	257 (428%)	179 (298%)	195 (333%)	345 (447%)	262 (332%)	197 (197%)	6357 (100%)

Table 1 This table presents the count and percentage of interactions with various healthcare professionals at each IUSM campus. The data is organized in descending order, from highest to least interactions. For each campus, the columns display the count and percentage of interactions with each healthcare professional at that campus. The 'Total' column on the right provides the overall count and percentage of interactions with each healthcare professional across all campuses. In the total row at the bottom of the table, the percentages represent how the interactions at each campus contribute to the overall total of interactions across campuses. The highest interaction(s) for each campus is highlighted in royal blue, followed by the second highest interaction(s) in yellow, followed by the third highest interaction(s) in dark gray. The healthcare professionals that students interacted with the most across all campuses were nurses (LPNs or RNs), except on the Muncie campus. The healthcare professionals with the second and third highest interactions varied across campuses. Despite these variations, students on all campuses could interact with a variety of healthcare professionals during their third- and fourth-year clerkship rotations.

Internal Medicine Clerkship										
Healthcare Professional	Indianapolis	Bloomington	Evanville	Fort Wayne	Muncie	Northwest-Gary	South Bend	Terre Haute	West Lafayette	Healthcare Professional Total
Pharmacist	240 (43%)	5 (1%)	14 (12%)	17 (16%)	0	1 (1%)	0	4 (12%)	7 (16%)	282 (43%)
Nurse – LPN or RN	83 (12%)	0 (0%)	34 (29%)	4 (4%)	6 (5%)	3 (3%)	6 (5%)	9 (26%)	2 (2%)	138 (21%)
Social Worker	60 (10%)	1 (2%)	1 (1%)	2 (2%)	4 (3%)	2 (2%)	2 (2%)	4 (12%)	1 (1%)	80 (12%)
Nurse Practitioner (NP)	23 (5%)	3 (5%)	7 (6%)	2 (2%)	0	0	3 (3%)	3 (9%)	1 (1%)	39 (6%)
Respiratory Therapist	15 (3%)	3 (5%)	5 (4%)	0	1 (1%)	1 (1%)	2 (2%)	3 (9%)	0	30 (4%)
Physical Therapist	12 (2%)	1 (2%)	3 (3%)	3 (3%)	2 (2%)	1 (1%)	0	0	0	20 (3%)
Technician	10 (2%)	2 (3%)	2 (2%)	1 (1%)	2 (2%)	1 (1%)	3 (9%)	1 (3%)	0	23 (3%)
Dietician	10 (2%)	3 (5%)	2 (2%)	0	1 (1%)	0	2 (2%)	0	0	18 (3%)
Medical Assistant (MA)	3 (1%)	2 (3%)	3 (3%)	1 (1%)	2 (2%)	1 (1%)	3 (9%)	1 (3%)	2 (2%)	18 (3%)
Chaplain	14 (2%)	0	0	0	1 (1%)	0	1 (1%)	0	0	16 (2%)
Other	9 (2%)	0 (0%)	0 (0%)	0	0	0	1 (1%)	2 (6%)	0	12 (2%)
Speech Pathologist	8 (2%)	0	0	0	0	1 (1%)	0	0	0	10 (1%)
Patient care assistant	3 (1%)	0	0	0	0	0	0	0	0	3 (1%)
Physician's Assistant (PA)	1 (1%)	1 (2%)	0	0	0	0	1 (3%)	3 (9%)	1 (1%)	6 (1%)
Genist	5 (2%)	0	0	0	0	0	0	0	0	5 (1%)
Medical Interpreter	3 (1%)	0	0	0	0	0	0	1 (3%)	0	4 (1%)
Anesthetist – CAA or CRNA	1 (<1%)	0	2 (2%)	0	0	0	0	0	0	3 (<1%)
Occupational Therapist (OT)	1 (<1%)	2 (3%)	0	0	0	0	0	0	0	3 (<1%)
Psychologist	2 (3%)	0	0	0	0	0	0	0	0	2 (3%)
Behavioral Therapist	2 (<1%)	0	0	0	0	0	0	0	0	2 (<1%)
Genetic Counselor	0	0	1 (1%)	0	0	0	0	0	0	1 (<1%)
Operating room assistant	0	0	1 (1%)	0	0	0	0	0	0	1 (<1%)
Surgical scrub technician	1 (<1%)	0	0	0	0	0	0	0	0	1 (<1%)
Campus Total	467 (100%)	32 (100%)	67 (100%)	28 (100%)	20 (100%)	13 (100%)	28 (100%)	33 (100%)	17 (100%)	709 (100%)

Table 3 This table presents the count and percentage of interactions with various healthcare professionals at each campus while on the Internal Medicine Clerkship. The data is organized in descending order, from highest to least interactions. For each campus, the columns display the count and percentage of interactions with each healthcare professional type. Any healthcare professionals with zero interactions across all campuses were not included in the table. The 'Healthcare Professional Total' column on the right provides the overall count and percentage of interactions with each healthcare professional across all campuses for the Internal Medicine Clerkship. The 'Campus Total' column on the bottom provides the total count and percentage of interactions at each campus. For each campus, the healthcare professional with the highest interactions is highlighted in royal blue, followed by the second-highest interaction in yellow, and the third-highest interaction in dark gray.

Neurology Clerkship										
Healthcare Professional	Indianapolis	Bloomington	Evansville	Fort Wayne	Muncie	Northwest-Gary	South Bend	Terre Haute	West Lafayette	Healthcare Professional Total
Nurse - LPN or RN	123 (4%)	4 (1%)	5 (1%)	3 (1%)	1 (0%)	1 (0%)	13 (9%)	1 (0%)	6 (3%)	163 (25%)
Nurse Practitioner (NP)	127 (16%)	1 (0%)	0 (0%)	2 (1%)	3 (1%)	4 (1%)	3 (2%)	2 (0%)	2 (0%)	137 (20%)
Technician	45 (2%)	2 (0%)	1 (0%)	3 (1%)	0 (0%)	3 (1%)	4 (2%)	4 (2%)	3 (1%)	71 (10%)
Physical Therapist	45 (6%)	1 (0%)	0 (0%)	2 (1%)	0 (0%)	3 (1%)	1 (0%)	0 (0%)	3 (1%)	55 (8%)
Medical Assistant (MA)	14 (2%)	0 (0%)	0 (0%)	2 (0%)	0 (0%)	0 (0%)	2 (0%)	0 (0%)	3 (1%)	21 (3%)
Physician's Assistant (PA)	8 (1%)	0 (0%)	2 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	10 (1%)
Speech Pathologist	34 (4%)	1 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	35 (5%)
Surgical scrub technician	15 (2%)	2 (0%)	0 (0%)	1 (0%)	1 (0%)	0 (0%)	3 (2%)	3 (2%)	0 (0%)	28 (4%)
Pharmacist	16 (2%)	1 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	17 (2%)
Chaplain	11 (2%)	0 (0%)	3 (1%)	2 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	16 (2%)
Occupational Therapist (OT)	13 (2%)	0 (0%)	1 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	14 (2%)
Respiratory Therapist	12 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	12 (2%)
Genetic Counselor	11 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0%)	12 (2%)
Other	9 (2%)	0 (0%)	0 (0%)	2 (1%)	0 (0%)	1 (0%)	0 (0%)	0 (0%)	0 (0%)	12 (2%)
Patient care assistant	9 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	9 (1%)
Medical Interpreter	7 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0%)	8 (1%)
Anesthetist - CA or CRNA	5 (1%)	0 (0%)	0 (0%)	0 (0%)	1 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	6 (1%)
Social Worker	4 (1%)	0 (0%)	0 (0%)	0 (0%)	1 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	5 (1%)
Operating room assistant	3 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (1%)
Dietician	2 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (<1%)
Emergency Medical Technician	1 (1%)	0 (0%)	1 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (<1%)
Child Life Specialist	1 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (<1%)
Campus Total	519 (100%)	19 (100%)	29 (100%)	23 (100%)	19 (100%)	22 (100%)	39 (100%)	39 (100%)	24 (100%)	721 (100%)

Table 7 This table presents the count and percentage of interactions with various healthcare professionals at each campus while on the Neurology Clerkship. The data is organized in descending order, from highest to least interactions. For each campus, the columns display the count and percentage of interactions with each healthcare professional type. Any healthcare professionals with zero interactions across all campuses were not included in the table. The 'Healthcare Professional Total' column on the right provides the overall count and percentage of interactions with each healthcare professional across all campuses for the Neurology Clerkship. The 'Campus Total' column on the bottom provides the total count and percentage of interactions at each campus. For each campus, the healthcare professional with the highest interactions is highlighted in royal blue, followed by the second highest interaction in yellow, and the third highest interaction in dark gray.

Surgery Clerkship										
Healthcare Professional	Indianapolis	Bloomington	Evansville	Fort Wayne	Muncie	Northwest-Gary	South Bend	Terre Haute	West Lafayette	Healthcare Professional Total
Surgical scrub technician	145 (31%)	16 (5%)	4 (2%)	12 (4%)	7 (3%)	7 (3%)	12 (10%)	12 (10%)	12 (10%)	227 (31%)
Nurse Practitioner (NP)	89 (84%)	4 (1%)	2 (7%)	4 (12%)	8 (6%)	4 (6%)	11 (11%)	6 (19%)	3 (8%)	105 (19%)
Physician's Assistant (PA)	57 (11%)	2 (2%)	0 (0%)	2 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	59 (8%)
Nurse - LPN or RN	46 (13%)	2 (6%)	2 (7%)	2 (11%)	1 (5%)	1 (5%)	5 (13%)	1 (3%)	4 (20%)	63 (12%)
Anesthetist - CA or CRNA	22 (5%)	1 (3%)	1 (4%)	1 (5%)	1 (5%)	1 (5%)	5 (13%)	1 (3%)	0 (0%)	34 (5%)
Technician	17 (4%)	0 (0%)	2 (2%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	20 (3%)
Physical Therapist	14 (3%)	0 (0%)	0 (0%)	1 (4%)	1 (5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	16 (2%)
Operating room assistant	12 (3%)	0 (0%)	1 (4%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	14 (2%)
Pharmacist	10 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	10 (1%)
Chaplain	8 (2%)	0 (0%)	0 (0%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	9 (1%)
Other	6 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (5%)	1 (3%)	0 (0%)	9 (1%)
Dietician	6 (1%)	0 (0%)	0 (0%)	2 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	8 (1%)
Medical Assistant (MA)	4 (1%)	0 (0%)	2 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)	0 (0%)	8 (1%)
Social Worker	4 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (1%)
Occupational Therapist	4 (1%)	0 (0%)	2 (2%)	1 (4%)	1 (5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	7 (1%)
Speech Pathologist	3 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (10%)	0 (0%)	7 (1%)
Medical Interpreter	3 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (1%)
Dentist	3 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (1%)
Respiratory Therapist	2 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (<1%)
Emergency Medical Technician	2 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (<1%)
Genetic Counselor	2 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (<1%)
Patient care assistant	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Campus Total	455 (100%)	31 (100%)	29 (100%)	27 (100%)	18 (100%)	18 (100%)	40 (100%)	32 (100%)	30 (100%)	635 (100%)

Table 8 This table presents the count and percentage of interactions with various healthcare professionals at each campus while on the Surgery Clerkship. The data is organized in descending order, from highest to least interactions. For each campus, the columns display the count and percentage of interactions with each healthcare professional type. Any healthcare professionals with zero interactions across all campuses were not included in the table. The 'Healthcare Professional Total' column on the right provides the overall count and percentage of interactions with each healthcare professional across all campuses for the Surgery Clerkship. The 'Campus Total' column on the bottom provides the total count and percentage of interactions at each campus. For each campus, the healthcare professional with the highest interactions is highlighted in royal blue, followed by the second highest interaction in yellow, and the third highest interaction in dark gray.

Obstetrics and Gynecology Clerkship										
Healthcare Professional	Indianapolis	Bloomington	Evansville	Fort Wayne	Muncie	Northwest-Gary	South Bend	Terre Haute	West Lafayette	Healthcare Professional Total
Nurse - LPN or RN	122 (16%)	4 (1%)	11 (4%)	5 (1%)	5 (1%)	4 (1%)	7 (1%)	14 (10%)	10 (4%)	179 (25%)
Midwife	55 (22%)	12 (5%)	0 (0%)	11 (20%)	3 (20%)	4 (10%)	7 (10%)	1 (1%)	2 (2%)	93 (14%)
Technician	50 (13%)	2 (0%)	1 (0%)	2 (1%)	3 (1%)	4 (1%)	4 (2%)	4 (2%)	3 (1%)	71 (10%)
Surgical scrub technician	44 (9%)	0 (0%)	0 (0%)	3 (2%)	0 (0%)	1 (1%)	1 (1%)	3 (2%)	5 (2%)	57 (8%)
Medical Assistant (MA)	38 (8%)	1 (4%)	0 (0%)	2 (0%)	2 (1%)	1 (1%)	3 (10%)	3 (10%)	1 (4%)	51 (7%)
Doula	30 (6%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	30 (4%)
Genetic Counselor	21 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	21 (3%)
Nurse Practitioner (NP)	13 (3%)	2 (2%)	4 (10%)	0 (0%)	0 (0%)	1 (1%)	2 (7%)	0 (0%)	0 (0%)	22 (3%)
Anesthetist - CA or CRNA	15 (3%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)	1 (1%)	0 (0%)	0 (0%)	18 (2%)
Medical Interpreter	17 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	17 (2%)
Physician's Assistant (PA)	4 (1%)	0 (0%)	2 (8%)	1 (4%)	3 (8%)	4 (11%)	1 (1%)	0 (0%)	0 (0%)	16 (2%)
Other	12 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	12 (2%)
Lactation Consultant	6 (1%)	0 (0%)	1 (4%)	1 (1%)	0 (0%)	3 (8%)	1 (1%)	1 (1%)	1 (1%)	13 (2%)
Social Worker	9 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)	1 (1%)	1 (1%)	0 (0%)	12 (2%)
Dietician	9 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	9 (1%)
Operating room assistant	5 (1%)	0 (0%)	0 (0%)	1 (1%)	1 (1%)	1 (1%)	1 (1%)	0 (0%)	0 (0%)	6 (1%)
Chaplain	6 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	6 (1%)
Pharmacist	4 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (1%)
Patient care assistant	2 (<1%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (<1%)
Physical Therapist	2 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (<1%)
Emergency Medical Technician	1 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (<1%)
Psychologist	1 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (<1%)
Campus Total	466 (100%)	23 (100%)	25 (100%)	26 (100%)	15 (100%)	13 (100%)	36 (100%)	30 (100%)	29 (100%)	657 (100%)

Table 9 This table presents the count and percentage of interactions with various healthcare professionals at each campus while on the Obstetrics and Gynecology Clerkship. The data is organized in descending order, from highest to least interactions. For each campus, the columns display the count and percentage of interactions with each healthcare professional type. Any healthcare professionals with zero interactions across all campuses were not included in the table. The 'Healthcare Professional Total' column on the right provides the overall count and percentage of interactions with each healthcare professional across all campuses for the Obstetrics and Gynecology Clerkship. The 'Campus Total' column on the bottom provides the total count and percentage of interactions at each campus. For each campus, the healthcare professional with the highest interactions is highlighted in royal blue, followed by the second highest interaction in yellow, and the third highest interaction in dark gray.

Anesthesia										
Healthcare Professional	Indianapolis	Bloomington	Evansville	Fort Wayne	Muncie	Northwest-Gary	South Bend	Terre Haute	West Lafayette	Healthcare Professional Total
Anesthetist - CA or CRNA	154 (31%)	0 (0%)	18 (9%)	13 (6%)	13 (6%)	11 (7%)	12 (11%)	25 (19%)	22 (9%)	267 (31%)
Nurse - LPN or RN	138 (27%)	6 (1%)	6 (1%)	4 (1%)	3 (1%)	3 (1%)	3 (2%)	11 (8%)	1 (3%)	176 (24%)
Surgical scrub technician	83 (18%)	10 (5%)	2 (6%)	5 (2%)	2 (1%)	0 (0%)	0 (0%)	2 (5%)	2 (5%)	94 (13%)
Physician's Assistant (PA)	73 (15%)	3 (2%)	2 (6%)	3 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	81 (11%)
Child Life Specialist	29 (6%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	29 (4%)
Operating room assistant	22 (4%)	1 (4%)	1 (1%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	3 (8%)	1 (3%)	29 (4%)
Dentist	18 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)	1 (1%)	20 (3%)
Physician's Assistant (PA)	7 (1%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	8 (1%)
Other	6 (1%)	1 (1%)	1 (1%)	1 (1%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	9 (1%)
Respiratory Therapist	8 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	8 (1%)
Medical Interpreter	6 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)	0 (0%)	7 (1%)
Nurse Practitioner (NP)	4 (1%)	0 (0%)	2 (6%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	6 (1%)
Patient care assistant	2 (<1%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (1%)
Pharmacist	3 (1%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (1%)
Doula	1 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (<1%)
Emergency Medical Technician	1 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (<1%)
Medical Assistant (MA)	1 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (<1%)
Physical Therapist	1 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (<1%)
Podiatrist	1 (<1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (<1%)
Total	502 (100%)	26 (100%)	32 (100%)	22 (100%)	16 (100%)	15 (100%)	29 (100%)	33 (100%)	29 (100%)	729 (100%)

Table 10 This table presents the count and percentage of interactions with various healthcare professionals at each campus while on the Anesthesia rotation. The data is organized in descending order, from highest to least interactions. For each campus, the columns display the count and percentage of interactions with each healthcare professional type. Any healthcare professionals with zero interactions across all campuses were not included in the table. The 'Healthcare Professional Total' column on the right provides the overall count and percentage of interactions with each healthcare professional across

	Indianapolis	Bloomington	Evansville	Fort Wayne	Muncie	Northwest-Gary	South Bend	Terre Haute	West Lafayette	Total for Professional
Inpatient setting (N=4347, 68%)										
Top Interaction	Nurse – LPN or RN	216 (17%)	35 (14%)	39 (9%)	23 (9%)	32 (12%)	27 (14%)	35 (10%)	23 (12%)	943 (15%)
2nd Interaction	Pharmacist	412 (29%)	7 (3%)	4 (1%)	24 (9%)	5 (3%)	1 (1%)	0 (0%)	7 (3%)	466 (7%)
3rd Interaction	Social worker	291 (7%)	16 (6%)	46 (12%)	14 (5%)	17 (6%)	7 (4%)	30 (9%)	9 (3%)	451 (7%)
4th Interaction	Surgical scrub technician	234 (5%)	13 (5%)	7 (2%)	15 (6%)	7 (4%)	4 (2%)	20 (6%)	9 (3%)	322 (5%)
5th Interaction	Nurse Practitioner (NP)	214 (5%)	8 (3%)	20 (5%)	11 (4%)	14 (5%)	3 (2%)	8 (2%)	12 (5%)	292 (5%)
Outpatient setting (N=2009, 32%)										
Top Interaction	Medical Assistant (MA)	268 (9%)	21 (8%)	61 (13%)	7 (2%)	29 (13%)	42 (22%)	29 (15%)	63 (18%)	363 (6%)
2nd Interaction	Nurse – LPN or RN	177 (4%)	19 (8%)	50 (12%)	19 (7%)	7 (4%)	12 (6%)	35 (10%)	31 (12%)	363 (6%)
3rd Interaction	Nurse	107 (3%)	5 (2%)	23 (6%)	12 (5%)	7 (4%)	22 (11%)	13 (4%)	23 (8%)	217 (3%)
4th Interaction	Practitioner (NP)	72 (2%)	4 (2%)	8 (2%)	5 (2%)	2 (1%)	7 (4%)	16 (5%)	9 (3%)	134 (2%)
5th Interaction	Physician's Assistant (PA)	50 (1%)	6 (2%)	9 (2%)	6 (2%)	6 (3%)	5 (3%)	8 (2%)	23 (8%)	114 (2%)

Table 12 This table presents the count and percentage of interactions of the top 5 interactions with various health professionals in inpatient and outpatient settings at each USM campus. The data is organized in descending order, from highest to the least total interactions. For each campus, the columns display the count and percentage of interactions with each healthcare professional at that campus. The 'Total for Professional' column on the right provides the overall count and percentage of interactions with each healthcare professional in each setting across all campuses. The highest interaction(s) for each campus is highlighted in royal blue, followed by the second highest interaction(s) in yellow, followed by the third highest interaction(s) in dark gray. The healthcare professionals that students interacted with the most in inpatient settings across all campuses were nurses (LPN or RN), except on the Evansville and Muncie campuses. The healthcare professionals that students interacted with the most in outpatient settings across all campuses were medical assistants (MAs), except for the Terre Haute campus. The healthcare professionals with the second and third highest interactions varied across campuses. Despite these variations, students on all campuses could interact with a variety of healthcare professionals in inpatient and outpatient settings during their third- and fourth-year clerkship rotations. Both setting types presented opportunities for students to interact with different healthcare professionals.

Students were also asked to identify if during each interaction they mainly interacted with students from other health professions only, healthcare professionals only, or both a student studying the profession and a healthcare professional. Statewide, most of the interactions (N=5590; 88%) occurred with healthcare professionals only (Table 11). The range of interactions with healthcare professionals only was between 80% and 92%. Interactions with students only (N=234; 4%) or both a student studying the profession and a healthcare professional (N=533; 8%) only comprised 12% (N=767) of the total interactions across all campuses (Table 11).

Professional or student?	Indianapolis	Bloomington	Evansville	Fort Wayne	Muncie	Northwest-Gary	South Bend	Terre Haute	West Lafayette	Total across Campuses
Students studying the profession only	173 (4%)	4 (2%)	14 (3%)	6 (2%)	5 (2%)	10 (3%)	12 (3%)	5 (1%)	5 (1%)	234 (4%)
Both a student studying the profession and a healthcare professional	337 (8%)	17 (7%)	24 (6%)	30 (11%)	12 (7%)	20 (10%)	27 (8%)	32 (12%)	34 (17%)	533 (8%)
Healthcare professional only	3750 (88%)	227 (82%)	376 (91%)	221 (86%)	162 (61%)	170 (87%)	308 (89%)	218 (83%)	158 (80%)	5590 (88%)
Grand Total	4260 (100%)	248 (100%)	414 (100%)	257 (100%)	179 (100%)	195 (100%)	345 (100%)	262 (100%)	197 (100%)	6357 (100%)

Table 11 This table presents the frequency and percentage of student interactions at each campus with the level of health care professional they interacted with. These interactions fall into three categories: a student studying the profession, both a student studying the profession and a healthcare professional, or a healthcare professional only. Across all campuses, the majority of interactions (N=5590; 88%) involved students engaging with healthcare professionals within their respective fields.

To evaluate how the assignment contributed to the development of students' interprofessional collaboration skills and knowledge, as well as to evaluate whether the students found value in the assignment, six evaluation questions were asked. The scale for each question was a 5-point Likert scale from 'Strongly Agree' to 'Strongly Disagree'. Across all questions and all campuses, the 'Strongly Agree/Agree' responses ranged from 84% to 95% (Figure 1), indicating a majority of students thought the experience contributed to the development of their interprofessional collaboration skills and knowledge, and that they found the assignment valuable. Figure 1A-F shows a visual representation of the breakdown in aggregated 'Strongly Agree/Agree', 'Neutral', and 'Disagree/Strongly Disagree' responses to each question prompt across all campuses. They all show that most student responses at all campuses were in agreement ('Strongly Agree/Agree') with all six questions. The student responses to the six evaluation questions, including the count (N) and the percentage breakdown of responses across all campuses, are also shown in Supplemental File 2. The combined total of 'Strongly Agree/Agree' responses across all six questions was 89% (N=33778), with only 9% 'Neutral' (N=3363) and 3% 'Disagree/Strongly Disagree' (N=978) (Supplemental File 2). This data shows that regardless of campus, students found the IPE experience comparable and valuable.

Disagree' responses to each question prompt across all campuses. They all show that most student responses at all campuses were in agreement ('Strongly Agree/Agree') with all six questions. The student responses to the six evaluation questions, including the count (N) and the percentage breakdown of responses across all campuses, are also shown in Supplemental File 2. The combined total of 'Strongly Agree/Agree' responses across all six questions was 89% (N=33778), with only 9% 'Neutral' (N=3363) and 3% 'Disagree/Strongly Disagree' (N=978) (Supplemental File 2). This data shows that regardless of campus, students found the IPE experience comparable and valuable.

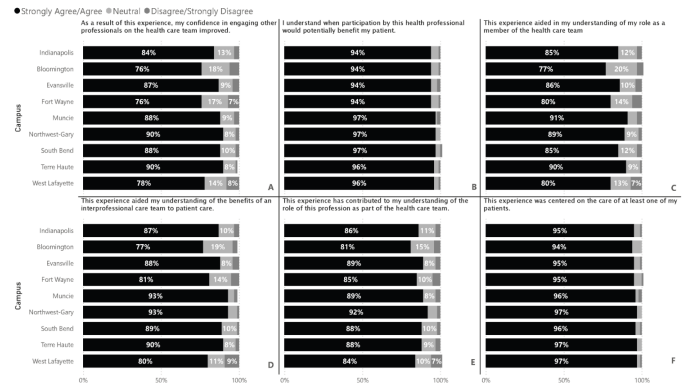


Figure 1 This figure shows the breakdown of student responses across all nine campuses regarding the assignment evaluation questions. The 'Strongly Agree' and 'Agree' responses were aggregated, as well as the 'Disagree' and 'Strongly Disagree' responses. These data show that across all nine campuses, the majority of students selected 'Strongly Agree/Agree' for all question prompts. The full breakdown of this responses is provided in Supplemental Table 5.

Discussion

Delivering interprofessional education across regional campuses is often challenging because the exercises can require logistically complex separate events planned by faculty and staff to bring learners from various professions and institutions together in what is often a simulated educational experience that lacks authenticity^{7,8}. The logistical complexities of these exercises are further exacerbated when trying to be coordinated and comparably delivered across multiple campuses. In addition to the logistical challenges with these types of events, students are often dissatisfied and fail to see the value in the experience since they typically occur outside of a true clinical setting system^{21,22}. The six evaluation questions that were asked on each assignment assessed students' interprofessional collaboration skills and perception of the assignment's value. The data show this approach successfully engaged

students across a distributed campus system and diverse healthcare system partners, fostering a variety of meaningful interprofessional experiences.

The aggregated results across all campuses revealed that most students (84% to 95%) agreed ('Strongly Agree/Agree') with all six questions. (Figure 1 and Supplemental File 2) The combined total of 'Strongly Agree/Agree' responses across all six questions was 89%. (N=33778) (Supplemental File 2). These consistent findings suggest that regardless of campus location, healthcare system partner, and care setting, students found the assignment valuable for their development and collaboration skills with other healthcare professionals, and they found value in the experience. These consistent findings also suggest that despite the requirement to repeat the assignment during each clerkship, the students still valued the assignment, emphasizing the importance of meeting with different health professionals each time the assignment was completed. These data underscore the assignment's positive impact on students' experiences, as well as their satisfaction with the assignment, emphasizing its value in fostering understanding of interprofessional collaboration skills regardless of campus location, health system partner, and clinical environment.

Because of the intentional design of this activity asking students to meet with a different healthcare profession during each of their required clerkships, they were able to meet with many different professionals. As a result, across all campuses and clerkships, the leading interactions were with nurses (LPNs and RNs), pharmacists, medical assistants, and social workers (Table 1).

The requirement to complete the assignment only once per clerkship rotation is also an important aspect of this exercise. As Tables 2-10 show, the proximity of healthcare professionals varies somewhat depending upon the specialty, which also likely contributed to the variety of interactions since students had opportunities to interact with different professionals specific to each specialty. As a result, the top professional interactions are different in the various clinical rotations. We think this is important because the exposures should be different in each clerkship specialty and students should have these

experiences during this time in their training to prepare them for residency and practice. For the most part, students at each campus interacted with the healthcare professionals most closely associated with each specialty, which demonstrates the relevance of the assignment and its ability to deliver a comparable experience across distributed campuses with varying healthcare systems. Where there is variability among campuses, it is often explained by a relatively small number of students participating in a clerkship on that campus, or a distinctly different practice model. These small differences do not detract from the goals of the exercise. Based on the high level of student satisfaction, we believe that students do not find one assignment per clerkship as administratively burdensome.

In our assignment, students could meet with a student, a professional, or both. It turned out that they met with significantly more professionals than students even at the Academic Health Center in Indianapolis (Table 11). For the purposes of this exercise, interacting with healthcare professionals achieved the goals. However, if interaction with other students is a goal, specifying that as a requirement of the exercise as part of instructions would be important.

Assuring that curricula include a representation of both inpatient and outpatient experiences is important because it leads to exposure to different colleagues and professionals, as well as different exposure to the range of work done in the various settings (Table 12). We were able to see that students in outpatient settings were exposed to more medical assistants, while inpatient settings had students interacting more with nurses (LPNs or RNs). Again, this is another opportunity to expose students to a range of healthcare professionals and the work they do in different settings.

Conclusion

Our interprofessional assignment offers a promising solution to the challenges of delivering high-quality, meaningful interprofessional education that prepares students for real-world teamwork. Its adaptability across distributed educational programs with minimal

resource requirements promotes widespread implementation and impact. By fostering collaboration and shared learning experiences in the setting of authentic, coordinated patient care, this exercise prepares students for real-world teamwork in the clinical environment.

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Supplemental File 1

IUSM IPE Clerkship Exercise

Introduction

Recognizing that high quality patient care is delivered in the setting of inter-professional teams, inter-professional education (IPE) in the health sciences is viewed as extremely important in the United States and internationally. IUSM has adopted a competency-based objective to reflect our commitment to IPE:

Demonstrate effective teamwork through collaboration with diverse patients, their supporters, and with the multi-disciplinary healthcare team (SBP1). See also ICS1.

Assignment

For this IPE exercise, each medical student will engage a colleague from another health profession **who is involved in the care of a mutual patient**. Students will complete this IPE exercise at least once during each clerkship and will document completion via submission of this canvas quiz. Students are required to speak with a different type of healthcare professional during each clerkship. Possible professions include Pharmacist, Medical Assistant (MA), Nurse, Physical Therapist, Respiratory Therapist, Physician Assistant, Nurse Practitioner, Social Worker, Nurse Anesthetist, Dietician, Genetic Counselor, Chaplain, Behavioral Therapist, Midwife, Lactation Consultant, Psychologist, Emergency Medical Technician, etc. Certain Clerkship rotations will be particularly amenable to discussions with professions. For example, we recommend waiting to speak with a Medical Assistant (MA) during your Family Medicine Clerkship rotation since they may be the only other healthcare professional in an office environment.

When speaking with the health professional (and/or health profession student), here are some suggested questions to help guide the conversation:

- How did you choose this career?
- What educational requirements did you complete for your profession?
- What is your scope of practice? How does your scope of practice impact the patient experience and/or potentially patient outcomes?
- What are the most important issues about our patient from your professional perspective?
- What were your findings, and recommendations for this patient and why?
- Can you share 1-3 general pearls/recommendations for best ways for our professions to interact?

Canvas Questions (on canvas only, not on the word doc reference sheet that the students can download):

1. Please indicate the date the conversation was held with the other healthcare professional/health profession student (text entry).
2. Please select which Clerkship you were rotating on when this conversation was held: (drop-down menu)
3. Please select which Campus you completed this activity. (drop-down menu)
4. What was the diagnosis of the patient you and the other healthcare professional/health profession student cared for? (text entry)
5. What was the care setting? (drop down menu – outpatient, inpatient)*

6. Which type of health care professional/health profession student did you interview? (drop-down menu in Canvas)
- i. Anesthetist – CAA or CRNA
 - ii. Behavioral Therapist
 - iii. Chaplain
 - iv. Child Life Specialist
 - v. Chiropractor
 - vi. Dentist
 - vii. Dietician
 - viii. Doula
 - ix. Emergency Medical Technician
 - x. Genetic Counselor
 - xi. Lactation Consultant
 - xii. Medical Assistant (MA)
 - xiii. Medical Interpreter
 - xiv. Midwife
 - xv. Nurse – LPN or RN
 - xvi. Nurse Practitioner (NP)
 - xvii. Occupational Therapist (OT)
 - xviii. Optometrist
 - xix. Operating room assistant - ORA
 - xx. Patient care assistant - PCA
 - xxi. Pharmacist
 - xxii. Physical Therapist (includes Athletic Trainer)
 - xxiii. Physician's Assistant (PA)
 - xxiv. Podiatrist
 - xxv. Psychologist
 - xxvi. Respiratory Therapist
 - xxvii. Social Worker
 - xxviii. Speech Pathologist
 - xxix. Surgical scrub technician
 - xxx. Technician (including Radiology Technicians/Ultrasonographers, Laboratory Technicians, Medical Equipment Technicians, Mental Health Technicians, Neurotechnicians, Ophthalmic Technicians, Patient Care Technicians, and Pharmacy Technicians.)
 - xxxi. Other
7. If "Other" was selected for the question above, please indicate which type of health care professional/health profession student was interviewed. (text entry)
8. Did you interact with a student studying that profession or a healthcare professional? (drop down menu)
9. Reflection: How do you think this healthcare professional improved patient care, the patient experience, and/or potentially patient outcomes? (Minimum 1-2 paragraph response required) (essay text entry)
10. **Scope of IPE Team:** Please recall all the health care professionals who were involved in the care of your patient (identify as many as you can recall).
- i. Anesthetist – CAA or CRNA
 - ii. Behavioral Therapist
 - iii. Chaplain
 - iv. Child Life Specialist
 - v. Chiropractor
 - vi. Dentist
 - vii. Dietician

- viii. Doula
- ix. Emergency Medical Technician
- x. Genetic Counselor
- xi. Lactation Consultant
- xii. Medical Assistant (MA)
- xiii. Medical Interpreter
- xiv. Midwife
- xv. Nurse – LPN or RN
- xvi. Nurse Practitioner (NP)
- xvii. Occupational Therapist (OT)
- xviii. Optometrist
- xix. Operating room assistant - ORA
- xx. Patient care assistant - PCA
- xxi. Pharmacist
- xxii. Physical Therapist (includes Athletic Trainer)
- xxiii. Physician's Assistant (PA)
- xxiv. Podiatrist
- xxv. Psychologist
- xxvi. Respiratory Therapist
- xxvii. Social Worker
- xxviii. Speech Pathologist
- xxix. Surgical scrub technician
- xxx. Technician (including Radiology Technicians/Ultrasonographers, Laboratory Technicians, Medical Equipment Technicians, Mental Health Technicians, Neurotechnicians, Ophthalmic Technicians, Patient Care Technicians, and Pharmacy Technicians.)
- xxxi. Other

For each of the following items, indicate your agreement using the 5-point Likert scale (strongly disagree to strongly agree)

1. This experience has contributed to my understanding of the role of this profession as part of the health care team.
2. I understand when participation by this health professional would potentially benefit my patient.
3. This experience aided my understanding of the benefits of an interprofessional care team to patient care.
4. As a result of this experience, my confidence in engaging other professionals on the health care team improved.
5. This experience aided in my understanding of my role as a member of the health care team.
6. This experience was centered on the care of at least one of my patients.

Supplemental File 2

Campus and Question	Strongly Agree/Agree (Count and %)	Neutral (Count and %)	Disagree/Strongly Disagree (Count and %)	Total (Count and %)
(4.1b) As a result of this experience, my confidence in engaging other professionals on the healthcare team improved.	5349 (84%)	782 (12%)	220 (3%)	6351 (100%)
Indianapolis	3577 (84%)	539 (13%)	139 (3%)	4255 (100%)
Bloomington	189 (76%)	44 (18%)	15 (6%)	248 (100%)
Evansville	362 (87%)	36 (9%)	16 (4%)	414 (100%)
Fort Wayne	195 (76%)	44 (17%)	17 (7%)	256 (100%)
Muncie	157 (88%)	17 (9%)	5 (3%)	179 (100%)
Northwest-Gary	176 (90%)	16 (8%)	3 (2%)	195 (100%)
South Bend	302 (88%)	36 (10%)	7 (2%)	345 (100%)
Terre Haute	237 (90%)	22 (8%)	3 (1%)	262 (100%)
West Lafayette	154 (78%)	28 (14%)	15 (8%)	197 (100%)
(4.2b) I understand when participation by this health professional would potentially benefit my patient.	6009 (95%)	267 (4%)	77 (1%)	6353 (100%)
Indianapolis	4007 (94%)	195 (5%)	55 (1%)	4257 (100%)
Bloomington	233 (94%)	12 (5%)	3 (1%)	248 (100%)
Evansville	390 (94%)	17 (4%)	7 (2%)	414 (100%)
Fort Wayne	242 (94%)	12 (5%)	3 (1%)	257 (100%)
Muncie	173 (97%)	2 (1%)	4 (2%)	179 (100%)
Northwest-Gary	190 (97%)	5 (3%)	0 (0%)	195 (100%)
South Bend	333 (97%)	9 (3%)	2 (1%)	344 (100%)
Terre Haute	251 (96%)	9 (3%)	2 (1%)	262 (100%)
West Lafayette	190 (96%)	6 (3%)	1 (1%)	197 (100%)
(4.3b) This experience aided in my understanding of my role as a	5386 (85%)	752 (12%)	215 (3%)	6353 (100%)

member of the healthcare team				
Indianapolis	3609 (85%)	507 (12%)	141 (3%)	4257 (100%)
Bloomington	190 (77%)	49 (20%)	9 (4%)	248 (100%)
Evansville	358 (86%)	41 (10%)	15 (4%)	414 (100%)
Fort Wayne	206 (80%)	35 (14%)	16 (6%)	257 (100%)
Muncie	162 (91%)	11 (6%)	5 (3%)	178 (100%)
Northwest-Gary	173 (89%)	18 (9%)	4 (2%)	195 (100%)
South Bend	294 (85%)	42 (12%)	9 (3%)	345 (100%)
Terre Haute	236 (90%)	24 (9%)	2 (1%)	262 (100%)
West Lafayette	158 (80%)	25 (13%)	14 (7%)	197 (100%)
(4.4b) This experience aided my understanding of the benefits of an interprofessional care team to patient care.	5534 (87%)	626 (10%)	191 (3%)	6351 (100%)
Indianapolis	3718 (87%)	414 (10%)	123 (3%)	4255 (100%)
Bloomington	192 (77%)	48 (19%)	8 (3%)	248 (100%)
Evansville	364 (88%)	34 (8%)	16 (4%)	414 (100%)
Fort Wayne	209 (81%)	35 (14%)	13 (5%)	257 (100%)
Muncie	167 (93%)	8 (4%)	4 (2%)	179 (100%)
Northwest-Gary	182 (93%)	12 (6%)	1 (1%)	195 (100%)
South Bend	307 (89%)	33 (10%)	4 (1%)	344 (100%)
Terre Haute	237 (90%)	20 (8%)	5 (2%)	262 (100%)
West Lafayette	158 (80%)	22 (11%)	17 (9%)	197 (100%)
(4.5b) This experience has contributed to my understanding of the role of this profession as part of the health care team.	5471 (86%)	674 (11%)	210 (3%)	6355 (100%)
Indianapolis	3651 (86%)	472 (11%)	137 (3%)	4260 (100%)
Bloomington	200 (81%)	37 (15%)	11 (4%)	248 (100%)
Evansville	367 (89%)	34 (8%)	13 (3%)	414 (100%)
Fort Wayne	219 (85%)	25 (10%)	13 (5%)	257 (100%)
Muncie	159 (89%)	15 (8%)	5 (3%)	179 (100%)
Northwest-Gary	178 (92%)	12 (6%)	4 (2%)	194 (100%)

South Bend	301 (88%)	36 (10%)	7 (2%)	344 (100%)
Terre Haute	231 (88%)	24 (9%)	7 (3%)	262 (100%)
West Lafayette	165 (84%)	19 (10%)	13 (7%)	197 (100%)
(4.6b) This experience was centered on the care of at least one of my patients.	6029 (95%)	262 (4%)	65 (1%)	6356 (100%)
Indianapolis	4025 (95%)	185 (4%)	49 (1%)	4259 (100%)
Bloomington	232 (94%)	16 (6%)	0 (0%)	248 (100%)
Evansville	393 (95%)	15 (4%)	6 (1%)	414 (100%)
Fort Wayne	243 (95%)	12 (5%)	2 (1%)	257 (100%)
Muncie	172 (96%)	3 (2%)	4 (2%)	179 (100%)
Northwest-Gary	189 (97%)	6 (3%)	0 (0%)	195 (100%)
South Bend	330 (96%)	12 (3%)	3 (1%)	345 (100%)
Terre Haute	253 (97%)	9 (3%)	0 (0%)	262 (100%)
West Lafayette	192 (97%)	4 (2%)	1 (1%)	197 (100%)
Grand Total	33778 (89%)	3363 (9%)	978 (3%)	38119 (100%)

Supplemental Table 13 This table shows the breakdown by # of students (N) and % at each campus of the level of student agreement with our six assignment evaluation questions. Responses were provided on a 5-point scale (5-point scale: Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree). The 'Strongly Agree' and 'Agree' responses and the 'Disagree' and 'Strongly Disagree' responses were aggregated. This table shows that, across all campuses, most students 'Strongly Agreed/Agreed' (N=33778; 89%) with all questions, regardless of the campus where they completed the assignment.

- 4.1 As a result of this experience, my confidence in engaging other professionals on the healthcare team improved. The range across campuses:
 - Strongly Agree/Agree= 76% (Bloomington) - 90% (Northwest-Gary and Terre Haute)
 - Neutral= 8% (Northwest-Gary and Terre Haute) -18% (Bloomington)
 - Disagree/Strongly Disagree= 1% (Terre Haute) - 8% (West Lafayette)
- 4.2 I understand when participation by this health professional would potentially benefit my patient. The range across campuses:
 - Strongly Agree/Agree= 94% (Bloomington, Evansville, Fort Wayne, and Indianapolis) - 97% (Muncie, Northwest-Gary, and South Bend)
 - Neutral= 1% (Muncie) - 5% (Bloomington, Fort Wayne, and Indianapolis)
 - Disagree/Strongly Disagree= 0% (Northwest-Gary) - 2% (Evansville and Muncie)
- 4.3 This experience aided in my understanding of my role as a member of the healthcare team. The range across campuses:
 - Strongly Agree/Agree= 77% (Bloomington) - 91% (Muncie)
 - Neutral= 6% (Muncie) - 20% (Bloomington)
 - Disagree/Strongly Disagree= 1% (Terre Haute) -7% (West Lafayette)

- 4.4 This experience aided my understanding of the benefits of an interprofessional care team to patient care. The range across campuses:
 - Strongly Agree/Agree= 77% (Bloomington) - 93% (Muncie, Northwest-Gary)
 - Neutral= 4% (Muncie) - 19% (Bloomington)
 - Disagree/Strongly Disagree= 1% (Northwest-Gary and South Bend) - 9% (West Lafayette)
- 4.5 This experience has contributed to my understanding of the role of this profession as part of the health care team. The range across campuses:
 - Strongly Agree/Agree= 81% (Bloomington) - 92% (Northwest-Gary)
 - Neutral= 6% (Northwest-Gary) - 15% (Bloomington)
 - Disagree/Strongly Disagree= 2% (Northwest-Gary and South Bend) - 7% (West Lafayette)
- 4.6 This experience was centered on the care of at least one of my patients. The range across campuses:
 - Strongly Agree/Agree= 94% (Bloomington) - 97% (Northwest-Gary, Terre Haute, and West Lafayette)
 - Neutral= 2% (Muncie and West Lafayette) - 6% (Bloomington)
 - Disagree/Strongly Disagree= 0 (Bloomington, Northwest-Gary, and Terre Haute) - 2% (Muncie)