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Using interprofessional medication management simulations to impact student attitudes toward teamwork to prevent medication errors

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ABSTRACT

Background: We developed and implemented a project incorporating ACPE Standard 11 and all Core IPEC competencies at a public University located at a medical center. The project was a collaboration between the colleges of nursing, pharmacy, and medicine at a distance campus location.

Interprofessional Education Activity: Our Interprofessional Education Activity, which targeted all three elements of ACPE Standard 11, provided TeamSTEPPS[®] training followed by four medical error simulations. A debriefing took place after each scenario within a team as well as with all four groups following each simulation session. The Teamwork Attitudes Questionnaire (TTAQ) was used to evaluate the activity.

Discussion: Findings from our interprofessional education activity indicate that while students entered the activity already perceiving teamwork as a positive aspect of safe care delivery, significant improvement in attitudes post training toward specific team constructs was seen across all five domains. The project helped inform the structure of a replication of this effort that is currently underway, with a focus on embedding it in the curricula of all three programs (medicine, pharmacy, and nursing) across campuses.

Implications: In summary, working collaboratively in a team while being exposed to a series of medication management scenarios enhances teamwork attitudes as well as potentially improving performance. Based on the positive initial results, plans have begun to extend the experience to other campuses and include a wider group of students.

Background

Preventable medical errors are the third leading cause of death in the United States each year behind heart disease and cancer.¹ Medical errors are divided into five categories: diagnostic errors, errors of commission, omission, context, and communication.¹ Of the five categories, erroneous communication between two or more healthcare providers or the patient and provider(s) is considered

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the leading cause of medical errors.² Several studies document how interprofessional training has a positive impact on patient care.³⁻⁵ Moreover, interprofessional training that targets teamwork based competencies is shown to be effective in improving clinical outcomes via meta-analysis.⁶ However, few studies have looked at interprofessional training that integrates pharmacy students into the simulated acute healthcare environment as a means to prevent such errors by strengthening team based skills.

In 2011, six professional education organizations, including medicine, nursing, and pharmacy, collaborated to define interprofessional competencies relevant to each profession.⁷ Four competencies and 39 subcompetencies were subsequently identified and updated in 2016. Competency 3 focuses on communication with not only the targets of care, but with other professionals using a team approach to treat and prevent disease. Sub-competencies in this domain focus on the selection of effective communication strategies and tools in order to enhance team function.⁷

The primary goals of this Interprofessional Education Activity were to enhance teamwork skills of medical, nursing, and pharmacy students, integrate pharmacy students into simulated acute care environments, and promote a positive attitude toward interprofessional teamwork in healthcare using simulated scenarios based on medication administration events. The use of simulation based training as an education model reduces medical errors and positively impacts patient outcomes.⁸ Simulation research studies reveal decreased medication errors, though most focus solely on nursing students and mainly on the administration process.⁸⁻¹¹ Additionally, evidence shows simulation based training is superior to problem-based learning in medical education.¹²

In 2011, the Robert Wood Johnson Foundation (RWJF) related a lack of collaboration between health professionals to high rates of medical errors across the nation.¹³ RWJF and other organizations continue to promote the utility of collaboration in care delivery, emphasizing the need to start during the education process of healthcare professionals.^{13,14} The positive impact on patient outcomes by effective teams like transplant teams, ICUs, and trauma teams is well documented as is team-based primary care focused on common health care problems, such as diabetes and hypertension.¹⁵⁻¹⁹

The insertion of pharmacists into key roles as part of an interprofessional team improves patient care, reduces readmissions, and, more importantly, reduces medication errors.²⁰⁻²⁴ A well-known example is a study conducted at Children's Medical Center in Dallas, Texas in which pharmacists were inserted into the emergency room to review each entered order. The result was a decrease in medication errors, with pharmacists intervening in 8.5% of adult prescriptions during the study period, and 23.6% of pediatric prescriptions.¹³ Ernst et al.²⁵ found that when a pharmacist was absent from their level 1 trauma center, thirteen times more errors were reported, and of 55 patients with medication errors in an ICU, 51 of those errors occurred when no pharmacist was on-site. As such, it is critical to include pharmacists as a mainstream fixture of the interprofessional healthcare team and further investigate how to improve their integration into the team using simulated training activities.

Earlier training that integrates students from each profession may foster positive attitudes towards interprofessional teamwork and ultimately improve communication and collaboration in care delivery. For this project, we incorporated pharmacy students into a simulated collaborative care setting typically reserved for the nursing and medical professions.

For our Interprofessional Education Activity, simulation scenarios involved conditions that could produce a drug-based error (DBE), requiring interprofessional team members to utilize effective communication strategies to recognize and identify the potential for or commitment of a DBE. Teams had to detect and analyze the etiology of those conditions; correct or amend it; and if failing to do so, inform the patient and family of the DBE, and report it to prevent patient harm. Such errors included failing to consider allergy based cross reactivity, prescribing needs based on altered pathophysiology, and administering a medication to the wrong patient. Our activity took place at a public university within a medical center at a distant campus location. The site has pharmacy students who complete all four years of their training at the distant site, medical students in their third and fourth year of training, as well as accelerated bachelor of nursing students. The three colleges have collaborated for several years on other interprofessional projects and coursework, but never before on a large-scale simulation project. The University is dedicated to increasing interprofessional activities and houses an Office of Interprofessional Activities. This office is located at the main campus and provided advice for this activity. Logistics were handled locally at the distant campus by the local faculty. The leading pharmacy faculty member who worked on the project is also the faculty member in charge of IPE activities at the distant campus for pharmacy education. The other key distant campus faculty from each of the colleges have worked together for many years and the connections and relationships that had been established with the local institution, including the simulation center, made this much more feasible given the many moving parts of putting together this large-scale project.

It was important that we incorporate the Core Competencies created by the Interprofessional Education Collaborative (IPEC) as well as ACPE Standards. Within the IPEC competencies, our activity reflected elements of each core competency including discussions and practice of mutual respect, roles and responsibilities of each health professional, interprofessional communication, and teams and teamwork.⁷ We framed the simulation activity using an evidence based strategy, TeamSTEPPS[®] (Team Strategies and Tools to Enhance Performance and Patient Safety), to facilitate skills performance in each of its domains—leadership, situation monitoring, mutual support and communication. Each of these skills are reflected across the IPEC sub-competencies. ACPE Standard 11 stresses the importance of preparing students to provide patient-centered care as a member of an interprofessional team. Our activity provided an interprofessional opportunity for our students which covered all three elements of Standard 11: interprofessional team dynamics, interprofessional team education, and interprofessional team practice.²⁶

Interprofessional education activity

The aim of this project was to utilize simulated medication management scenarios in an interprofessional training environment, and to evaluate the impact of the training on team based skills and attitudes. We mapped specific learning objectives to 28 IPEC sub-competencies as follows: 1) utilizes appropriate team based communication strategies to overcome barriers to safe care delivery

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