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Research Article

The utilization of a simulated electronic medical record in an introductory pharmacy practice experience

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Abstract

Background: Institutions are implementing electronic medical records (EMR) in response to federal initiatives. Additionally, Accreditation Council for Pharmacy Education (ACPE) states that pharmacy graduates shall demonstrate expertise in informatics. We introduced clinical technology into the simulated Introductory Pharmacy Practice Experience (IPPE) course at St. John's University College of Pharmacy and Health Sciences.
Objective: To incorporate informatics and evaluate the usefulness of a commercially available simulated EMR in the institutional practice setting components of a simulated IPPE.
Methods: We incorporated a simulated EMR into institutional pharmacy practice modules within the simulated IPPE. A questionnaire of 365 students enrolled evaluated their prior experiences with EMR, understanding of the role of EMR in an institutional practice setting, and level of confidence in utilizing EMR on their upcoming hospital rotations.
Results: Overall, 270 students responded (response rate of 74%). Only 9.6% of students had prior experience with EMR. An overwhelming majority of students felt that the simulated EMR adequately demonstrated the role of informatics in managing the simulated hospital patients and enhanced their hospital learning experiences (83.7% and 78.9%, respectively). As a result of using a simulated EMR, 72.6% of students felt more prepared to utilize EMR in upcoming hospital IPPE rotations.
Conclusion: A simulated EMR offers realistic hospital charting and gives the pharmacy students exposure to electronic medical records, which are important components of practicing pharmacy in a facility or institution. Utilizing a simulated electronic medical record allows pharmacy students to gain knowledge and apply skills in navigating medical records and extrapolating data for patient cases.

Keywords: Simulation; Technology; Electronic medical record; EMR; Experiential; IPPE

Introduction

The pharmacist's role in health systems continues to transition to a patient-centered care model ensuring safe and effective medication use in all practice settings. As a result of this, pharmacy education must also evolve. A joint task force from the American Society of Health-System Pharmacists (ASHP) and the Accreditation Council on Pharmacy Education (ACPE)[1] concluded that changes in pharmacy school curricula have resulted in graduates who possess good clinical knowledge; however, there have been reports that not all graduates are adequately prepared to enter practice or a residency in the hospital setting.

Current ACPE *Accreditation Standards and Guidelines for the Professional Program Leading to the Doctor of Pharmacy Degree (Version 2.0)*[2] state that through pharmacy practice experiences students will achieve

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competency in five core domains: patient safety; basic patient assessment; medication information; identification and assessment of drug related problems; and mathematics applied to pharmaceutical calculations, compounded medications, dose calculations, and applications of pharmacokinetic calculations. Section 14.4 of current standards[2] and 12.6 of the 2016 draft standards[3] state that introductory pharmacy practice experiences (IPPE) must account for 300 hours over the first three professional years and that a minimum of 150 hours must be balance between community pharmacy and institutional health system settings. Furthermore, Section 14.5[2] (12.7 of 2016 draft standards[3]) states that colleges and schools of pharmacy may include a structured simulation (defined as an activity or event which mimics actual or realistic pharmacist-delivered patient care situations) as part of their IPPEs and cannot account for more than 20% (~60 hours) of the total IPPE time. St. John's University College of Pharmacy and Health Sciences has created and implemented a required course that allows students to complete 52 hours of IPPE time as structured simulation. Simulated community and institutional experiences were created to focus on the five core domains of pharmacy practice education over 13 weeks.[4]

There has been a significant increase in the use of electronic health records (EHR) among physicians and hospitals as detailed in two studies published in the journal *Health Affairs*.[5] The studies found that in 2013, almost eight in ten (78%) office-based physicians reported they adopted an EHR system. About six in ten (59%) hospitals had adopted an EHR system with certain advanced functionalities in 2013—quadruple the percentage for 2010. About 75% of eligible professionals and more than 91% of hospitals have adopted or demonstrated Stage 1 Meaningful Use of certified EHRs of the Medicare and Medicaid EHR Incentive programs.

The American Association of Colleges of Pharmacy (AACP) Center for the Advancement of Pharmaceutical Education (CAPE) Advisory Panel on Education Outcomes 2013 was created by focusing on the knowledge, skills, and attitudes entry-level graduates should possess. The outcomes were constructed around the following four domains: foundational knowledge that is integrated throughout pharmacy curricula, essentials for practicing pharmacy and delivering patient-centered care, effective approaches to practice and care, and the ability to develop personally and professionally. Domain two states that the pharmacist should provide patient-centered care as the medication expert (collect and interpret evidence, prioritize, formulate assessments and recommendations, implement, monitor and adjust plans, and document activities). Also, pharmacists are to manage patient health care needs using technological resources to optimize safety and efficacy of medication use systems.[6]

One of the factors that prompted ACPE to revise their current standards was the report of the Institute of Medicine noting the need for change in our health care system to improve medication safety and patient outcomes. They listed five competencies that all health care professionals should attain during their education; one of the five was to utilize informatics.[3]

This article describes how pharmacy students in their first professional year utilized a commercially available simulated electronic medical record (EMR) in a simulated Introductory Pharmacy Practice Experience (IPPE) course.

Methods

A simulated IPPE course entitled Experiential Pharmacy I was designed to transition the student from didactic to experiential training in the community and institutional settings. It is a 13-week course, taught by two faculty members, which allows the student to complete 52 hours of IPPE. Activities included physical assessment (blood pressure, pulse, respiration rate, and temperature), calculations, laboratory values, point-of-care testing, and medication safety. A commercially available web-based simulated electronic medical record (SimEMR®, KbPort LLC, Allison Park, PA) was incorporated into the following four institutional pharmacy practice setting modules within the simulated rotation: Hospital Documentation, Adverse Drug Reaction Identification and Reporting, Medication Errors Identification and Reporting, and Laboratory Values Assessment. The fees for utilizing this EMR consisted of purchasing logins for one year. A total of 45 logins were purchased and shared between sections. Each student in each class section had their own login and access to the EMR. All activities utilizing the simulated electronic medical record were case-based. Faculty members developed and inputted patient case scenarios that mirrored the topic that was covered that week. Each subsequent week, the patient case was further developed to incorporate the current topic as well as the previous week's topic. For example, by the end of the four modules, students used the EMR to review their patient's active and inactive problems, allergy information, laboratory values, vital signs, family and social history, interdisciplinary notes, and medications. Students utilized drug information resources to confirm the presence of disease, adverse drug reaction, or medication error. They then designed a patient-centered care plan, including assessment, plan, and recommendations for monitoring and follow-up in the form of a written Subjective, Objective, Assessment, and Plan (SOAP note on paper. The faculty facilitated each EMR activity in the classroom and provided both verbal and written feedback throughout the activity.

The impact of a simulated electronic medical record on the students was evaluated and students were assessed to determine if they felt better prepared for their IPPE rotations after these activities. In class, all students were asked to anonymously complete a web-based SurveyMonkey® questionnaire that was emailed to their university e-mail account from the College's assessment office. The students were asked questions to assess both the EMR overall and the utilization of the simulated EMR in the four hospital modules. The questionnaire consisted of responses that