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Patient Safety Interprofessional Training for Medical, Nursing, and Pharmacy Students

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Abstract

Introduction: Patient safety education is required in medical, nursing, and pharmacy training, and interprofessional education offers an ideal format for teaching the core concepts of patient safety. This training activity was developed to fulfill interprofessional education core competencies for communication and teamwork and was nested within a required patient safety course taught at a medical school. However, the activity can easily be adapted as a stand-alone offering that can be included in a preclinical doctoring course, offered as an elective, or hosted at a college of nursing or pharmacy. Our goal was to prepare learners for the clinical environment by providing a context for patient safety, communication, and teamwork. **Methods:** Students participate in a 1.5-hour large-group activity that explores a case from the perspectives of each discipline. Faculty from all three disciplines sequentially present and debrief the case using focused questions to guide students' reflections and interactions between team members. **Results:** We have presented this activity for 4 consecutive years. Students complete a questionnaire with retrospective pre-post ratings of their perspectives on the activity and its impact on their awareness of disciplinary roles and responsibilities, communication errors, and strategies for addressing interdisciplinary conflicts. Results show statistically significant increases in the items of interest. **Discussion:** This interprofessional education offering is effective in terms of increasing awareness and knowledge among members of three health care disciplines, improving awareness of potential kinds of communication errors, and helping students consider the role of interdisciplinary interactions.

Keywords

Interprofessional Education, Communication, Teamwork, Patient Safety

Appendices

A. IPE Patient Safety Facilitator Guide.docx

B. IPE Slides.pptx

C. Patient Safety Session Evaluation.doc

All appendices are peer reviewed as integral parts of the Original Publication.

Educational Objectives

By the end of this lesson, students will be able to:

1. Communicate information with patients, families, community members, and health team members in a form that is understandable and avoids discipline-specific terminology when possible.
2. Listen actively and encourage ideas and opinions of other team members.
3. Recognize how their own uniqueness (experience level, expertise, culture, power, and hierarchy within the health team) contributes to effective communication, conflict resolution, and positive interprofessional working relationships.
4. Communicate the importance of teamwork in patient-centered care and population health programs and policies.

Introduction

The Institute of Medicine's 2003 report *Health Professions Education: A Bridge to Quality* called for the education of health professionals in patient safety science.[1] While discipline-specific roles and responsibilities may be different, the tenets of patient safety science are the same for medical, nursing, and pharmacy students.[1,2] This curricular convergence offers a unique opportunity for interdisciplinary training that promulgates effective communication and the importance of teamwork. This resource is

especially targeted for preclinical medical, nursing, and pharmacy students just prior to entering the clinical domain. Using a scaffolding approach to teaching patient safety, our goal was to prepare learners for the clinical environment by providing a context for patient safety, communication, and how to work in teams. After meeting with faculty leaders from nursing, pharmacy, and medicine, we reviewed the literature for preexisting materials to use in our training of preclinical students.

The literature is rich with opportunities for interprofessional training during the clinical years. Indeed, a search of MedEdPORTAL at the time of our curriculum development showed 16 offerings in interprofessional collaboration. However, none of those offerings met the goals for our represented disciplines as they either were intended for more advanced clinical training or were context specific (e.g., refugees, pediatric, geriatric). A more recent MedEdPORTAL offering, "Coordinating Care Across Settings: Roles and Responsibilities in the Primary Care Clinic,"[3] addressed some of the same student learning outcomes targeted in this offering but focused more attention on diagnosis and treatment of specific medical and dental conditions.

Another program, TeamSTEPPS,[4] was considered for our students. TeamSTEPPS is arguably the most well-known evidence-based framework for interprofessional training in communication, leadership, situation monitoring, and mutual support. Again, the scenarios presented in that training are intended for more advanced clinical learners, and we were concerned that the students would perseverate or be too distracted over the clinical presentation instead of focusing on the phenomena of teamwork and interprofessional communication. Lastly, we determined the complexity of this training, along with the human and temporal requirements (4 hours), exceeded our resources.

Finding no preexisting training materials that met our specific needs, we created this learning activity in a collaborative and iterative manner. The specific case was loosely adopted from a case report described in the pharmacy literature.[5] In the first year, we piloted this project with a total of 27 students (10 medical, 10 nursing, and seven pharmacy). In the second year, we revised the materials and scaled the project up to include 286 students (174 medical, 78 nursing, and 34 pharmacy), and in the third year, 295 students (175 medical, 79 nursing, and 41 pharmacy). In the fourth year, 335 students participated (178 medical, 87 nursing, and 70 pharmacy). Each year, we made adjustments to the curriculum in response to administrative lessons learned, changes in clinical practice, student feedback, and faculty participation.

The specific session objectives for this offering were adapted from the *Core Competencies for Interprofessional Collaborative Practice*.[6]

Methods

This activity consists of a case presentation and discussion with student participants from medicine, nursing, and pharmacy and is facilitated by faculty assigned to interdisciplinary cohorts within a large-group setting. The case is presented in four distinct sections, with each section led by a different faculty representative. At the end of each section, students are asked to work through questions regarding the case and are invited to report out. Each student cohort has a nursing, medicine, or pharmacy faculty member assigned to keep learners focused, on task, and moving forward. We chose a large-group discussion for preclinical learners because it afforded an opportunity for equal presentation and exposure to faculty from all three disciplines. While small-group sessions are ideal for a case-based discussion, we found that the large-group format ensured students were exposed to faculty from all three disciplines and was more feasible than recruitment of over 90 representative small-group facilitators. Our data also support that our objectives were met using this format.

This resource may be used in an advanced doctoring course, patient safety course, or elective, or as a stand-alone activity. All learners should be senior preclinical students just prior to entering the clinical phase of their training. Before this case-based activity is implemented, students should have an entry-level understanding of the use of supplements, assessment and treatment of minor head injuries following a

fall, and corresponding discipline-specific roles and responsibilities. Learners should also have received basic instruction in the fundamentals of teamwork and patient safety science through either readings, didactics, or online learning.

Roles and Responsibilities

To begin the session, a faculty member is designated to welcome the students, introduce the faculty leaders, and offer any introductory remarks. This designated faculty member then begins the icebreaker following the instructions provided in the facilitator guide. He or she also serves as timekeeper and leads the wrap-up. After the welcome and introductions, the PowerPoint presentation (Appendix B) begins. The icebreaker activity is displayed on the screen, and the students are allowed 10 minutes get to know each other and discuss the questions. During this time, the volunteer small-group leaders should encourage their students to discuss and engage.

After the icebreaker, a physician faculty member leads part one by reading the case and posing the questions. Students are given 5 to 7 minutes to discuss the questions in their assigned groups. While this is happening, the timekeeper circulates among the groups to monitor student progress by checking in with the small-group facilitators; this can be predetermined by a simple head nod or hand signal. When ready, or after about 7 minutes, the timekeeper signals the physician faculty to debrief the questions. If needed, support staff can pass a microphone to students as they share their responses.

Following this same format, a nursing faculty member leads part two, a pharmacy faculty member leads part three, and part four can be led by nursing and pharmacy either alone or jointly. A physician faculty member leads the case conclusion by reading the final large-group discussion questions and inviting any additional case-related comments or questions. The faculty member who opened the session should lead the wrap-up, distribute the evaluation (Appendix C), thank the students for their participation, and dismiss them. See the Table for section timings and suggested leaders/presenters.

Table. Facilitation Schema

Section	Suggested Time	Suggested Faculty Leader or Presenter
Welcome and introduction to the activity	5 min	Course director or host institution
Icebreaker activity	10 min	Same as introduction
Part one: 70-year-old male with a fall	10 min	Medical faculty
Part two: nurse begins discharge	10 min	Nursing faculty
Part three: pharmacist makes rounds	10 min	Pharmacy faculty
Part four: team discussion	10 min	Nursing/pharmacy faculty
Case conclusion: subdural hematoma diagnosis and treatment	10 min	Medical and all faculty
Wrap-up evaluations and/or other housekeeping issues	10 min	Same as introduction and icebreaker

Administrative

In order to assure that students and small-group leaders are proportionally distributed, faculty leaders from each discipline need to provide the administrative assistant with a roster of attendees to be assigned to a group (both students and faculty). An auditorium with sufficient capacity should be prepared, with group numbers distributed using paper placards or tabletop holders. In addition, a simple at-a-glance instructions handout that includes time, location, directions with maps, and contact information should be emailed to all participates prior to the event. Attendance sheets and questionnaires need to be prepared in advance and distributed to the students at the conclusion of the session.

Faculty Leaders/Presenters

Representative faculty leaders should meet at least a month in advance and again a week prior to the event to review teaching materials and discuss logistics and teaching responsibilities. A faculty leader or leaders from each discipline should be selected as the ones responsible for communicating to their constituents, recruiting their discipline-specific small-group facilitators, and troubleshooting issues for both their faculty and learners. Finally, discussion about potential publicity generated by the event

(photography, reporters, or newsletters) should be presented and mutually agreed upon by all representative faculty leaders.

Group Facilitators

Group facilitators are needed to keep the small groups focused and on task. These facilitators should not dominate or lead the discussion. Students should lead the discussion as much as possible to encourage and foster interaction among the disciplines. However, in a large-group setting such as ours with more than 30 groups of 10 students in the auditorium, some students may disengage or become distracted by electronic devices. Our experience has shown better student engagement when each group has an assigned facilitator. Facilitators are instructed to remain mostly silent unless the students get bogged down in a clinical issue and to encourage the students to move on to the next question once they have exhausted a topic. Because facilitators are not leading the group per se, fellows, residents, and even senior medical, nursing, or pharmacy students may serve in this role. Facilitators should receive a copy of the activity guide (Appendix A) and review all materials prior to the session.

Learners

Learners should be reminded about the event and the preclass assignment along with any other institutional instructions. They should wear their name badges, uniforms, and/or lab coats with identifying insignia to the training for easy identification. They are responsible for attending and participating in the activity, as well as for signing the attendance sheet and completing a questionnaire (Appendix C) at the conclusion of the activity.

Learning Environment

The hosting facility is responsible for developing materials with the address, location, and phone numbers, along with any maps (interior or exterior) to assist learners and faculty in finding the auditorium. Inside the facility, signage should be posted to direct participants to the learning site. In addition, security personal or support staff should be notified about the event and be prepared to direct participants to the location of the activity. Student and facilitator small-group assignments should be clearly posted on a wall; support staff with that information should be available to help participants who need assistance.

The hosting facility should provide and test the audiovisual equipment ahead of the activity, allowing plenty of time to address any problems. The facility is also responsible for greeting any local media and providing assistance for photos/video or interviews. It should be careful to follow institutional guidelines related to public affairs and make sure any required permissions are secured prior to interviewing learners or other participants.

Results

This interprofessional educational offering has been presented as a required session associated with a medical school patient safety course for 4 consecutive years. To date, 943 unique learners (537 medical students, 254 nursing students, and 152 pharmacy students) have completed the offering. Approximately 95 medical, nursing, and pharmacy faculty have participated as small-group facilitators over the course of the 4 years. These volunteer faculty were recruited because of their express interest or advanced training in patient safety.

Data from the third year of implementation were analyzed using the nonparametic Wilcoxon signed rank test for related samples. Of the 295 participants, 175 were medical students, 79 were nursing students, and 41 were pharmacy students. Previous interdisciplinary training was reported by 36% of all students and varied by discipline, though these differences were not statistically significant (pharmacy had the most and nursing had the least for this cohort). Prior training with other disciplines did not appear related to students' ratings of the effectiveness of this session. The participants rated the session effective (M = 6.1 on a 7-point scale, SD = 1.1) for helping consider how different disciplines contribute to errors in patient care. Across all students, there were significant increases from presession to postsession in students' perceptions of their knowledge about the roles of each discipline ($p < .001$), their knowledge of how to communicate with members of an interdisciplinary team ($p < .001$), and their belief in their ability to resolve

interdisciplinary conflicts ($p < .001$). Students also reported increases in awareness of communication errors and the social or cultural factors that can contribute to patient care error ($p < .001$).

On an end-of-course evaluation, medical students were asked to comment on anything in the course that either went well or needed improvement. Note that nursing and pharmacy students were not enrolled in the patient safety course and thus did not complete this course evaluation. In the third and fourth years, medical students commented that they especially enjoyed this activity, that it was a highlight of the course, and that they would like additional opportunities for interprofessional training. Negative comments reflected dissatisfaction with the teaching environment, specifically the auditorium and loud noise levels associated with the discussion. Anecdotally, pharmacy and nursing students have verbalized unsolicited praise for the activity; no negative comments have been reported from these cohorts.

Discussion

This activity was conceived as a joint teaching effort after attending a national conference on interprofessional education collaboration. Of special interest to educators is that all of the people participating in this activity represented independent institutions of higher learning and were not part of a common university system. Therefore, the logistics of location, recruitment, and scheduling were especially challenging due to discrepancies in class size, academic year, and learner preparation. In addition, none of the institutions had a physical capacity large enough to comfortably contain all of the students in a single location. We attempted to mitigate this problem by meeting at an off-campus auditorium in the third year and by evenly splitting attendance between two simultaneous yet separately located sessions in the fourth year. Neither of these solutions proved satisfactory, and so, finding enough space remains an ongoing challenge or opportunity for improvement.

In reflecting upon the design and development of this activity, care was taken to be fair and inclusive of all disciplines. Therefore, planning meetings took place at an off-site common area so that no one discipline was perceived as owning the product. Despite the desire to distribute all functions equally, management and coordination for developing this activity did require a point person responsible for communication, scheduling, and keeping the process moving forward in a timely manner. Because the school of medicine had received funding to develop an interprofessional activity, it had the resources to fulfill that role.

Case selection required careful consideration. Each discipline brought forth examples from our collective real-world experiences. While these cases were genuine and authentic, none offered sufficient representation for all three disciplines. A concurrent literature search identified a case from the pharmacy literature that proved ideal.[5] The case was revised, expanded, and refined until there was consensus by all three disciplines. An evaluation expert was also funded for this project and contributed to the development and design of all evaluations to rigorously analyze the data. As a result of this expertise, we have disseminated this interprofessional activity at five regional and/or national conferences.[7-11]

In the fourth year, we introduce the use of Poll Everywhere, a commercial audience response system that utilizes a smart phone to capture small-group responses. While using this product did help to focus the discussion, there was less student interaction because participants were texting their responses instead of talking to each other. Therefore, in future years, we will seek to convert this activity into a true small-group session using small-group rooms. We recognize that this will pose a significant challenge in terms of recruiting at least two discipline-specific faculty facilitators for over 41 small groups, but we believe that by using classrooms located on all three campuses, we will be able to increase faculty participation. Regardless, this training session has become fully embedded in the required curriculum of all three institutions and will continue to evolve. Overall, the process has been mutually beneficial and has led to additional collaborative offerings. Therefore, we will continue to revise and evaluate in an effort to determine the best educational value for our learners.

Limitations

Potential limitations for this interprofessional offering include the use of a retrospective pre-/postsession evaluation, which may not be as representative as a true presession and postsession assessment. In

addition, this activity may not be generalizable to all nursing, medical, and pharmacy learners. While our activity includes nurses training in a baccalaureate program, nurses training in an associate degree program may not have the same level of preclinical training. Likewise, the effectiveness of this activity for preclinical doctor of osteopathic medicine students is unclear. Finally, this activity may not be useful for schools of medicine that introduce clinical training in year one.

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Prior Presentations
Gill AC, Nelson EA, Cowart JB, Hatfield CL, Dello Stritto RA, Teal CR. Interprofessional education: a novel method of introducing patient safety concepts early in preclinical training. Poster presented at: Moving up the Educational Ladder—Improving Your Skills and Building Your Career in Medical Education; February 7, 2014; Houston, TX.

Gill AC, Nelson EA, Cowart JB, Hatfield CL, Dello Stritto RA, Teal CR. Interprofessional education: a novel method of introducing patient safety concepts early in preclinical training. Poster presented at: Baylor College of Medicine Annual Quality Improvement and Patient Safety Conference; May 15, 2014; Houston, TX.

Gill AC, Nelson E, Hatfield C, Dello Stritto R, Landrum P, Teal CR. Interprofessional patient safety education in the preclinical curriculum. Presented at: Association of American Medical Colleges Medical Education Meeting; November 11, 2015; Baltimore, MD.

Gill AC, Nelson E, Hatfield C, Dello Stritto R, Landrum P, Teal CR. Interprofessional patient safety education in the preclinical curriculum. Presented at: GME-Macy Foundation Summit: Developing an Innovative Blueprint to Address Training and Retention of Rural Practitioners, Mental Health Issues, and Interprofessional Education; February 17, 2016; Houston, TX.

Ethical Approval
This publication contains data obtained from human subjects and received ethical approval.

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