INSTRUCTIONAL DESIGN AND ASSESSMENT

Evaluation of Interprofessional Team Disclosure of a Medical Error to a Simulated Patient

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Objective. To evaluate the impact of an Interprofessional Communication Skills Workshop on pharmacy student confidence and proficiency in disclosing medical errors to patients. Pharmacy student behavior was also compared to that of other health professions' students on the team.

Design. Students from up to four different health professions participated in a simulation as part of an interprofessional team. Teams were evaluated with a validated rubric postsimulation on how well they handled the disclosure of an error to the patient. Individually, each student provided anonymous feedback and self-reflected on their abilities via a Likert-scale evaluation tool. A comparison of pharmacy students who completed the workshop (active group) vs all others who did not (control group) was completed and analyzed.

Assessment. The majority of students felt they had adequate training related to communication issues that cause medication errors. However, fewer students believed that they knew how to report such an error to a patient or within a health system. Pharmacy students who completed the workshop were significantly more comfortable explicitly stating the error disclosure to a patient and/or caregiver and were more likely to apologize and respond to questions forthrightly ($p < 0.05$).

Conclusions. This data affirms the need to devote more time to training students on communicating with patients about the occurrence of medical errors and how to report these errors. Educators should be encouraged to incorporate such training within interprofessional education curricula.

Keywords: student, interprofessional, error, simulation, communication

INTRODUCTION

The American Association of Colleges of Pharmacy (AACP) and Accreditation Council for Pharmacy Education (ACPE) recognize the importance of quality improvement and patient safety as a core component of pharmacy education.^{1,2} In addition, they evaluate the extent of interprofessional education at colleges and schools of pharmacy.^{1,2} However, limited research is published regarding what pharmacists learn about medication safety in school, and there is considerable variation in the nature and depth of this subject within curricula.³ Literature reports prevention and identification of errors as the main focus.³⁻⁵ Rickles et al described a void in pharmacy education in providing students with information on how to communicate and disclose medical errors.⁶ In their study, only a third of students knew how to communicate effectively. This study also

demonstrated that in the control group, fewer students were able to appropriately communicate with patients about an error.

The majority of published research is with medical student/resident training. Stroud et al's review of the literature demonstrated that incorporating disclosure into curricula leads to improvement in learner knowledge, skills, and attitudes.⁷ Most curricula consisted of a brief, single encounter, combining didactic lectures or small-group discussions with role-play. Inclusion of a brief curriculum about patient safety and medical errors with third-year medical students significantly increased awareness and improved communication skills.⁸ In fact, 94% of students strongly agreed or agreed that this exercise was a useful learning experience. Sukalich et al's standardized patient encounter and self-guided tutorial to first-year medical residents proved to significantly improve self-efficacy of handling medication errors. They noted that this intervention could easily be replicated in other settings and with other members of the health care team.⁹

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Although educators often focus on the recognition of medication errors, especially within laboratories and practice experiences, the literature contains less information about the communication of these errors when they do occur.⁶ Good provider-patient communication skills facilitate trust and comfort, improve patient satisfaction, and minimize frequency of errors and potential litigation.¹⁰⁻¹² In fact, patients who are confident in their providers' commitment to disclose medical errors are not more litigious and far more forgiving than patients who have no faith in their providers' commitment to disclose.¹³ Unfortunately, patients report that they are typically not given a clear explanation of what to do when an error occurs and often feel distanced from their health care provider(s) because of the lack of clear answers.^{14,15} Patients want explicit answers about why the error happened, how the error's consequences will be mitigated, and how recurrences will be prevented. Many factors may contribute to a provider not fully disclosing an error including fear of litigation, damage to the clinician's reputation, potential job loss, and awkward clinical interactions.^{14,15}

The purpose of this study was to evaluate the impact of an Interprofessional Communication Skills Workshop on students' confidence and proficiency in disclosing medical errors to patients. We believe the simulated interprofessional experience that includes a medication safety component aids in fulfilling accreditation standards set forth as above. The description of our process and evaluation, along with objective data from students in various professional programs, adds to the limited published literature in this area and may serve as a resource for other schools when developing their own experiences.

DESIGN

For two consecutive academic years, students from four different health professions (fourth-year medical students, third-year pharmacy students, second-year nursing students, and first-year physician assistant students) participated in team simulated interprofessional rounding experiences (SIRE). All pharmacy students (n=75) were required to be involved in SIRE but only select groups of students from other schools were able to participate (36 medical students, 18 physician assistant students, and 18 nursing students). At the minimum, each SIRE team consisted of two pharmacy students, one medicine student, and one physician assistant or nursing student. All students had the same case, which required care of a patient with an acute gastrointestinal bleed secondary to a medication error.

The medication error was duplication of anticoagulation therapy, which ultimately led to the bleed. It was unknown to students at what point in the health care process the error occurred. Students were expected to recognize the error based on the medication list and patient history and then disclose the error at hospital discharge. Students were assessed on a number of behaviors, including whether they were forthright with the error, apologized, and were able to answer additional questions the patient may have had without blaming any particular person.¹⁶ Each student within a team was expected to be involved in the discharge counseling, but it was primarily the pharmacy students who were designated to speak with the patient about their medications.

The original description of SIRE at our institution and more specific details of this particular case are

Table 1. Evaluation of Interprofessional Team Disclosing Error to Patient: Use of a Medical Error Communication Assessment Tool¹⁶

Behavior	Positive (1 point)	Negative (0 points)
Conducts explicit disclosure of error to patient	Describes nature/source of error and consequences of error to patient	Does not explicitly explain that an error took place and patient suffered as result
Apologizes upfront and early in conversation	Apologizes to patient at or near beginning of conversation	Does not apologize upfront or does not apologize at all
Responds forthrightly to patient questions about the event/error	Responds truthfully to patient's questions	Avoids direct responses to patient's questions
Exhibits good general communication skills with patient	Displays verbal/nonverbal empathy and support of patient's emotions	Remains aloof and distant to patient's emotional distress
Conducts blame-free disclosure	Avoids directly blaming other team members in front of patient	Directly blames a team member in front of patient
Offers plan to prevent future errors	Explains to patient what will be done to prevent such errors in future	Does not address plans for preventing future errors
Plan a follow-up with patient	Offers to follow up with patient (or gives contact info) for questions patient may have	Does not offer to follow up with patient

published in the *Journal*.¹⁷ To summarize, students were given 10 minutes to review the chart, and then the team went into the simulation room to care for the patient, as would occur during hospital rounds. The interprofessional team conducted a patient interview, physical examination, labs, diagnostic tests, and medications based upon the patient history and observed vital signs. The team had approximately 30 minutes to stabilize and treat the patient, 10 minutes to provide discharge counseling, and 10 minutes for debriefing. During discharge counseling, students were expected to discuss with the patient in further detail the reason for the hospitalization and medication error. Faculty facilitators, who were in the simulation booth controlling the simulation and role-playing the patient, debriefed the team and discussed strengths and weaknesses of the teams' recommendations and communication skills.

Two faculty facilitators from different professions were assigned to each room and followed the same script. One facilitator played the role of the patient and answered questions as asked by the team. The other faculty member ran the computer program that adjusted vital signs, provided lab values, x-rays when ordered, etc. Facilitators worked together to complete the team evaluation sheet after each session. The exercise was part of the third-year clinical assessment laboratory course for pharmacy students (they received a participation grade only) and was voluntary for students in other professions (ie, not part of a particular course).

During the first year of SIRE (SIRE1), no participating students had formal training in error disclosure; thus, this cohort served as the "natural" control group. Prior to the second year of SIRE (SIRE2), all pharmacy students and other health professions students participated in a half-day workshop. Because of logistical and scheduling issues, SIRE2 (active intervention group) only included the pharmacy students who completed the workshop, along with other health professions' students who had not completed it. The workshop was led by a group of interprofessional faculty members and included a 1-hour lecture on the key steps in error disclosure and the impact that interprofessional teams may have on disclosing errors and reducing future errors. Students were then assigned to interprofessional small-group practice sessions (with the same student teams as they would have later in the simulation center) and participated in three low-fidelity simulations, in which teams disclosed errors to a standardized family member at varying levels of difficulty.

After the simulations, a small group debrief was conducted and focused on interprofessional error disclosure and general concepts of interprofessional teamwork in

Table 2. Student Satisfaction with the Interprofessional (IP) Communication Skills Workshop (ICSW)

	Large group lecture	Small group error disclose activity	Overall assessment (lecture and simulation)	Learning with other professionals was valuable	Group facilitator sought participation from all	Knowledge about my profession's role increased	Activity enhanced appreciation of value of IP	Activity increased knowledge of other professions	Activity improved teamwork skills
Dental Medicine	3.2	4.4	3.9	4.0	4.5	4.0	3.6	3.8	3.9
Graduate Studies	2.7	3.5	3.2	3.4	3.9	3.1	2.2	3.7	3.3
Health Professions	3.3	4.4	3.9	4.4	4.7	4.1	3.7	3.9	4.0
Medicine	4.2	4.6	4.3	4.4	4.6	4.4	4.2	4.0	4.3
Nursing	3.8	4.7	4.5	4.6	4.7	4.6	4.4	4.3	4.5
Pharmacy	3.6	4.6	4.3	4.5	4.6	4.4	4.1	4.1	4.2
All students	3.7	4.5	4.1	4.4	4.6	4.2	3.9	4.0	4.2

First 3 columns: 1 = ineffective; 5 = very effective

Last 6 columns: 1 = strongly disagree; 5 = strongly agree

health care. When students completed the workshop, they were asked to voluntarily complete a satisfaction survey. The workshop was modified from the original interprofessional medical error simulation developed at the University of Washington to fit needs at our university (eg, expanded professional roles to include dentistry).¹⁸ Prior to SIRE, all participating medical, pharmacy, and physician assistant students (n=147) completed a survey assessing their confidence and comfort with disclosing errors to a patient. The authors modified an existing survey reported in the pharmacy literature.⁶ All SIRE1 teams (n=33) and SIRE2 teams (n=35) were evaluated on proficiency of interprofessional team disclosure of medical errors based on a rubric reported in the literature (Table 1).¹⁶

These evaluations were completed independently in real-time by two faculty members from different professions, and feedback was given to the students immediately after the simulation. Student surveys and team evaluations were statistically analyzed using chi square measure (GraphPad; La Jolla, CA). The Medical University of South Carolina Institutional Review Board approved this research study prior to the simulation.

EVALUATION AND ASSESSMENT

Pharmacy students evaluated the workshop as 4.3 on a Likert Scale (1=ineffective, 5=very effective) and agreed that “the activity improved my teamwork skills” at 4.2 on a Likert Scale (1=strongly disagree, 5=strongly agree), compared with 4.1 and 4.2 respectively for all university students. For full results of the workshop, refer to Table 2.

Pharmacy students of SIRE2 demonstrated significant increases in positive responses to three of the survey items, compared with SIRE2 medical and physician

assistant students. These include: “I received sufficient training on how to communicate with other peers/team members about the occurrence of a medication error” ($p<0.05$); “I know how to report a medication error” ($p<0.005$); “I know how to identify how a medication error may have been caused” ($p<0.005$). Nursing students were excluded from this analysis, as their participation in the workshop could not be verified. For full results of survey responses, see Figures 1-3. Compared to SIRE1, SIRE2 team scores in proficiency of communication with patients regarding medical error improved significantly for explicit disclosure, apologizing to the patient, and forthright disclosure ($p<0.05$, Table 3).

DISCUSSION

Local curriculum mapping at the colleges of medicine, pharmacy, nursing and health professions showed that minimal time is devoted to medical/medication errors and the appropriate way in which to deal with them, which made this particular exercise so useful and necessary. The study adds data to the paucity of literature on the topic of interprofessional medical error disclosure and incorporating error disclosure into a health education curriculum in general. The simulation and related research study aided in fulfilling pharmacy accreditation standards for medication safety using active-learning strategies. Educators may be able to incorporate medication errors and disclosure exercises into current objective structured clinical examinations (OSCEs) and/or patient simulations.

Collaborations and partnerships with other professions should be encouraged to provide such exercises, as the recommendation for interprofessional educational experiences becomes more common in all health

Figure 1. Student Self-Reported Response to Whether the Student Received Sufficient Training on Communicating with Peers About the Occurrence of Medication Error: Comparison of pharmacy students to medicine and physician assistant students - SIRE2.

Figure 2. Student Self-Reported Response to Whether the Student Knows How to Report a Medication Error: Comparison of pharmacy students to medicine and physician assistant students - SIRE2.

professions' curricula. Of course, consideration of cost, scheduling, and faculty time must be taken into account. In our situation, faculty coordinators spent 26 hours in the simulation center (other volunteer faculty members spend anywhere from 4-24 hours) in addition to time spent coordinating student groups up front. The simulation center was used for 26 hours and cost approximately \$3500. Individual colleges at the institution ended up splitting the costs. Formal faculty feedback was not collected, although the institution gives credit during annual evaluations as well as in promotion and tenure guidelines for

teaching/facilitating interprofessional experiences on campus.

Partnerships that include health professions who have ownership in the simulation center may provide a mechanism to reduce or waive fees associated with simulation centers. Advanced planning and flexibility will help to alleviate scheduling issues across colleges. Finally, department chairs and other administrators should encourage and assure faculty members are given adequate credit for facilitating in laboratories and small groups.

Figure 3. Student Self-Reported Response to Whether the Student Knows How to Identify How a Medication Error May Have Occurred: Comparison of pharmacy students to medicine and physician assistant students - SIRE2.

Table 3. SIRE Team Proficiency in Disclosing Error to a Patient Based on Faculty Evaluation Using a Rubric (%)

	SIRE1 Control (n=33 teams)	SIRE2 Intervention (n=35 teams)	SIRE1 vs SIRE2
Explicit Disclosure	69	97	+28 ^a
Apologizes	23	64	+41 ^a
Responds Forthrightly	77	100	+23 ^a
Communication Skills	69	73	+4
Blame-Free Disclosure	80	94	+14
Prevention of Future Error	60	67	+7
Plans for Follow-Up	66	67	+1

^aSignificant, $p < 0.05$

The study adds to the literature on using surveys and evaluation rubrics from existing literature to increase validity. Moreover, the study went beyond attitudinal and survey data and evaluated behavior of interprofessional student teams disclosing an error. It should be noted that significant improvements were seen in the SIRE2 teams, which were the teams that included a student trained in error disclosure. Finally, the study utilized a “natural” control group.

Limitations included results being from one institution and nursing/physician assistant students not being involved in all teams. Although observers were trained on use of the evaluation rubric, inter-rater reliability was not calculated. In addition, only pharmacy students in SIRE2 teams had been through the workshop. Although we would hypothesize that the intervention would have benefited all students, we are unable to definitively state that assumption. Further research is needed to assess long-term effects of formal training on skills acquisition and behavior change and whether this translates into real-world clinical practice.

Others may be able to use these learning strategies as a template when developing similar activities at their institutions. Our instructors plan to continue simulation training and evaluation in the future, while training more students from various professional programs through the workshop.

SUMMARY

A workshop that provided applied practice in interprofessional communication regarding medical errors improved students’ perceived confidence with communicating about these errors. Inclusion of a pharmacy student with medical error disclosure training in a simulated

patient care team improved teams’ proficiency in disclosing errors appropriately. Educators may want to incorporate such training in health professions curricula.

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