Research Paper

Trends in electronic health record usage among US colleges of pharmacy

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ABSTRACT

Introduction: Electronic health records (EHRs) are used extensively throughout health systems; this indicates a need for pharmacy student competencies prior to pharmacy practice experiences. The objective was to determine current utility, perceived benefit, and future plans for EHR use in the didactic curriculum of doctor of pharmacy programs in the United States.

Methods: An electronic survey was distributed to members of two special interest groups through the American Association of Colleges of Pharmacy. Content areas in the 14-question survey included current utilization of EHRs in the didactic curriculum, perceived benefit for preparing students for pharmacy practice experiences, and future plans for implementing or improving EHR use.

Results: A total of 59 (7.7%) individuals responded to the survey, representing 43 out of 133 schools (32%). Of the respondents currently using EHRs (37%), more than 60% have been using an EHR in the classroom for two years or less while 18.2% reported five or more years of experience. The most common application of EHRs was for clinical cases (77%) followed by pharmaceutical care lab courses (59%), other uses in pharmacotherapeutics (27%), and interprofessional education (23%). Of those not currently using EHRs (63%), the vast majority (84%) plan to integrate EHRs into didactic coursework within the next two years.

Conclusions: EHRs appear to be used by many colleges of pharmacy in courses where clinical cases are being discussed. Further research into the value of EHR usage at earlier stages of professional programs, including within skills labs, objective structured clinical examinations, and other pharmacy coursework, may be helpful given increasing EHR use in healthcare settings.

Introduction

Acute care hospital electronic health record (EHR) use has significantly increased throughout the United States (US) over the past 10 years. Non-federal acute care hospital adoption of at least basic EHR use increased nationwide from 9.4% in 2008 to 83.8% in 2015.[1] In addition, the Accreditation Council for Pharmacy Education (ACPE) Standards 2016 require that student pharmacists demonstrate the ability to deliver patient care in entry-level practice settings.[2] The standards specifically reference inclusion of health informatics via technology systems, including EHRs, in the didactic curriculum to promote student preparedness for pharmacy practice.[2] Furthermore, the North American Pharmacist Licensure Examination identifies the need for competence to obtain, interpret, assess and/or evaluate the patient medical record under Area 1: Ensure safe and effective pharmacotherapy and health outcomes.[3] Given the widespread EHR adoption to facilitate patient care and documentation with the goal of improving medication safety and patient outcomes, student pharmacists should demonstrate familiarity with EHR technology prior to direct patient care

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exposure. Therefore, an academic EHR offers a simulated opportunity to expose students to this technology in the classroom environment.

An academic EHR is an adapted version of a clinical EHR modified to meet the needs of an academic environment.[4] This technology provides students with the opportunity to practice routine patient care activities including, but not limited to, documentation of therapeutic recommendations and interventions, screening for duplication of therapy and drug interactions, monitoring safety and efficacy of drug therapy, and medication reconciliation in a simulated environment prior to interacting with patients in the practice setting. Previous studies have described student perceptions of EHRs and individual examples of how EHRs have been incorporated into specific pharmacy courses.[5–8] However, patterns of use in pharmacy curricula throughout the US are largely unknown.

The primary objective of this study was to assess how pharmacy schools across the US utilize EHRs in their didactic curricula through use of an electronic survey. Secondary objectives were to evaluate survey responders' perceptions regarding the EHR impact on student preparedness and to identify plans for future didactic use.

Methods

An online survey, developed in QuestionPro (QuestionPro, Inc., San Francisco, CA), was distributed via email in Fall 2015 to all members of two special interest groups (SIGs) commissioned by the American Association of Colleges of Pharmacy (AACP). The Technology in Pharmacy Education and Learning (TiPEL) and Laboratory Instructors SIGs were chosen based on the likelihood that faculty members involved with either group would be familiar with academic EHR use at their institution. The electronic membership list of these two SIGs included 771 unique email addresses and 133 unique colleges of pharmacy; therefore, multiple individuals from some institutions were invited to participate. No incentives were offered to encourage participation in this anonymous, voluntary survey. The survey sought information describing how ACPE-accredited pharmacy schools in the US incorporated electronic health records into their didactic curriculum. The survey instrument consisted of 14 questions: 10 multiple-choice; one ranking question; one Likert-type scale question; and two open-ended questions. The multiple-choice questions primarily focused on demographics and descriptive use of EHR in the didactic curriculum. The ranking question asked survey respondents to rank the order of importance of EHR features for advanced pharmacy practice experience (APPE) student preparation. The Likert-type scale question asked respondents to rate on a five-point scale (1 = strongly disagree and 5 = strongly agree) their level of agreement with statements evaluating the perception of how academic EHR exposure impacted student APPE preparedness for practice relating to clinical skills, documentation, and communication. Survey program logic was used to assess plans for future expansion in current users or implementation of this technology in non-users. The survey remained active for four weeks and included one completion reminder sent to survey recipients after the first two weeks to encourage completion. Only complete survey submissions were included in the data analysis. The local institutional review board (IRB) reviewed the survey instrument and determined it did not meet the federal definition of human subjects research; as such, IRB approval was not required.

Survey data were automatically collected via the web-based survey program and were downloaded directly into IBM SPSS (version 22.0, IBM, Inc., Armonk, NY) for statistical analysis. Aggregate descriptive statistics were reported. The Spearman's rank correlation coefficient test was used to analyze the correlation between the length of time of EHR use and the perception of student preparedness for introductory and advanced pharmacy practice experiences as well as their future career. The level of significance was set at less than 0.05.

Results

Of the 771 SIG members who were contacted to complete the survey, 82 (11%) responses were received with 59 (7.7%) responses of sufficient completion for the purposes of analysis. Of the 59 individual responses included in the analysis, 43 (32% of surveyed colleges of pharmacy) unique colleges of pharmacy were represented. Unless otherwise specified, the analysis is based on complete

Table 1
Demographics of survey respondents.

	Number of Responses (%)
Position of individual completing the survey (% of survey respondents)	
Administrator	15 (25)
Faculty	42 (71)
Staff	1 (2)
Other	1 (2)
Number of Colleges of Pharmacy represented (% of surveyed colleges of pharmacy)	43 (32)
Type of Institution	
Public	22 (37)
Private	37 (63)
Affiliated with an academic medical center	10 (17)
Current EHR use	
Yes	22 (37)
No	37 (63)

EHR: electronic health record.