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A Simulated Clinical Skills Scenario to Teach Interprofessional Teamwork to Health Profession Students

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ABSTRACT: The Eastern Pennsylvania Delaware Geriatric Education Center developed an Interprofessional Clinical Skills Scenario (CSS) to facilitate development of teamwork skills, specifically decision making, communication and collaboration, in health professions students in medicine, nursing, pharmacy, occupational and physical therapy programs. The case scenario provides students with the opportunity to practice communication and collaboration with a team and standardized patient and caregiver in a simulated clinical setting. The CSS was integrated into an existing occupational therapy course in 2011. Students were recruited by faculty from various schools (health professions, pharmacy, nursing, medicine) throughout the university to participate in the CSS. The program evaluation included demographic assessment, process, and outcome measures. 166 students have participated in the CSS. Pre- and post-tests measured students' attitude toward healthcare teams. A Team Observation Tool was used by faculty and standardized patients/caregivers to evaluate student teams on communication, information sharing, and team interaction. A satisfaction survey was completed by the learners at the end of the CSS. This simulated Clinical Skills Scenario is a practical, interactive exercise that allows teams of interprofessional students to practice teamwork skills and patient-centered care with standardized patients and caregivers. Following a review of the learning activity and evaluation tools, the authors reflect on the effectiveness of the evaluation process for this CSS.

KEYWORDS: interprofessional education, geriatric care, clinical skills simulation

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Introduction

Patients benefit from well-coordinated care delivered by well-functioning teams of health professionals.[1–4] To function in an effective team in the clinical setting, students need to develop efficient team skills and competencies in prelicensure programs. Interprofessional education (IPE), where students from two or more professions learn about, from, and with each other,[5] facilitates development of collaboration and cooperation skills consistent with effective team-based care.[6]

IPE has been shown to be effective in changing students' attitudes,[7–10] increasing students' decision-making abilities,[11] knowledge,[10,12] and clinical skills.[4] Long-term outcomes of IPE include improved team performance in clinical settings.[13,14] Patients reported higher satisfaction, higher level of participation in decision making, and receiving a higher quality of care when receiving treatment from interprofessional teams versus usual care.[15] Professionals who experienced IPE reported increased confidence in their teamwork skills and increased

satisfaction with professional relationships in their first year of clinical practice.[16]

There is little doubt that the evidence in academic and clinical settings is increasingly supportive of IPE, and it appears that the goals of IPE are slowly being realized. While many educational institutions are committed to the practice of IPE, several challenges still hinder the implementation of IPE learning activities across prelicensure curriculums. These challenges include conflicting schedules, difficulty matching students of comparable skill sets in the same learning activity, limited faculty time, limited faculty knowledge of other disciplines, and lack of funding or time to include additional content into an already overloaded curriculum.[1,3,6] Several factors that contribute to the success of IPE include use of learning activities outside traditional didactic and classroom methodologies. Examples include group problem-solving case stories, experiential learning, and distance education technologies.[17–20] Other factors that lead to successful IPE are having well-defined learning outcomes,[21] motivated and skilled faculty,[20] support from administration and leadership, and financial support.[22]

In 2009–2010, faculty from Thomas Jefferson University in Philadelphia, as part of the Eastern Pennsylvania Delaware Geriatric Education Center, developed a Clinical Skills Scenario (CSS) to facilitate development of interprofessional teamwork skills. The CSS focused on decision making, communication, and collaboration in health profession students in medicine, nursing, pharmacy, and occupational and physical therapy programs. This case scenario was created to provide students with the opportunity to practice communication and collaboration with a team in a simulated setting.

The simulation experience re-created an interactive clinical situation in which students can practice skills without potential harm to patients.[23] During the simulated experience, the student is expected to respond as he/she would in the real situation.[24] Simulation can be a very effective teaching tool as the faculty can structure a scenario that requires students to actually perform specific skills or demonstrate specific knowledge.[25] By structuring a case scenario in which students are required to function as a team, they have the opportunity to practice behaviors that may not be available to them in typical clinical settings.[26] Simulation has been shown to be an effective method for teaching team skills.[2,6,25] The degree of realism in the simulated experience reinforces the skills needed for clinical practice.[6,27]

This paper describes the development, implementation, and program evaluation of an interprofessional simulation learning activity.

Methods

Educational design and development. The CSS was developed by an interprofessional workgroup of faculty with expertise in geriatrics and teamwork dynamics. The purpose of this learning activity was to provide the opportunity for students to work in an interprofessional team and to demonstrate the important roles of all health professionals in caring for a patient and family. The process of creating the activity began with defining the learning objectives and developing a clinical case scenario. The specific learning objectives for the activity are listed in Table 1. The faculty workgroup created a patient chart and a video to illustrate the simulated patient's case. In the clinical scenario, the chart presented the case of a 76-year-old patient who is hospitalized for an acute stroke with left-sided hemiparesis. The interprofessional video lasting 30 minutes depicted a physician, nurse, occupational therapist, physical therapist, pharmacist, and social worker, each conducting an assessment of the patient in the acute care setting.

Participant recruitment. Over the past 4 years, the CSS has been administered to several groups of interprofessional students in the health professions and medical school at the university. The CSS began as a pilot program in 2010 and in 2011 was integrated into an existing occupational therapy course that occurs each spring semester. It was mandatory for the occupational therapy students in the course to participate in the CSS but not for other health profession students. Other students were invited by faculty from various schools (health professions, pharmacy, nursing, medicine) throughout the university to participate in the CSS. Scheduling conflicts between the four schools often limited the number of students from each profession that were available to participate in the CSS. Faculty members from each of these schools served as facilitators and evaluators for the CSS exercise. They worked closely with faculty from the occupational therapy course to help facilitate the learning activity for all students.

Table 1. Learning objectives for the clinical case scenario.

LEARNING OBJECTIVES FOR THE CLINICAL CASE SCENARIO	EVALUATION TOOLS
Learners will demonstrate the ability to communicate and collaborate with |other healthcare professionals, patient and family during a family meeting.	Pre-Post Attitudes Towards Healthcare Teams Survey Team Observation Checklists
Learners will develop a care plan for the patient in collaboration with other healthcare professionals.	Team Observation Checklists
Learners will describe the importance of caring for the entire patient to fulfill his/her needs.	Student Satisfaction Survey Post Test Write Up

Educational implementation. Students who participated in the CSS received an information letter outlining the learning activity, the specific time to report for the exercise, and their team assignment. Each team comprised up to 10 students from medicine, nursing, occupational therapy, physical therapy, and pharmacy. Students were randomly assigned to teams by the course faculty who ensured that each group had a minimum of three professions represented. The letter also provided information about learning activities that the students completed prior to the session. The CSS included several learning activities designed in a specific sequence to facilitate the learning process as shown in Table 2. The student viewed the interprofessional assessment video of the patient in the acute care setting, reviewed the Curriculum for the Hospitalized Aging Medical Patient (CHAMP) discharge planning information,[28] and reviewed the patient chart prior to the session. CHAMP provides online educational material to teach effective discharge planning for hospitalized older adults.[28] On the day of the session, students met the other student members of the interprofessional team. The interprofessional teams of students reviewed the patient chart again and conducted a 15-minute team meeting to discuss the case and formulate a discharge plan together as a team. Students then met with the standardized patients assigned to their team (the patient and her adult child caregiver) in the simulated team meeting. The faculty workgroup previously trained dyads of standardized patients who would portray the patient and family member. This meeting lasted 20 minutes, during which time, the team and family discussed the patient's medical condition, the patient and family perspective, and the team's recommendations for the patient. The entire session was observed by a faculty member who recorded their observations on the Team Observation Checklist. After the simulated team meeting with the patient and family, the standardized patients left the room and completed the Team Observation Checklist. Students had a debriefing session with the faculty observer and then debriefed with the standardized patients (patient and caregiver) regarding their skills as a team. Finally, students completed the postactivity surveys. The total time for the session is 1 hour 15 minutes.

Evaluation Plan

The program evaluation includes demographic information of the number and types of health profession students, learning process, and outcome measures. Several evaluation methods are used. These include pre- and post-test surveys and team observation checklist used by the standardized patients and faculty observers. The pre- and post-test surveys collect attitudes toward interprofessional teams and the efficacy of team process. The team observation checklist measures components of teamwork: information sharing, communication, and team interaction. This checklist was adapted from a team observation tool.[29] Students also complete a satisfaction survey and one-page narrative reflecting on the learning activity. These evaluation tools were newly adapted and developed for our program by the faculty workgroup and were not tested for reliability or validity prior to use. The Thomas Jefferson University institutional review board approved all evaluation procedures and materials.

Pre- and post-test Surveys—Attitudes Toward Healthcare Teams. A 14-item survey uses a subset of questions adapted from the Heinemann survey to all students at the beginning and at the end of the CSS.[30] All items were rated on a 6-point rating scale of 1 (negative—strongly disagree) to 6 (positive—strongly agree).

Team Observation Checklist. The team observation checklist evaluated competencies specific for interprofessional teamwork and patient-centered care. The faculty and standardized patients used the same team observation checklist to evaluate the ability of the students to work as a team and provide patient-centered care. The standardized patients and faculty rated each team of students using the same 30-item evaluation checklist consisting of three domains: communication

Table 2. Timeline for the CSS exercise.

#	WHO	ACTION	TIME
1	• Available Faculty Member • Learner Healthcare Professionals	Orientation to Exercise Complete Pre-Survey	5 minutes
2	• Team of Learner Healthcare Professionals	Discuss discharge planning for Ms. Walker	15 minutes
3	• Team of Learner Healthcare Professionals • Patient and Family Caregiver	Discuss discharge planning with Ms. Walker and her family	20 minutes
4	• Team of Learner Healthcare Professionals • Faculty	Debriefing with faculty	20 minutes
5	• Team of Learner Healthcare Professionals • Patient and Family Caregiver	Debriefing with Patient and Family Caregiver	10 minutes
6	• Learner Healthcare Professionals	Post-Test Survey and Write-up (1 thing you learned today)	5 minutes
	Session Ends	**Total Time:**	1 hour 15 minutes

Notes: Learners do pre-work (viewing interprofessional online video, CHAMP online educational information on discharge planning, and reviewing patient chart) prior to attending this learning activity.

(10 questions), information sharing (10 questions), and team interaction (10 questions). All items were rated on a rating scale of 1 (poor) to 5 (excellent).

Student satisfaction. At the end of the CSS, students filled out an anonymous feedback form in which they rated the overall program including team interaction, team participation, exercise clarity and material, and feedback process from faculty and standardized patients on a rating scale of 1 (worst—strongly disagree) to 5 (best—strongly agree). Students also described one thing they learned at the CSS in a narrative statement.

Evaluation Results

Twenty-six students participated in the CSS in 2011, 76 students participated in 2012, and 64 students participated in 2013. There were differences in the number of students participating from each profession over the 4 years because of curriculum schedules and student availability as shown in Table 3. Only the occupational therapy students were required to participate in the CSS as it was part of their coursework. For the other students, this was not part of a required course, and therefore, only a limited number of students in other professions, in particular, the medical and nursing students, were available to be recruited to participate because of other clinical activities occurring at the time of the CSS. Students were not graded on their participation.

Table 3. Disciplines of learners (frequency).

	2011	2012	2013
Medicine 3rd and 4th year	5	0	0
Nursing Various years	1	9	2
Occupational therapy 2nd year	14	20	11
Physical therapy 2nd year	0	46	41
Pharmacy 3rd year	6	1	10
Total	26	76	64

Pre- and post-test Surveys—Attitudes Toward Healthcare Teams. Students rated their attitudes toward working in a healthcare team before and immediately after the program as shown in Table 4. All items are rated on a 6-point scale from 1—strongly disagree to 6—strongly agree. Overall, students had a positive attitude toward healthcare teams. Most of the students felt that team meetings foster communication among different disciplines (5.6 pre and 5.6 post on a 6-point rating scale) and that the team approach permits healthcare teams to better meet the needs of patients/families (5.72 pre and 5.76 post). The team approach to patient care

Table 4. Attitudes Toward Healthcare Teams (selected items).

QUESTION RATING SCALE 1–6 (6 = HIGHEST)	PRETEST N	PRETEST MEAN	POSTTEST N	POSTTEST MEAN
I depend on other disciplines, I.e. social workers, nurses, physicians, therapists, and pharmacists, when I plan a discharge.	166	5.45	161	5.49
I understand the different services provided by home health care and how to utilize them.	166	4.87	161	5.11
Team meetings foster communication among team members from different disciplines.	166	5.6	161	5.6
The team approach permits health professionals to meet the needs of family caregivers as well as patients.	159	5.72	160	5.76
Hospital patients who receive team care are better prepared for discharge than other patients.	159	5.64	160	5.67
Working on a team keeps most health professionals enthusiastic and interested in their jobs.	159	5.1	160	5.23
Developing a patient care plan with other members avoids errors in delivering care.	159	5.4	160	5.51
The team approach makes the delivery of care more effective.	159	5.45	160	5.58
Developing an interdisciplinary patient care plan is excessively time consuming.	159	2.34	160	2.16
Having to report observations to the team helps team members better understand the work of other health professionals.	159	5.54	160	5.65

was not viewed to be excessively time consuming (2.34 pre and 2.16 post) or complicating matters unnecessarily (1.78 pre and 1.81 post). Students rated the team approach as an effective way to deliver care (5.45 pre and 5.58 post). There was no statistical significance between the pre- and post-test survey results.

Team Observation Checklist. The faculty and standardized patient and caregiver (SP) rated the student interprofessional team skills based on three domains: communication, information sharing, and team interaction. All items are rated on a scale of 1—poor to 5—excellent and are detailed in Table 5. The Information Sharing section evaluated whether

Table 5. Team Observation Checklist (selected items).

RATING SCALE-SCALE OF 1 TO 5 (5 = HIGHEST SATISFACTION/EXCELLENT)	FACULTY N	FACULTY MEAN	STANDARDIZED PATIENT/CAREGIVER N	STANDARDIZED PATIENT/CAREGIVER MEAN
Information sharing				
The team explains reason for visit.	27	3.88	29	3.41
The team explains recommendations/management plan.	27	4.11	29	4.0
The team explains reasons for recommendations.	27	4.11	29	4.0
The team checks for understanding.	27	3.26	28	2.82
The team assesses patient's willingness and/or ability to follow the recommendations.	27	3.28	28	3.25
The team solicits questions about your concerns regarding the discharge plan.	27	3.8	28	3.53
The team recommends/addresses follow up.	27	3.6	27	3.22
Communication				
Organization of Data Collection: The team began with open ended questions and progressed with more specific (close ended) questions. Asked questions in a logical sequence. Used transition statements, completing one topic before jumping to the next.	27	3.37	29	3.38
Clarity of Questions: The team asked clear questions, one question at-a-time Avoided leading questions.	27	3.81	29	3.72
Listening Skills: the team allowed you to tell your story without interrupting you and without making you feel pressured. Asked for clarification when necessary.	27	3.96	29	3.69
Professional Manner: The team appeared confident and well groomed. Introduced self, shook hands, and addressed you by your preferred name.	27	4.27	28	3.71
Body Language: Body language, eye contact, and facial expressions made you feel comfortable. The team used appropriate tone of voice to show interest in and concern about you. Respected your personal space.	27	4.4	28	3.82
Affect: The team was respectful, non-judgmental, and unpretentious toward you. Did not seem condescending.	27	4.52	29	3.9
Empathy and Support: The team reflected and legitimized your feelings and concerns. Created a nurturing atmosphere.	27	4.11	29	3.38
Closing Visit: The team used summary statements including a discussion of the topic. Asked about questions; discussed future plans.	24	3.54	29	3.31
Overall Communication: Would you or a member of your family feel comfortable having this team care for you in the future?	27	3.93	29	3.45
Team interaction				
Knowledge About Own Roles: Do the team members appear knowledgeable about their own roles?	27	3.74	29	3.38
Knowledge About The Roles Of Others: Do team members appear knowledgeable about the roles of the other disciplines?	26	4.15	29	3.76
Overall Teamwork: How would you rate teamwork during this meeting/scenario?	25	3.88	28	3.57

Table 6. Student Satisfaction Survey (conducted at post-test) (selected items).

RATING SCALE: 1-STRONGLY DISAGREE, 2-SOMEWHAT DISAGREE, 3-NEUTRAL, 4-SOMEWHAT AGREE, 5-STRONGLY AGREE	N	MEAN
The focus of today's exercise was clear.	166	4.48
The time allotted for the exercise was sufficient.	167	4.69
The materials (assessments, pt. chart, video) were appropriate for the exercise.	167	4.53
The team meeting was helpful in determining the patient plan of care.	167	4.71
Each team member was an active participant in the care of the patient.	167	4.56
The patient and caregiver session was helpful.	165	4.74
The faculty feedback session was helpful.	165	4.82
This experience has allowed me to understand how important each healthcare professional is in providing care to the patient.	165	4.72

the team was able to provide information in a patient-centered manner such as *team explains recommendations and management plan, checks for patient/caregiver understanding, and solicits patient/caregiver concerns*. In the Communication domain, overall team communication skills such as *listening*, *professional manner*, *body language*, *and affect* were evaluated. Team Interaction evaluated the effectiveness of the team dynamic and knowledge of team roles. In all three domains, the average rating ranged from 3 to 4. There was no statistical significance between the SP and faculty scores. In general, there was a trend toward slightly lower scores by the standardized patients in most of the categories.

Student Satisfaction Survey and narrative statement. The students' satisfaction ratings for specific aspects of the program are detailed in Table 6. Overall, the program was well received by the students. All items were scored on a 5-point rating scale: 1—strongly disagree to 5—strongly agree. Learners rated the team interaction/meeting as helpful in planning patient care (4.71). They rated the statement "*experience allowed me to understand the importance of each profession in providing care to patient*" with a mean of 4.72. Students rated feedback from the standardized patients and faculty (4.74 and 4.82, respectively) as very helpful. Student satisfaction was also reflected in the narrative statements. One student wrote, "I learned the valuable roles that each team member has to offer the group as a whole." Another student stated, "This was a valuable experience to help us work (with) other disciplines and speak with a patient to better prepare us for the real world." Although these statements are anecdotal, they illustrate that students perceived value of working with other professions. One student added, "It is important to realize the strengths and limitations of each member in a multidisciplinary team." Another student wrote, "Collaborating with team members helps clarify patient goals and concerns."

Discussion

An important educational component was teaching students the value of each profession in the care of patients and families and to consider the patient and family as part of the healthcare team when making critical decisions such as discharge planning. Members of the faculty workgroup (the authors) evaluated the CSS after 4 years to determine if the activity was meeting the intended learning objectives. The use of each evaluation tool was reviewed and the findings and recommendations follow:

Pre- and post-test Surveys—Attitudes Toward Healthcare Teams. The pre- and post-test survey information was gathered in an aggregate to evaluate the overall effectiveness of the learning activity. The review of the overall results of the pre- and post-test surveys indicated that the attitudes of the students toward healthcare teams did not differ before and after the program. Even prior to the learning activity students held a positive view of teamwork and agreed that healthcare teams foster communication and improve the quality and efficiency of care to patients. This may be because of the early exposure to many different interprofessional experiences such as Jeff Mentors that the students in our university participate in during their training. Since the pre- and post-test attitudes toward health team surveys identified no differences before and after the program, the faculty decided to eliminate the use of this survey in future sessions.

Team Observation Checklist. The items on the team observation checklist were developed to guide the debriefing discussions with the standardized patients and the faculty, which address Learning Objectives 1 and 2. Review of the checklist after several years of use indicated that the checklist was too long (there were 10 items in three sections for a total of 30 items). The standardized patients completed the checklist as a pair and often were engaged in discussion about each item before assigning a score. In several cases, the standardized patients were unable to complete the checklist in the allotted time. The faculty reviewers identified redundancy in the items and revised the checklist. It now has 14 items addressing teamwork, communication, and interaction; takes less time to complete; and still provides the foundation for the debriefing discussions.

Student Satisfaction Survey and post-test write up. The intent of these tools was to identify student satisfaction with the learning activity and to meet Learning Objective 3.

To date, over 165 students have participated in the CSS activity. A review of the student satisfaction survey and post-test write-up revealed consistently high satisfaction survey scores. Through the narrative responses, students have reported the significant impact of this experience on their learning and development as future healthcare professionals. Students commented specifically on the importance of the standardized feedback from patients on how they were perceived by the patient and caregiver during the meeting. Faculty reviewers felt these tools were helpful in identifying the value of the experience and measuring the extent to which learning outcomes were addressed. These tools will continue to be part of the evaluation process of the learning activity.

Conclusions

This simulated CSS is unique in that it is a quick yet practical exercise that allows teams of interprofessional learners to practice teamwork skills with a simulated patient and caregiver. This CSS has several strengths. First, the learning activity is based on evidence that simulation activities facilitate the development of team communication and collaboration skills. Students in simulated learning activity practice skills applying knowledge learned through didactic sessions and group discussions. Second, the learning activity requires approximately 2 hours of learning time, making it efficient for students and faculty and less likely to displace other curricular activities in various schools. For faculty at other programs, the materials (patient chart, video) are readily located on the Eastern Pennsylvania Delaware Geriatric Education Center website (http://epadgec.jefferson.edu/), which makes it feasible to adapt the CSS for use at other institutions. Finally, student satisfaction surveys and narrative statements gathered from the last 3 years indicate that the learning experience is well received and perceived as valuable by students. The students mentioned that they valued working and collaborating with other professions and rated the standardized patient and faculty feedback as very helpful.

There are a few notable limitations to this CSS. The activity requires the availability of medical and health profession students to create interprofessional teams. However, a major challenge was the conflicting academic schedules that limit the number and type of students available to participate in this one-time activity. In particular, we had difficulty recruiting medical and nursing students in their clinical years as they were all in different rotations and clinical sites. It was challenging to schedule a time for the CSS that would allow for equal number of students to attend from each profession. Therefore, we often had teams that did not have all the health professions represented but we ensured that each team comprised at least three different disciplines. Another key component of the learning activity was the use of standardized patients as part of the discharge planning meeting. Institutions with limited resources may not have the ability to recruit and train standardized patients. Thomas Jefferson University has a well-developed University Clinical Skills and Simulation Center, which is a vital resource. Finally, we recognize that evaluation tools used in the CSS have not been tested for validity and reliability. However, we have used the information from this review to begin the process of developing a more reliable, valid, efficient, and effective evaluation process for the CSS. As a learning activity, the CSS provides opportunities for students to learn more about the roles of other team members, practice team communication and collaboration, incorporate patients and caregivers as vital members of the team, and communicate with patients and families in an empathetic manner in a team setting. Bringing students together from different professions is challenged by academic schedules, limited faculty time, and a lack of sustained process for integrating IPE curriculum. However, even a brief simulated clinical exposure to team-based scenarios should be considered for integration into health profession and medical school curricula as it can have a positive effect on students' perceptions of interprofessional teams and patient-centered care. The ability to participate effectively in a healthcare team should be a required competency in all health professions.

Author Contributions

Conceived and designed the experiments: EAH, CH, TW-T. Analyzed the data: EAH, CH, PK. Wrote the first draft of the manuscript: EAH, CH, TW-T. Contributed to the writing of the manuscript: EAH, CH. Agree with manuscript results and conclusions: EAH, CH. Jointly developed the structure and arguments for the paper: EAH, CH, TW-T. Made critical revisions and approved final version: EAH, CH. All authors reviewed and approved of the final manuscript.

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