EXPERIENCE EXCHANGE

Integrating interprofessional core competencies through simulation that promotes ethical decisions, patient safety, and cultural diversity

Robyn MacSorley*[1], Kim Adcock[2], Eloise Lopez-Lambert[1], Zeb Henson[3], Melissa Klamm[1], Lyssa Weatherly[1], Joseph Tacy[1]

[1] *School of Nursing, University of Mississippi Medical Center, United States*
[2] *School of Pharmacy, University of Mississippi, United States*
[3] *School of Medicine, University of Mississippi Medical Center, United States*

ABSTRACT

Introduction: Integrating ethical decisions, patient safety, and cultural diversity through multidisciplinary team-based simulation enhances learning and awareness of interprofessional core competencies.

Methods: A simulation scenario was designed to meet educational objectives and create a realistic environment for second-year medical, third-year pharmacy, and third-year nursing students. Students from each of the three disciplines were evenly distributed into groups to participate in a scenario. The simulation-based encounter consisted of a prebrief session, a simulation activity, and an overall debrief session. Course faculty from each discipline facilitated the three mirror-imaged scenarios, observed student behaviors, and operated mid-fidelity simulators. Students' knowledge and attitudes related to the interprofessional education core competencies (IPE-CC) were evaluated using pre- and post-assessment surveys. Additionally, student feedback was gathered through an opinion survey following the activity.

Results: Three-hundred and sixty-one students participated in the simulation activity during the spring semester of the 2021-2022 academic year. A statistical significance was noted with 80% of the pre- and post-assessment survey items. Learner opinion survey results provided favorable feedback as well as suggestions for improvement. The educational objectives were met.

Discussion: This simulation activity provides a realistic environment for students to apply the IPE-CC in preparation for their role as an interdisciplinary healthcare team member.

Key Words: Healthcare, Simulation, Interprofessional education, Ethics, Culture, Patient safety

1. INTRODUCTION

More emphasis is being placed for healthcare programs to provide interprofessional education (IPE) utilizing a multi-disciplinary patient-centered team-based care approach.[1] Therefore, it is imperative for all healthcare education disciplines to provide students the opportunity to interact and learn effective communication skills with each other. Implementing IPE allows students from various healthcare disciplines to learn about, from and with each other.[2, 3] Integrating IPE into health profession curricula encourages collaboration and communication, thereby, preparing students for the healthcare workforce.[2] Over the past fifty years, simulation-

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enhanced interprofessional education (SE-IPE) has become a vital approach for enhancing educational interactions among prelicensure students across disciplines. Simulation-based activities create a more realistic clinical environment that serves as a platform for the introduction of various patient care situations that challenge the students' critical thinking. Moreover, in developing communication and teamwork, SE-IPE is a tool that can be used to introduce students to dilemmas faced in healthcare such as ethical issues, patient safety, and cultural diversity. An increased awareness of these dilemmas might help alleviate future healthcare disparities and improve overall health outcomes.[4] Furthermore, the use of SE-IPE increases the level of student engagement, which improves knowledge retention, alterations in behaviors, and better patient outcomes.[5]

The University of Mississippi Medical Center (UMMC) is the only academic medical center in the state of Mississippi (MS). The UMMC campus, located in Jackson, MS, is home to multiple healthcare programs including schools of Medicine, Nursing, and Pharmacy. The campus encompasses four hospitals and the only level one trauma center in the state. Approximately 1,000 students graduate from the medical center each year. Over the past seven years, UMMC's Schools of Medicine, Nursing, and Pharmacy have collaborated in implementing IPE to increase student opportunities for interprofessional collaboration before entering clinical practice. This initiative began after new research showed the benefit and need for IPE and continued due to complexity of healthcare and providing standards of best practice.[6] The desire to improve outcomes for future providers and patients led to the creation of an IPE committee, which began forming new ideas for activities. The following SE-IPE program started with medicine and nursing students in 2011 and added pharmacy students in 2015. The committee utilized the competencies of TeamSTEPPS as the foundational design to develop skills regarding leadership, situation awareness, teamwork, and communication.[7] The template utilized to develop the scenario was adapted from the National League for Nursing (NLN).[6, 9] The committee altered the scenario over the past seven years to include important concepts of ethical conflicts due to observed provider care, stated assumptions, and diversity of the patient population. With further development of the simulation scenario, the faculty from medicine, nursing, and pharmacy chose to incorporate the IPEC core competencies (IPEC-CC) for the students to learn about, from, and with each other.[6, 8] The IPEC-CC include ethics and values to promote mutual respect, roles and responsibilities to learn about each other communication to practice the effective techniques for sharing information, and teamwork to understand optimal patient outcomes.[6, 8]

Objectives

This study aimed to promote student awareness and response to a culturally diverse patient with an ethical dilemma specific to an interprofessional patient/population centered care situation. The objectives used to meet the aim were based on the level of the learner and four educational objectives. 1) Nurse communicating focused respiratory assessment findings to patient and healthcare team following assessment. 2) Pharmacist evaluate patient and communicate prescription drug findings to team. 3) Medicine communicates patient's cultural concerns/unconscious bias (referred to as a GOMER, frequent flyer, homeless veteran, etc.) with healthcare team members, and 4) All team members implement three team-based techniques focusing on patient safety (ex. Communicate patient health concerns to attending, recommend admissions due to illness, communication with patient, etc.). Like Gill et al., our simulation scenario aimed to increase student awareness regarding the importance of communication and respectful professional relationships for patient safety concerns.[10] Therefore, our team developed a patient scenario to address the IPEC-CC and issues related to team members respecting dignity and awareness of ethical conduct when providing care to this patient population.[8] The scenario required the students to work as a team, practice efficient communication skills, consider ethical dilemmas including patient safety, and understand more about each other's abilities. Our approach was intended to integrate the IPEC-CC into one simulation experience conducive for learning among medicine, nursing, and pharmacy students. According to a systematic review of SE-IPE, only a few used TeamSTEPPS for their framework, and none used the IPEC-CC like our design.[11] The review also showed a lack of results supporting an increase in new knowledge at level two of Kirkpatrick model with only 28% of reviewed studies measuring the second level.[11] The Kirkpatrick model of evaluation of training programs defines the simulation learning experience through four levels: reaction, learning, behavior, and results.[12] The Kirkpatrick levels relate to the expected outcomes ranging from students' reaction (level 1), to knowledge and learning (level 2), to change in behavior (level 3), and results of impact on the system and patients (level 4).[12] This SE-IPE activity was designed, using the framework of the Kirkpatrick Model, level 1 and 2, to promote a comprehensive approach for improved student preparation for the changing healthcare environment.

2. METHODS

It is imperative for all healthcare education disciplines to provide students the opportunity to interact and learn effective communication from each other. In this SE-IPE en-

counter, students from medicine, pharmacy, and nursing participated in one simulated case developed from the International Nursing Association for Clinical Simulation and Learning (INACSL) Standards of Best Practice: SimulationSM Simulation-Enhanced Interprofessional Education (Sim-IPE), IPEC-CC, and placed on the National League for Nursing (NLN) template IPEC-CC.[8,9] Our interprofessional faculty adapted the scenario to meet the learning needs of our students and incorporated elements of communication, teamwork, patient advocacy, cultural diversity, and patient safety. Each school included the simulation as a requirement for one of their courses. Not all involved students had prior clinical experience because the focus of the activity was not on treatment.

The School of Nursing (SON) Clinical Skills and Simulation Lab (CSSL) faculty developed and provided an instruction sheet to faculty that detailed the expectations and structure of the simulation. Time was provided for faculty to examine the environment, observe the flow of the scenario, and review the expected roles and responsibilities for the simulation. CSSL faculty reviewed the technical controls for the mid-fidelity manikin to ensure nursing faculty understood how to operate the manikin's physical response (e.g. coughing, wheezing, shortness of breath, etc.) to student interventions. CSSL faculty and staff ran through the scenario progression plan to create consistency among faculty facilitators and to ensure each person knew the expected verbal cues and student interventions. Faculty from each of the three disciplines, along with medicine and pharmacy residents, served as facilitators during each SE-IPE encounter. In addition, a nursing faculty operated the manikin at each station. The faculty facilitators helped guide their respective students through the simulation. The faculty provided appropriate cues to keep the focus on the IPEC-CC instead of the specifics of the diagnosis.

One faculty from the SON CSSL conducted every pre-brief session to create consistency. The prebrief utilized a PowerPoint presentation with predesigned content to facilitate the psychological safety of the student prior to the simulation. For debrief, one faculty, trained in the debriefing method, led the session along with content experts from each profession. The SON developed and refined the set of questions to use for all debrief sessions that guided students in discussing initial reactions, concerns regarding the scenario, and lessons learned from each other.

In this SE-IPE encounter, the second-year medicine, third-year pharmacy, and third-year nursing students were randomly placed on interdisciplinary groups consisting of 4 to 6 members each. Before the simulation, students re-

ceived information regarding objectives, expected professional behaviors, delineated roles, and pre-work related to communication tools. The activity assigned groups to one of four stations utilizing the same scenario. Each SE-IPE encounter lasted approximately 75 minutes (sign-in, assignment of roles, recorded prebrief, and room orientation 20 minutes, simulation 20 minutes, debrief 30 minutes, and surveys 5 minutes). The encounters occurred during three days in February and two days in March to accommodate each school's schedule. The encounters consisted of a total of 16 sessions, each session lasting 75 minutes. To accommodate the number of students, study investigators developed a rotating schedule: as one group of students moved into debrief, the next group began the prebrief. Each school was responsible for assigning students to a particular session. Pharmacy permitted students to self-select a simulation slot through use of an online polling system, whereas other schools assigned students to each session. Study investigators required all students to sign a confidentiality agreement and video consent form prior to participation.

This simulation activity involved one scenario duplicated at four stations to provide consistent student experiences, accommodate student numbers, and facilitate debrief discussion. To introduce cultural diversity, the case involved a homeless veteran patient who frequented a rural hospital emergency department (ED) and presented with complaint of shortness of breath (SOB), a history of alcohol abuse, congestive heart failure (CHF), and chronic obstructive pulmonary disease (COPD). In this ethical dilemma, the ED provider ordered the patient to be discharged from the ED because he was "a frequent flyer." The medicine and nursing students reacted by advocating for their patient based on the patient's current clinical status and lab results. The patient also relayed to the pharmacy student that he was not able to fill his last prescriptions and still had them in his pocket. The unfilled prescriptions prompted the pharmacy students to investigate alternative medications and resources.

Prior to the simulation, lab faculty provided a prebrief session to facilitate student understanding of the planned simulation experience. The prebrief session included review of our basic assumption, confidentiality, and suspension of disbelief, logistics, providing for psychological safety, expectations, and a brief scenario introduction. The prebrief continued into the simulation room with an environmental orientation at the bedside.

Scenario: Students encounter either a Caucasian-American or African-American male mid-fidelity manikin dressed in a dirt-tinged t-shirt, outer shirt, shorts, and a dirt-tinged cap

on his head, sitting up in bed with a patient armband [name, date of birth (DOB), medical record number (MR#)], allergy armband, simulated peripheral intravenous (IV) line, and receiving 2 liters of supplemental oxygen delivered via nasal cannula. A beard was applied to the manikin along with moulage of dirty skin for realism. Mid-fidelity or high-fidelity simulator sounds include a regular heart rhythm, breath sounds with wheezing on the left; crackles on the right, and normoactive bowel sounds. Other mid-fidelity programmable settings were set at normal/default values.

(Hospital equipment: Hospital bed with sheets; pillow with case and bedspread; over bed table; bedside table; simulated headwall for oxygen, automatic vital sign machine with pulse oximeter; Patient identification band with name, DOB, MR#; Patient with Hydrocodone allergy band; Exam gloves; and Hand foam. Respiratory equipment: Nasal cannula and flowmeter, and Oxygen tubing. IV equipment: IV pole; IV pump; Simulated normal saline IV fluid infusing at 75 mL/hr. Electronic Equipment: Preset thermometer; Bedside monitor). For the intravenous fluids (IVF), use IVF bags filled with distilled water, labeled as simulated 0.9% Normal Saline. The IVF is connected to an angiocath to infuse the fluid into the manikin's arm vein at the correct IVF rate per scenario. Running IVF will drain into an empty IV bag.

2.1 Prebriefing

Prior to the IPE activity, all students were required to attend a prebriefing session. To accommodate large number of students, all prebriefing sessions were held in a synchronized fashion with approximately twenty students divided between four small classrooms. When each group of students completed the prebriefing session, they were escorted to their assigned simulation suite for the IPE activity. Once the simulation was completed, the students were escorted to the debrief session as another group of students entered the prebriefing rooms for prebrief. Upon entry to the prebrief room, students signed in and received a color-coded simulation role badge. Each role badge identified the student as a second-year medical student (M2) patient care provider, a third-year pharmacy student (PY3) as a student pharmacist or rounding pharmacist, and third-year nursing student (N3) patient care provider. The different color badges and the letters A, B, C, and D helped the student identify their assigned station.

During prebrief several communication techniques from the TeamSTEPPS framework were introduced to the students. Students learned about patient advocacy along with the following communication tools; SBAR (Situation, Background, Assessment, and Recommendation); closed loop/repeat back

communication; and briefs and huddles. Additionally, students were introduced to their patient Mr. Pete Prince, a 60-year-old homeless veteran with several health issues.

Prior to leaving the prebriefing room, the prebrief facilitator discussed concepts reinforcing psychological safety, which include "this IPE simulation activity is a safe environment where mistakes are welcome; there are no "gotcha" moments, and direct feedback from faculty is to improve communication skills and teamwork." Due to the circumstance that several students had no prior clinical experience, students were reassured this IPE activity focuses on communication and not procedural or diagnostic skills.

2.2 Debriefing

The main three phases of debriefing include reactions, analysis, and summary of experiential learning and application for future.[13] Reactions provide the opportunity to express emotions and review facts related to misunderstandings or technical issues. Analysis addresses the relation of the experience to the learning objectives. The discussion portion of analysis creates new understandings and broader considerations of practice. The summary allows the formation of connections between the experience, discussion, and relation to future applications.[13] The study utilized the Gather-Analyze-Summarize (GAS) debriefing model to guide the debriefing session. The GAS debriefing model uses a structured technique to promote a consistent method for educational applications.[13] GAS follows the same main phases of debriefing. The gather phase refers to assessing the perspective and feelings of a student immediately after a simulation. The facilitator asks questions to guide reflection of observations. The analyze phase is where the facilitator helps the student assess their performance compared to the learning outcomes. The facilitator addresses any gaps of knowledge identified during the reflection. In the last phase of summary, students express how they plan to apply the new knowledge to their practice.[13]

The facilitators of the activity had attended multiple debriefing trainings on and off campus, therefore, they provided guidance for the structure of debriefing. Nursing, medicine and pharmacy faculty served as content experts during debriefing to assist deeper discussion and relation to practice. To aid students through reflection of actions taken and possible improvements, one faculty from each discipline worked together to facilitate the overall debriefing. Co-debriefing with faculty of different practice backgrounds allowed content experts to address specific areas of discussion related to their expertise. The inclusion of more than one facilitator perspective promoted clearer answers to student questions or

concerns.[14] Study investigators were able to model team-work and communication in a way that shared the debriefing session and appreciated each other's perspectives.

Following each simulation, students regrouped for a general debriefing discussion. Faculty developed a list of questions to guide debriefing that followed the phases of the GAS debriefing model. Every debrief session started with an opportunity for students to express their initial thoughts and feelings about the simulation experience. Several students expressed their frustration with the attending who was trying to discharge the patient based on bias and not facts. This activity emphasized the possibility that any healthcare provider could be the one demanding to send out the patient, such as a charge nurse, pharmacist, or administrator. The study used the situation to highlight their instinct to advocate for the patient. Study investigators helped the participants to realize the importance of forming a strong argument for admission based on the patient's report and various test results instead of an emotional response. The study utilized the debriefing guiding questions to help participants reflect on their communication with each other and the patient. Several groups realized their communication had improved by the end of the scenario, but then the patient was neglected as the group circled at the end of the bed, leaving him out of the discussion. Investigators provided pharmacy students the opportunity to share their specific knowledge about the cost of their prescriptions and ideas for improving their ability to obtain them.

2.3 Assessment

Formative pre- and post-assessment tools were obtained via open access and adapted from the University of Washington Center for Health Sciences Interprofessional Education Research and Practice (CHSIERP) to measure a change in learner knowledge.[15] Researchers at the University of Washington, through the Macy grant and Hearst Foundations funding, developed and validated the 5-point Likert scale assessment tools June 2011 for interprofessional team training, the tools were last updated in 2017.[15] The pre-assessment was completed by students prior to attending assigned session. Following a large group debrief session, students completed the post-assessment. Additionally, students provided quantitative feedback via a faculty developed 4-point Likert learner opinion survey based on the open access simulation effectiveness tool modified (SET-M).[16] Qualitative feedback via

a faculty developed learner opinion survey based on Kirkpatrick evaluation model in determining student perceptions and reactions as to what they liked most and least about the IPE activity and suggestions for improvements to future IPE activities. The committee utilized TeamSTEPPS competencies as the foundational design for the program focusing on developing skills regarding leadership, situation awareness, teamwork, and communication.[17] The pre- and post-assessment survey provided qualitative feedback regarding what students learned from interprofessional training (Kirkpatrick level 1). Quantitative results were obtained from the pre- and post-assessment survey 5-point Likert scale determining benefits of training, learning and performance, team structure, and communication. Additionally, a 3-point categorical scale evaluated the essential practice characteristics. Learning was determined by t-test results analyzed from the pre- and post-assessment (Kirkpatrick level 2). Data obtained from the pre- and post-assessment were analyzed using the International Business Machines (IBM) Corporation Statistical Package for the Social Sciences (SPSS) Statistics v28.0. A paired t-test with a p value set at .05 analyzed the pre- and post-assessment via SPSS®.

3. RESULTS

The inclusion criteria were students enrolled as second-year medicine, third-year pharmacy, and third-year nursing with a total of 361 student participants (158 medicine, 109 pharmacy, and 94 nursing) who may or may not have prior clinical experience. Quantitative data revealed of the 361 participants, 326 completed the pre- and post-assessment survey and 335 completed the learner opinion survey. Of those 335 participants, 106 listed gender as male and 228 listed gender as female. Analysis of qualitative data revealed learning about, from, and with other disciplines aided students in preparing them to be effective members of a healthcare team. Students realized the importance of effective team communication, appreciation of each discipline responsibilities, and the value of interprofessional ethics when caring for patients. The 2022 pre- and post-assessment data were analyzed using a paired t-test (see Table 1). Statistical significance was noted with multiple variables and coinciding means ranging from .080 to .414 when assessed. The two 2022 learner opinion survey statements related to the objectives were reported (see Table 2). Content analysis was used to identify themes associated with the qualitative data obtained from the pre- and post-assessment and the learner opinion surveys.

Table 1. Paired *t*-tests for pre- and post-assessment survey

Variables All Survey Participants (N = 326)	Mean	*p*-value
Benefits of Training		
Learning with other students helps me become a more effective member of a healthcare team	.213	< .001
Patients ultimately benefit if interprofessional healthcare students learn together to solve patient problems	.046	.238
Shared learning with other healthcare students increases my ability to understand clinical problems	.156	< .001
Interprofessional healthcare team training exercises help me appreciate other professionals	.111	.003
Learning and Performance		
I enjoy learning in team-based healthcare activities	.409	< .001
I perform well in team-based healthcare activities	.107	.006
I enjoy learning in simulated environments	.370	< .001
I perform well in simulated environments	.199	< .001
I enjoy learning opportunities that bring together students from other professions	.341	< .001
I perform well in settings that bring together students from other professions	.273	< .001
Learning Environments		
Learning in small groups is a good use of training time	.341	< .001
Learning with other healthcare students is a good use of training time	.380	< .001
Learning in stimulated team exercises is a good use of training time	.414	< .001
Skills		
I can work effectively in teams	.073	.034
I can contribute valuable insights to teams	.107	.001
I can easily facilitate communication between team members	.098	.006
I am not as effective at delegating responsibility for tasks	.052	.421
I can effectively coordinate tasks and activities of a team	.112	.003
I am able to resolve conflicts between individuals effectively	.091	.027
I do not feel I can take on a leadership role in a team and be effective	.046	.448
Integrating information and suggestions into a plan is something I am not very good at	.018	.771
Team Structure		
It is important to ask patients and their families for feedback regarding patient care	.088	.006
Patients are a critical component of the care team	.043	.202
This facility's administration influences the success of direct care teams	.195	< .001
A team's mission is of greater value than the goals of individual team members.	.134	.002
Effective team members can anticipate the needs of other team members	.232	< .001
High-performing teams in healthcare share common characteristics with high-performing teams in other industries.	.145	< .001
Leadership		
It is important for leaders to share information with team members	.061	.054
Leaders should create informal opportunities for team members to share information	.147	< .001
Effective leaders view honest mistakes as meaningful learning opportunities	.083	.016
It is a leaders' responsibility to model appropriate team behavior	.018	.588
It is important for leaders to take time to discuss with their team members plans for each patient	.080	.016
Team leaders should ensure that team members help each other out when necessary	.098	.003
Situational Monitoring		
Individuals can be taught how to scan the environment for important situational cues.	.165	< .001
Monitoring patients provides and important contribution to effective team performance	.096	.003
Even individuals who are not part of the direct care team should be encouraged to scan for and report changes in patient status	.148	< .001
It is important to monitor the emotional and physical status of other team members	.102	.004
It is appropriate for one team member to offer assistance to another who may be too tired or stressed to perform a task	.111	.004
Team members who monitor their emotional and physical status on the job are more effective	.105	.006
Mutual Support		
To be effective, team members should understand the work of their fellow team members	.098	.007
Asking for assistance from a team member is a sign that an individual does not know how to do his/her job effectively	.301	<.001
Providing assistance to team members is a sign that an individual does not have enough work to do	.161	.055
Offering to help fellow team member with his/her individual work task is an effective tool for improving team performance	.157	<.001
It is appropriate to continue to assert a patient safety concern until you are certain that it has been heard	.202	<.001
Personal conflict between team members do not affect patient safety	.098	.204
Communication		
Teams that do not communicate effectively, significantly increase their risk of committing errors	.061	.107
Poor communication is the most common cause of reported errors	.147	<.001
Adverse events may be reduced by maintaining an information exchange with patients and their families	.190	<.001
I prefer to work with team members who ask questions about information I provide	.347	<.001
It is important to have a standardized method for sharing information when handing off patients.	.119	<.001
It is nearly impossible to train individuals how to be better communicators	.396	<.001

Qualitative data obtained from the pre-assessment statement "What is the most important learning experience you expect to take away from the Interprofessional Training?" Themes included how to communicate more effectively with other healthcare providers during patient care, working as members of the health care team, and gaining a better understanding of each other's role.

"How to properly communicate and assert yourself into the team when you see there is something that needs to be said." "Engaging others and learning to listen to their concerns and consider what they have to offer." "To learn how to effectively communicate information between other departments. This is important because other healthcare professions likely have different approaches and procedures for patient care and we all need to be on the same page."

Qualitative data obtained from the post-assessment statement "What is the most important learning experience you took away from the Interprofessional Training?" Themes included the importance of effective communication, learning to ask for help, and understanding others roles when interacting with other healthcare professions. Several statements provided are as follows:
"Always be an advocate for the patient and include them in discussion about their care"
"I really enjoyed working with other students in different programs. The most important thing was definitely learning how to communicate"
"Important to confidently and concisely advocate for patient and voice concerns when you feel something is being overlooked."

Table 2. Results from two Learner Opinion Survey Statements

Q1. I feel the lab objectives were met					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly Disagree	2	.6	.6	.6
	Disagree	1	.3	.3	.9
Valid	Agree	158	47.2	47.2	48.1
	Strongly Agree	174	51.9	51.9	100.0
	Total	335	100.0	100.0	
Q2. I am more confident in providing interventions that foster patient safety					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly Disagree	2	.6	.6	.6
	Disagree	3	.9	.9	1.5
Valid	Agree	169	50.4	50.4	51.9
	Strongly Agree	161	48.1	48.1	100.0
	Total	335	100.0	100.0	

Quantitative results were obtained per student self-report via the Qualtrics survey platform and analyzed by SPSS for the following two questions:
1) I feel the lab objectives were met (98.5% of the 335 who filled out the survey either 'agreed' or 'strongly agreed' with the statement).
2) I am more confident in providing interventions to foster patient safety (97.9% of the 335 who filled out the survey either 'agreed' or 'strongly agreed' with the statement).

Qualitative data obtained from the learner opinion survey based on objectives and statement regarding "What did you like MOST about the IPE activity?" Themes included working with and learning from other team members, the opportunity to communicate with and feel valued by other

professions, and learning in a simulated, but real feeling environment. Several comments were related to the aim.

"The simulated experience was a great way to learn these concepts."
"I enjoyed working with other professions to ensure patient safety was met."
"Relying on the expertise of my nursing colleagues to alert me to the severity of the patient's sickness, and on the expertise of my pharmacy colleagues to address some concerns the patient had about affording medications. It was also fun getting to practice assessing the patient and interpreting labs, and then incorporating it all into a presentation to the attending."
"That it teaches you about the real world and shows you what

to expect"

Qualitative data obtained from the learner opinion survey based on objectives and statement regarding "What did you like LEAST about the IPE activity?" Themes included feeling overwhelmed, an awkward environment, being unclear of role and difficulty talking to a mannequin. Several statements provided are as follows:
"I think using a patient actor would have been better than a simulation."
"It was stressful but a great learning opportunity"
"I didn't like having only 15 minutes for the whole experience. The time constraint prevented me from being able to fully communicate with my peers and I wish I had more time."

Qualitative data obtained from the learner opinion survey based on objectives and statement regarding "Please list suggestions for improvement" Themes included need for more time for simulation activity, smaller groups, providing more information or direction prior to beginning the simulation session, and the desire to use standardized patients. Several statements provided are as follows:
"It would be difficult to get an SP, but that would be the only thing I could think of. This was about as realistic as it could be which I liked!"
"Limit the group to one or two students from each discipline."
"Longer time for patient interaction and assessment"

When evaluating teaching and learning outcomes, the Kirkpatrick model demonstrated level 1 reaction and level 2 learning occurred. The learner opinion survey addressed Kirkpatrick level 1 or students' reaction to the simulation. The pre- and post-assessment addressed Kirkpatrick level 2 or student learning from the simulation activity as demonstrated by qualitative and quantitative results provided.

4. DISCUSSION

Such SE-IPE situations offer an engaging environment promoting knowledge retention and behavior modifications.[5] This simulation activity incorporated IPEC-CC by providing an avenue for open discussion on healthcare challenges, including ethical decision-making, patient safety efforts, and strategies for addressing cultural diversity. These SE-IPE sessions aimed to improve interprofessional teamwork and communication by providing scenarios for pharmacy, nursing, and medical students to address together and identify difficulties. According to Buckley et al., students with exposure to examining each other's perspectives and proper communication techniques are more likely to seek perceptions and support from all members of the healthcare team.[18] The use of simulation increased student awareness of everyone's

roles in patient care and the ability to coordinate for improved patient outcomes.[19] During debriefing, the students had an opportunity for further reflective discussion led by faculty from each discipline. The reflective discussions promoted open dialog which addressed the educational objectives and dilemmas encountered during the SE-IPE session. Lessons learned from the simulation, applications for future clinical patient encounters, and new understandings about one another were acquired.

Based on previous experience, CSSL faculty were able to validate how quality prebrief impacts participant preparedness and feelings of psychological safety. Historically, students did not feel like they knew what to expect prior to starting scenarios. Thus, a more comprehensive prebrief was provided that introduced the patient, the scenario, the group members, and the expectations. In addition, designated faculty were assigned to lead the prebrief and debrief which allowed for efficient student IPE rotations. Utilizing the student rotations also decreased the number of faculty needed to facilitate and the time needed to host the simulations.

Involving faculty from all disciplines throughout each phase of planning led to a more inclusive student experience and shared learning goals. The study accomplished this by providing a single case scenario, redefining student roles, and decreasing student group sizes. Previously, three distinct scenarios were created, each focusing on a separate theme leading to unequal learning experiences. The use of a single case provided consistent experiences throughout simulation progression, debriefing and knowledge acquisition. In addition, role clarification for the students was identified as important to enhance engagement and to make it a more realistic clinical environment. In response, faculty created discipline-specific roles to promote active student participation and meaningful group contributions. Similarly, too many participants in each simulation scenario creates several ancillary roles, causing some to feel uninvolved or confused with their roles. Based on this feedback, the group size was limited to 4-6 students, typically in combinations of 2-3 medical students, 1-2 pharmacy students and 1-2 nursing students. The decreased group sizes provided equal engagement, deeper reflection, and learning throughout the experience.

Possible limitations of this SE-IPE activity included challenges with class size and scheduling. Difference in discipline's class size [medicine (158), pharmacy (109), and nursing (94)] resulted in unbalanced student groups, particularly medical students, during some sessions. The differing class schedule for each discipline resulted in limited times available to offer the simulation. In addition, faculty scheduling conflicts occurred resulting in varied faculty at patient

stations which led to unequal feedback. The simulation environment should encourage student-centered learning. On occasion, bedside facilitators from all disciplines intervened at varying levels to assist student decisions during the simulation, which changed the focus from student-centered to facilitator driven. In addition, the pharmacy, medicine, and nursing faculty had varying education regarding all aspects of simulation in general. SON CSSL faculty received National League of Nursing (NLN) simulation training, one CSSL faculty is a Certified Healthcare Simulation Educator (CHSE), and shared related knowledge with other faculty members to facilitate simulation.

The data obtained from the simulation served as a quality improvement tool in our programs of study, not for how it could be applied to different disciplines. This SE-IPE simulation activity as a whole is generalizable to most healthcare professionals in an acute care setting and could incorporate more students than just medical, pharmacy, and nursing. For instance, social work students would be an excellent addition to the team dynamics. However, with the addition of more disciplines, more time within each school's academic calendar would be required. Recommendations for future studies is to perform a longitudinal study to observe for Kirkpatrick's evaluation model at level 3 for behavioral changes in the healthcare setting. Moving forward, additional recommendations include utilizing updated IPE assessment tools to address the aim of our study more specifically, and implement simulated participants (SPs) in the patient role, to increase realism and provide a more collaborative communication experience.

CONFLICTS OF INTEREST DISCLOSURE
The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

INFORMED CONSENT
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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

DATA SHARING STATEMENT
No additional data are available.

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