



Research

Implementation and evaluation of evidence-based patient care application during a primary care advanced practice experience

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Abstract

Objective: To implement and evaluate improvement in application of evidence-based recommendations during a primary care advanced practice experience.

Design: During a five-week primary care advanced pharmacy practice experience (APPE), three preceptor faculty members utilized primary literature evaluation exercises to enhance pharmacotherapy knowledge of clinical end points and strengthen student application in clinical decision-making and individualized care.

Assessment: A 39-item case-based short-answer exam was developed to assess the impact of the educational activities. Pre- and post-tests from 74 students indicated a mean change of 30.3 point improvement in scores (SD = 14.6) ($p < 0.05$).

Conclusions: Integrating structured primary literature activities into a primary care rotation deepened understanding of evidence and strengthened application of literature-based therapeutic recommendations.

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Introduction

Knowledge and application of research evidence in pharmacotherapy recommendations are critical to optimizing patient care outcomes. In pharmacy education, there have been different strategies to improve the transfer of knowledge to patient care. Masters et al.¹ demonstrated improved student knowledge during an ambulatory care advanced pharmacy practice experience (APPE) using interactive case-based disease state discussions. Strategies incorporating improvement in evidence-based decision-

making and primary literature evaluation into this process have been described in the literature. Published examples include targeted instruction in elective rotations, journal club presentations during patient care rotations, and APPE tools (i.e., assessment forms in specialized patient populations like heart failure, online modules) to help students apply principles of standards of care in treatment as well as drug policy practice decisions.^{2–6}

In experiential education, the goal is to develop patient care skills to optimize drug therapy outcomes as well as instill in students a professional commitment to lifelong learning to meet the demands of an ever-changing medical field. APPEs historically center learning around patient care activities; identification of drug-related problems; and development of patient-specific, evidence-based therapy plans. The 2013 Center for the Advancement of Pharmacy Education (CAPE) educational outcomes focus on the

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learner's foundational knowledge (Objective 1.1), providing patient-centered care (Objective 2.1), interpreting evidence and patient data (Objective 2.1.2), problem-solving abilities (Objective 3.1), and professionalism with commitment and accountability to excellence (Objective 4.4).⁷ Additionally, the Accreditation Council for Pharmacy Education (ACPE) guidelines for APPEs include interpreting and applying biomedical literature to apply, reinforce, and advance knowledge previously learned in the curriculum.⁸

Rationale and objectives

Historically, we have noted that a large number of students were not transitioning into the P4 year, systematically assessing patients or consistently applying the guidelines learned in the P3 year. Students could loosely report the therapeutic recommendations by the guidelines without understanding the rationale behind such drug therapy selections. Additionally, it became apparent that students could not differentiate which drug therapies were associated with clinical outcomes (i.e., morbidity and mortality reduction), signaling a need for a deeper understanding of this therapeutic information. Students were primarily defending recommendations based on pharmacological effects. Secondly, in researching health and therapeutics information for patient care, students were almost exclusively utilizing therapeutic textbooks or reviewing class notes from their P3 year to refresh therapeutics knowledge. Students rarely addressed medication-related problems with primary literature searches during the rotation. Finally, it was quite apparent that students were largely uncomfortable and unfamiliar with reading and interpreting primary literature.

Recognizing how clinical trial outcomes shape guideline development and provide the basis for pharmacotherapy recommendations is important. Broadening student understanding to compare and contrast important clinical outcomes (i.e., cardiovascular end points) among pharmacotherapy options for a given disease state such as diabetes strengthens foundational knowledge. Students should be challenged to keep abreast of new literature published since the current guidelines that need consideration in patient care treatment decisions.

For students to develop confidence and competence in accurate interpretation and application of primary literature, multiple opportunities to practice are needed. While information learned in the didactic portion of the professional program is intended to be reinforced during patient care rotations and a required minimum number of journal club, clinical platform, and patient presentations already exist, it was felt that the areas identified above could be strengthened with additional, structured primary literature evaluation and patient care application activities during an APPE rotation. The primary focus was to improve student abilities to accurately apply new literature to patient care to optimize pharmacotherapy outcomes. To our knowledge, this is the first project to implement and evaluate incorporation of

informal, interactive primary care primary literature discussion activities during a direct patient care advanced practice experience and measure the impact on student performance. This article will describe the educational activities and assessment methods used for teaching and learning and patient care application. Additionally, information regarding implementation and dedicated time will be discussed.

Materials and methods

In 2010, three full-time clinical faculty teaching an APPE Primary Care rotation began collaboration in the development and implementation of the literature evaluation activities. The three full-time faculty members were located at different APPE practice sites. Each of the faculty practiced within a primary care setting (a Federally Qualified Health Care Clinic, a Family Medicine Teaching Clinic, and an Internal Medicine Teaching Clinic). All of the faculty have direct patient care roles in providing collaborative drug therapy management at their respective practice sites. The primary outcome is the improvement in knowledge and application of evidence-based recommendations based on student examination scores during 2011–2013. The interaction between the learning improvement and practice site is also explored. The study was reviewed and approved by the university's Institutional Review Board.

Selection of primary literature

To improve pharmacotherapy evaluation ability-based outcomes and better prepare graduates in patient care application, efforts were made to address and strengthen several areas of professional performance with primary literature activities. The intention was to expose students to a broad scope of primary literature including landmark trials that were the basis of treatment guidelines and highlight new literature published after the guidelines. The faculty expressly sought to select several examples targeting the following disease states including hypertension, dyslipidemia, and diabetes mellitus (Table 1) and aimed to heighten awareness of new literature that has influenced practice since the release of Seventh Report of the Joint National Committee (JNC VII) and Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults [Adult Treatment Panel III, (ATP III)] treatment guidelines as well as diabetes outcomes.^{9,16} These activities occurred prior to the release of JNC VIII and the 2013 ACC/AHA Cholesterol Guidelines.^{25,26} A diverse selection of position statements, meta-analyses, and clinical trials was chosen to expose students to a broader scope of important clinical resources (Table 1). These different publications allow for discussion regarding why this form of literature is published as well as strengths and limitations of the various study designs.

The three faculty independently performed a review for new and clinically relevant published primary literature

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