



Experiential learning exercise to achieve objective assessment of interprofessional education



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ABSTRACT

At the undergraduate medical education level, many U.S. medical students have only experienced interprofessional patient care by observation or intermittent discussion-based educational activities. However, we believe medical students will gain the most impactful understanding of the allied health professionals they will collaborate with in the future through both real or simulated practice as learners as well as witnessing the direct benefit to patient care. Given the lack of objective assessment of interprofessional education (IPE) competencies, specifically those with a direct impact on patients, we developed an innovative simulated exercise focusing on a medical student discharge plan before and after an interprofessional team meeting. We hypothesized that the interprofessional team of medical, nursing, and pharmacy students will assist the medical student in producing a discharge summary with higher specificity and completeness than a discharge summary produced by a medical student alone.

Data obtained from discharge plan scoring and post-intervention narrative survey was analyzed via convergent parallel mixed-methods design. The mean post-intervention score of the discharge plan showed improvement, but did not meet statistical significance. However, when evaluated by each individual domain, the Follow-up section of the post-intervention discharge plan showed significant improvement. This exercise is a first step in the direction of obtaining more objective outcomes data as a result of students engaging in simulated interprofessional team-based care. Evaluation data demonstrated a positive trend towards a more comprehensive, and by extension, safer discharge plan. We are hopeful that our work contributes to other exercises intended to help move from students merely “enjoying” the IPE experience toward demonstrating the first-hand benefit to patients, which substantiates and supports the motivation for future physicians to move toward competence in team based care.

1. Format

Simulated exercise with standardized patients focusing on a medical student discharge plan before and after an interprofessional team meeting including nursing, pharmacy, and medical students. The discharge planning process involves various care providers and is often viewed in the context of patient safety and quality measurements, so is an apt marker for objective assessment of an interprofessional team exercise.¹

2. Target audience

60 total health professions students including twenty in each category: fourth year medical students (MS4), senior nursing students (AAS), and pharmacy students in their first clinical year (P3).

3. Objectives

The Learning Objectives for the Simulated Experiential Interprofessional Education Learning Exercise included:

- Students will demonstrate the ability to effectively communicate

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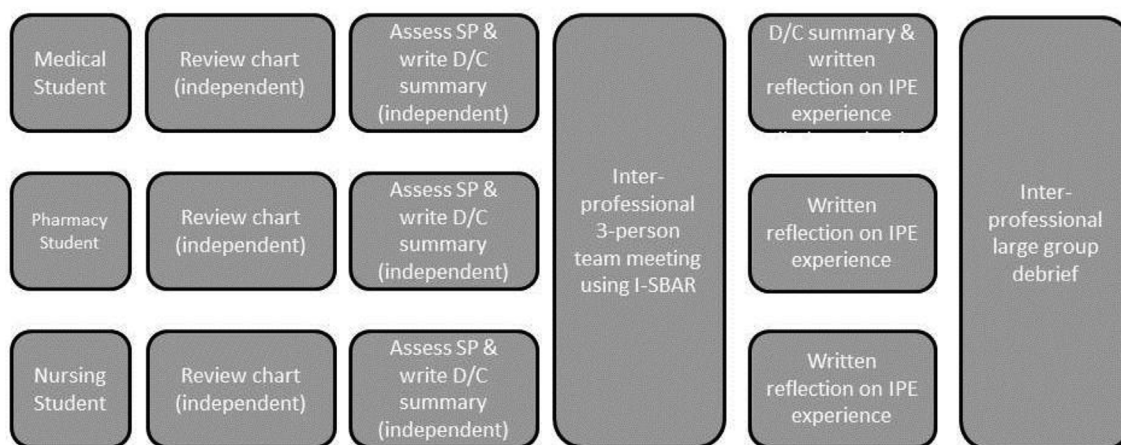


Fig. 1. Outline of the IPE exercise Standardized Patient (SP); discharge (D/C); Identify-Situation-Background-Assessment-Recommendation (I-SBAR).

and collaborate with other healthcare professionals.

- Students will demonstrate the ability to efficiently interview and assess a patient, showing empathy, and sensitivity to a patient's cultural and personal needs.
- Students will develop a comprehensive care plan to meet the patient's healthcare needs in collaboration with other healthcare professionals.
- Students will describe the role of other healthcare professionals in caring for a patient with chronic illness.

4. Activity description

Prior to the day of the exercise, students were introduced to the national standards for the recommended contents of a discharge plan through electronic distribution of the "IDEAL" tool produced by the Agency for Healthcare Research and Quality.² Fig. 1 details the outline of the exercise which started with all students independently reviewing the hospital chart of a complex fictional patient. The case was a patient with diabetes and renal insufficiency who presented to the Emergency Department with a complaint of foot pain and was admitted with a diagnosis of osteomyelitis. During hospitalization, the patient underwent an MRI and surgical wound debridement. The hospitalization included Infectious Disease consultation, peripherally inserted central catheter placement for vancomycin treatment, wound care consult, and physical therapy evaluation. Throughout the course of the hospital stay, the patient had changes in their medication plan and ability to perform activities of daily living.

After reviewing the hospital chart, the students from each profession (MS4, P3, and AAS) were asked to independently meet with the standardized patient (SP) of this case to evaluate them and discuss the discharge plan. The MS4 was asked to then write a discharge plan using a discharge plan template that was provided. Following the patient evaluation, one each of the MS4, P3, and AAS students met as an interprofessional team to discuss the patient's needs. They were provided written instructions on team communication using the I-SBAR format, but otherwise, the team meeting was not facilitated.³ At the end of this discussion, the MS4 was asked to write a second discharge plan. All students ended the exercise with an interprofessional debriefing with medical, pharmacy, and nursing faculty. The students were asked to complete 5 anonymous, open-ended questions about their experience for the qualitative component of the analysis to add more depth to the understanding of the student perspective on the potential impact of IPE on patient care.

5. Assessment

Assessment included several components, including feedback

provided directly to each individual student from the SP based on a standardized communication checklist specific to the case. In the weeks after the exercise, students received written feedback from a combined faculty assessment of their team's communication using the McMaster-Ottawa Team Observed Structured Clinical Encounter checklist.⁴ These two assessments determined whether students achieved the objectives related to communication and team roles. As well, learners completed a brief qualitative reflection of their IPE experience at the conclusion of the exercise and prior to the debriefing.

6. Evaluation

To determine whether this educational activity achieved the overall objective of the exercise, data obtained from scoring and the narrative survey was analyzed via convergent parallel mixed-methods design and examined the discharge plan when the senior medical student acted alone as compared to when the same student had the benefit of input of nursing and pharmacy students.⁵ Case-specific main domains evaluated for completeness included Diagnoses, Medications, Follow-up, Supplies, and Self-care/social supports; pre and post-intervention discharge plans were scored using a rubric with equal weight given to each of the main domains (detailed scoring rubric available upon request). Statistical analysis was conducted using a *t-test* in a quasi-experimental method, with statistical significance between the pre- and post-intervention scores analyzed for significance ($p < 0.001$).

The mean pre-intervention score of the combined discharge plan domains was 49.6% [95% CI, 44.9 to 54.3] compared to the mean post-intervention score of 54.2% [95% CI, 48.9 to 59.5], which was an improvement, but was not statistically significant. However, when evaluated by each individual domain, the Follow-up section of the post-intervention discharge plan showed significant improvement (Table 1). Additionally, both before and after the team meeting, Medication scores

Table 1
Pre and post-intervention scoring of discharge summary.

	Pre-intervention scores (aggregate)		Post-intervention scores (aggregate)	
	Mean	Standard deviation	Mean	Standard deviation
Diagnosis	57%	40%	59%	36%
Medications	89%	9%	89%	8%
Follow-up*	44%	21%	55%	21%
Supplies	8%	18%	10%	26%
Self-care/social supports	51%	16%	58%	20%

* $p < 0.05$.

Table 2
Pre-intervention scoring of discharge summary.

	Mean	95% CI LB	95% CI UB
Diagnosis	58%	41%	75%
Medications	89%	86%	92%
Follow-up	49%	41%	58%
Supplies	9%	–1%	19%
Self-care/social supports	55%	47%	62%

LB = Lower Bounds, UB = Upper Bounds.

were significantly greater than the other four domains while scores on the Supply section were significantly lower, suggesting that medical students were fairly complete in their assessment of medication needs and dosing even before discussion with a pharmacy student (Table 2).

7. Impact

From the qualitative component of the exercise, many themes emerged. The majority of the students commented that they had limited active/simulated IPE experience. Most of their learning in this competency occurred by direct observation alone. There was no standardized exposure to the health professions or students from other disciplines. From a communication standpoint, although the medical students were not specifically trained to facilitate an interprofessional discussion, they commented that the interactions were collegial and respectful and many noted that all of the team members contributed meaningfully to the care of the patient. The medical students seemed to gain an understanding of the complexity of the discharge process through successful collaboration as the majority of the medical students stated that they wanted to increase the availability of allied health professionals in their discharge planning process. Most participants saw the value of including students from other professions in the healthcare team, and the trend in the qualitative analysis pointed towards increased thoroughness in the discharge plan and patient care. Many of the students commented that they realized they overlooked important details to the patient plan.

Although this wasn't a structured learning exercise, the students still made personal gains in terms of individual impact. Some commented that even if they didn't change their perspective on collaboration, the exercise served to at least deepen their comprehension of the other professions. Of all twenty subjects, there were no negative comments regarding their education and further development. Our qualitative results indicate true learning can occur through the experience of actual teamwork and collaboration, specifically with regard to an individual outcome (the patient's), as well as individual performance (the medical student's).

This innovative exercise is a step in the direction of obtaining more objective outcomes data as a result of students engaging in simulated interprofessional team based care. Although the overall scores did not show a statistically significant improvement post-intervention, this effect may have been limited by multiple factors. The level of clinical experience among the health professional students was difficult to standardize. Specifically, the MS4s had nearly completed while the P3 students were still early in clinical training which may have minimized their contribution and leadership in directing the care of the patient. Many of the AAS students had prior clinical experiences before matriculating into nursing school which added to robust team conversation. Being a pilot, only twenty MS4s participated, perhaps contributing to the lack of significance in the quantitative analysis. Even so, the data demonstrated a positive trend towards a more comprehensive, and by extension, safer discharge plan. In addition, medical students appreciated and expanded their knowledge of interprofessional encounters, specifically in relation to discharge planning and patient safety.

The students of nursing and pharmacy participated in the study, but their qualitative and quantitative results were not factored into this

analysis. Although interprofessional education and collaboration is encouraged and becoming increasingly prevalent in the health professions, the design of an effective curriculum remains a challenge. This exercise was an observation and assessment of a self-directed, team-based, interprofessional discussion, and not an educational intervention. A true educational experience requires the synergy of all of the health professional curricula, not merely an observation of a team discussion.

8. Required materials

This exercise is resource and time intensive. Institutions will need access to a clinical simulation center and standardized patient resources. Materials included a complete simulated hospital chart, a discharge plan scoring rubric, the I-SBAR tool,³ the McMaster-Ottawa Team Observed Structured Clinical Encounter checklist,⁴ and the IDEAL discharge summary tool (produced by the Agency for Healthcare Research and Quality and available free online).²

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Other disclosures

The authors have nothing to disclose.

Ethical approval

This study was reviewed and approved by the medical school institutional review board on 5/12/16.

Disclaimers

None.

Previous presentations

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.xjep.2018.09.002>.

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