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Experiences in Teaching and Learning

Assessment of students' ability to incorporate a computer into increasingly complex simulated patient encounters

Sarah Ray, PharmD, BCPS^{a,*}, Katie Valdovinos, PharmD, BCPS^b^a Concordia University Wisconsin School of Pharmacy, Mequon, WI^b Elmbrook Memorial Hospital, Brookfield, WI

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ABSTRACT

Background and purpose: Pharmacy students should be exposed to and offered opportunities to practice the skill of incorporating a computer into a patient interview in the didactic setting. Faculty sought to improve retention of student ability to incorporate computers into their patient–pharmacist communication.

Educational activity and setting: Students were required to utilize a computer to document clinical information gathered during a simulated patient encounter (SPE). Students utilized electronic worksheets and were evaluated by instructors on their ability to effectively incorporate a computer into a SPE using a rubric. Students received specific instruction on effective computer use during patient encounters. Students were then re-evaluated by an instructor during subsequent SPEs of increasing complexity using standardized rubrics blinded from the students.

Findings: Pre-instruction, 45% of students effectively incorporated a computer into a SPE. After receiving instruction, 67% of students were effective in their use of a computer during a SPE of performing a pharmaceutical care assessment for a patient with chronic obstructive pulmonary disease (COPD) ($p < 0.05$ compared to pre-instruction), and 58% of students were effective in their use of a computer during a SPE of retrieving a medication list and social history from a simulated alcohol-impaired patient ($p = 0.087$ compared to pre-instruction).

Discussion: Instruction can improve pharmacy students' ability to incorporate a computer into SPEs, a critical skill in building and maintaining rapport with patients and improving efficiency of patient visits. Complex encounters may affect students' ability to utilize a computer appropriately. Students may benefit from repeated practice with this skill, especially with SPEs of increasing complexity.

Background and purpose

With the adoption of the American Recovery and Reinvestment Act in 2009, Congress authorized incentive payments through Medicare and Medicaid to providers that use certified electronic health records (EHRs) in a meaningful way to improve health care delivery. The 2012–2013 report of the Argus Commission¹ describes the digital revolution that is occurring in today's health care environment and its impact on the role of pharmacy educators, the pharmacist, and other health care professionals. Technological advances have the potential to dramatically influence pharmacists' contributions to patient care.

The computer is now a vital component for storing and retrieving patient information, and health care providers must have the

* Corresponding author: Sarah Ray, PharmD, BCPS, Concordia University Wisconsin School of Pharmacy, 12800 N. Lake Shore Drive, Mequon, WI 53097.
E-mail address: Sarah.ray@cuw.edu (S. Ray).

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ability to seamlessly integrate technology into patient communication activities such as the patient interview. To maximize efficiency and balance other demands for time, practitioners will need to gather information from a patient while simultaneously documenting it into the patient's electronic record. Easily accessible information may help them better target their interview questions, eliminating inquiries for which they already have information or probing deeper into areas with little documentation. To thrive in a technologically advancing practice model, pharmacy students should be exposed to and offered opportunities to practice incorporating a computer into a patient interview in the didactic setting.

With all of the expected benefits of EHR use, there also are some unintended adverse consequences, including negative effects on patient-centeredness.² It has been documented that using computers has caused physicians to lose rapport with their patients, with up to 24% of the visit spent in screen gazing or keyboarding.² Screen gaze is inversely related to physicians' engagement in psychosocial question asking and emotional responsiveness.² It has also been documented that basic communication skills are highly related to the quality of patient–physician communication, with or without the EHR, and the computer seems to amplify both positive and negative pre-EHR communication patterns.³

A recent study³ assessed the training that nurse practitioners and primary care providers received on the EHR and its incorporation into practice. Three health care systems' training programs were reviewed, and the researchers found that zero to six percent of time was devoted specifically to patient–provider communication while utilizing the EHR. The remainder of training time was devoted to the various features of the EHR such as order entry, information retrieval, and documentation and communication with other providers within the EHR.

There are few studies documenting the effect the EHR has on patient–pharmacist relationships. We do know, however, that communication is critical in the development of good patient relationships and the delivery of pharmaceutical care.⁴ Demonstration of strong communication skills and utilization of an EHR are consistent with expectations from both the Center for the Advancement of Pharmacy Education (CAPE) 2013 Educational Outcomes⁵ and the Accreditation Council on Pharmaceutical Education (ACPE) standards.⁶

A previous study completed by the authors⁷ demonstrated that third-year pharmacy students have the ability to effectively utilize a computer and electronic worksheet to document information obtained from a simulated patient encounter (SPE) after specific instruction in an applied patient care laboratory course. Students' performance and self-assessed confidence in pre-defined criteria related to these skills improved with education and practice. Students improved in their ability to introduce themselves to the patient before turning to the computer, explain the purpose of the computer prior to starting the interview, form a work triangle between the patient, computer, and themselves, and maintain good eye contact with the patient throughout the encounter. Students' confidence in performing these skills also improved, as did their attitudes toward using computers during patient interviews. The authors exposed the students to straightforward cases in which the communication was similar to simulated encounters they had previously experienced in the laboratory setting. No additional literature was identified on the impact of the EHR on the patient–pharmacist relationship.

The authors' previous work demonstrated students' ability to improve in their computer use skills when they received instruction and completed simple, straightforward simulated patient cases.⁷ Only one pre-instruction and one post-instruction case were analyzed in the previous work. The authors noted that students struggled with incorporating this skill into increasingly complex cases. In this current study, the authors compared rubric results from an additional complex SPE to the pre- and post-instruction SPE rubric results in one student cohort. The authors sought to find opportunities to improve retention of student ability to incorporate computers into their patient–pharmacist communication.

Educational activity and setting

The assessment of students' ability to incorporate a computer into a more complex SPE occurred in the fall semester of the third year as part of the required six course applied patient care (APC) laboratory series. The third-year fall semester course (APC 5) is a two credit course that includes both lecture and laboratory components. During the third year of the curriculum, students integrate the provider and patient communication skills that they have learned and practiced in the first two years of the series with gradually more complex patient cases. They gather medication lists or perform pharmaceutical care assessments (medication list, social and medical history, and assessment for drug therapy problems) of simulated patients (typically third-year classmates) and then develop and deliver pharmacotherapy plans to either patients or providers. In prior semesters, students work both in pairs and independently to perform these skills. In APC 5, the students work independently and are given 15 or 20 minutes to complete an activity. The class is divided into sections containing 12–15 students, and the students perform their simulated activities in a room equipped with a computer and video camera. The cases for the SPE vary slightly for each section in an attempt to maintain the integrity and confidentiality of the SPE; each case variation is a similar level of difficulty. There are four to five simulated patients and instructors assigned to each section. Faculty, resident, and fourth-year student teaching assistants grade the students with a rubric that contains criteria developed by the faculty. The cases are available to the students prior to the lab in PDF form. Medication list and pharmaceutical care assessment worksheet templates are available for students to utilize to help organize their approach to the patient encounter. Students can modify these worksheet templates to best match their interview style. In prior semesters of the series, students were allowed to use their own personal computer during patient encounters to record the information they gathered from the patient on an electronic version of the worksheet, but it was not mandatory. Students at Concordia University Wisconsin did not have access to a real or simulated EHR.

In order to prepare students to utilize computers during patient encounters on their Advanced Pharmacy Practice Experiences (APPEs), students were required to utilize their own personal computer to collect and document patient information in an electronic

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