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Teaching drug utilization review skills via a simulated clinical decision making exercise

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ABSTRACT

Background: Drug utilization review (DUR) is a central role of the pharmacist, especially within the community pharmacy setting. Previous literature has shown risk of "alert fatigue", supporting the necessity of pharmacists to utilize a step-wise approach in evaluation of drug therapy during the verification process. Many students are intimidated by this process, and may lack verification practice or experience until their first day as a licensed pharmacist.
Educational Activity and Setting: An innovative skills-based laboratory exercise was developed for third-year pharmacy students to develop DUR skills. Through simulation of patient prescriptions, profiles, and drug information resources, students were tasked with completing a DUR for each patient case. Students were expected evaluate the clinical significance of various drug-related problems, determine if they would or would not dispense the prescription, and were required to provide rationale for their decision.
Findings: This learning activity was well-received by the student population; however, students struggled with the volume of cases along with identifying a solution to the clinical scenario. On average, students required nine minutes per case, which is likely longer than community pharmacists can devote to a single DUR in practice.
Discussion: In response, to student challenges with the activity, the number of cases was condensed to highlight key concepts and cases that facilitated strong discussion. To improve students' approach to the DUR process, faculty developed a vodcast to watch prior to the activity explaining a systematic approach to the DUR process as well as considerations a pharmacist should have.
Summary: Development and integration of an active-learning, simulated dispensing activity allowed students to gain valuable experience completing the DUR process, a foundational community pharmacy practice skill; however, repeated experience should be provided to ensure competency.

Background and purpose

Drug utilization review (DUR) is a central role within the practice of pharmacy, especially within community pharmacy practice where the pharmacist is the final safe-guard in the healthcare system and medication use process to prevent a medication-related error.[1,2] By definition, DUR is the review of a prescription prior dispensing the product to a patient.[1] Key components of the DUR

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process include screening for drug-drug interactions, therapeutic duplication, drug-disease interactions, drug-allergy contra-indications, clinical abuse and misuse, and inappropriate dosage or duration of therapy.[3] Additional elements to consider include prescription accuracy and drug-food interactions.[1] With current technology, dispensing systems are available that alert the pharmacist to potential errors; however, pharmacists may develop "alert fatigue" or these alerts may present to the pharmacy technician without communication to the pharmacist. Pharmacists must be capable of performing DUR without the aid of dispensing system alerts through their professional knowledge and clinical judgment.[1]

Previous literature has shown success utilizing innovative active-learning cases to assess the decision-making process associated with DUR. Losey et al.[2] utilized prescription vignettes to assess pharmacist likelihood of dispensing a prescription that would likely be harmful to patients. Depending on the vignette scenario, 16.3–56.2% of pharmacists would fill medications with a high likelihood of harm after identification of a potential risk if the physician still authorized filling. Three-quarters of pharmacists would fill a prescription they had a significant concern for the patient's safety because they felt the prescriber knows the medical history or clinical situation better than they did. Of note, nearly half of pharmacists felt that they were not adequately trained in pharmacy school to deal with prescriptions where there was a significant concern. Almost all pharmacists felt that responsibility for adverse outcomes should be attributed to the physician opposed to only pharmacists or even shared liability among both parties.[2]

There were two primary motivators for the development of the exercise described herein, the first being experiences of the community pharmacy faculty when precepting Advanced Pharmacy Practice Experience (APPE) students during community pharmacy rotations. Anecdotally, students struggled with "practice verification" and needed significant refinement in their ability recognize and evaluate the clinical significance of issues and interactions found during DUR. Students were able to identify issues generally, but frequently struggled with a "knee-jerk" reaction to the situation and wanted to immediately call the physician. While that is certainly a potentially appropriate solution, faculty wanted students to evaluate the clinical significance of the interaction first. They saw the need to better prepare students with the questions that are necessary to ask themselves when performing a DUR in order to safely and appropriately care for patients.

Faculty wanted to ensure that students were adequately prepared to handle these situations to improve patient care without delaying access to medications unnecessarily, wanting to enhance their ability to evaluate the clinical significance of these drug interactions during community pharmacy APPEs. Further, faculty have noticed fewer students have pharmacy internship experience outside of Introductory Pharmacy Practice Experiences (IPPEs) where students may have the ability to develop some of this knowledge base prior to APPEs.

The second motivator for the development of this active-learning exercise includes "Standards 2016" from the Accreditation Council for Pharmacy Education (ACPE), which include the Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes 2013 as Standards 1–4.[4,5] Specifically, this activity addressed ACPE Standards 1.1 (foundational knowledge), 2.1 (patient-centered care), 2.2 (medication use systems management), 3.1 (problem solving), and 10.4 (skill development).[4]

Educational activity and setting

Two community practice-focused faculty members designed a pharmacy skills lab during the third-year pharmacy curriculum utilizing active learning cases to simulate DUR during prescription verification. The lab was titled "Clinical Decision Making," and the focus was appropriately performing DUR within the dispensing process through utilization of problem-solving and critical thinking skills. Cases were designed so that the students had to evaluate the clinical significance of drug-drug or drug-disease interactions, identify potential contraindications or inappropriate use, and ensure guideline-based and evidence-based prescribing. Several cases were designed to stimulate discussion of the relevance of drug-enzyme (e.g., CYP450) interactions and strategies for management, as well as how to evaluate for evidence of that interaction.

The "Clinical Decision Making "exercise was piloted during spring 2015 within a required third-year course (n=78), Pharmacy Practice VI. The focus of the course was to provide a broad overview of a practicing community pharmacists' work environment, decision making, workplace resources, management skills, and marketing considerations. Due to curricular revision, the "Clinical Decision Making" exercise has since been incorporated into a new, longitudinal integrated lab course series entitled "IntegrateD Environment for Applied Learning and Skills" (IDEALS). Activities within this lab are coordinated with curricular content longitudinally, including therapeutics, pharmaceutical sciences, and foundational practice skills. This lab is part of a series of three labs focusing on community pharmacy dispensing skills: Clinical Decision Making, Errors and Omissions, and Gray Areas of Pharmacy Law. Faculty developing the content covered in this lab relied on Appendix D of the 2007 Accreditation Council for Pharmacy Education (ACPE) Standards 2.0[6] to identify activities that would allow for assessment of students' readiness to enter fourth-year APPEs. Noticing a significant gap in student application experiences with essential community practice skills in the last third-year class within the old curriculum, faculty created the Clinical Decision Making exercise as a pilot.

During the lab activity, faculty wanted to stimulate students to identify the mechanism of action associated with the drug issue: how was this physiologically happening? From there, students were encouraged to process how they might identify side effects of that interaction to monitor for its clinical significance. Lastly, students needed to decide how severe and urgent the resolution of interaction was, or if the interaction may not be clinically significant. Such an example would be treatment with clarithromycin in a patient who is also on a CYP3A4 metabolized statin, such as simvastatin. Many students immediately want to call the provider to switch the antibiotic, which may delay treatment or result in inappropriate antibiotic selection. Faculty wanted to challenge students to think of alternative options, such as temporarily stopping statin therapy during the antibiotic course.

Table 1 provides a brief summary of cases (n=12) that have been refined and utilized through two offerings of this active learning exercise. Within the table, the interaction for the case is provided with a key point or concept that faculty were trying to communicate