

## LETTERS

### **Inclusion of Black Box Warnings in the Curriculum: A Topic of Global Significance in Patient Care and Management**

*To the Editor.* In a recent issue of the *Journal*, an interesting research article that evaluated the awareness of black box warnings among pharmacy undergraduates was published.<sup>1</sup> While it is important to have such a knowledge base about black box warnings built into the curriculum, given the importance of these warnings in clinical practice, the idea of conducting a survey to get a feedback is indeed commendable. This may help to better administer the course and build an interesting curriculum on a topic that has such a tremendous impact in the prescribing of medicines and therapeutics.

The cross-sectional survey was performed meticulously and without bias by incorporation of sound statistical analysis following the ratings on the questionnaire by 2 independent judges. Overall, it was suggested that third-year doctor of pharmacy students are more knowledgeable on black box warnings than first- or second-year students. Familiarity with black box warnings on drugs such as paroxetine and estrogen was evident, while familiarity with other black box warnings such as stavudine and enoxaparin was generally lacking.<sup>1</sup> One interesting thought process: would a personal background or family history of depression or anxiety disorder have resulted in some of the pharmacy students being more familiar with paroxetine? Likewise, would knowledge of hormone replacement therapy and associated women's health disorders have made some students more knowledgeable about estrogen? In addition, prescriptions for chronic disorders such as depression, cancer, and cardiovascular disease may have helped students to understand the significance of black box warnings as opposed to medicines for acute use or short-term prescriptions. This exercise in particular, of conducting an awareness survey, is significant in the context of preparing future pharmacists for practice in the real world and ties into the objectives of this letter to the editor.

Pharmacy students in the United States are privileged to be able to study interesting topics such as black box warnings as part of the curriculum. Their knowledge on black box warnings assumes universal significance as it is applicable in clinical care and clinical practice across various geographies, not just in the United States. It prepares pharmacy students to face real world challenges, regardless of the professional path they choose (ie, research, pharmacy practice, industrial position, etc). Unfortunately,

pharmacy students in many other countries and developing regions are not exposed to this subject matter and their familiarity with black box warnings would be very limited or, perhaps, non-existent. Hence, this topic would be extremely beneficial to pharmacy students in other regions to be exposed to since black box warnings and prescription implications along with other co-medications may have serious safety consequences in patient care and disease management. Also, the conduct of an unbiased survey to ensure the awareness of black box warnings is a progressive way to ensure the spread of knowledge. Such practices should also be readily adopted in the developing regions when they introduce topic(s) of public health in the pharmacy curriculum. After all, the well preparedness of pharmacy students post curriculum would enable implementation of such public health practices.

It is the suggestion of the author that as part of *Journal* development, some special topics are chosen that may have universal applicability. Although the aim of the *Journal* may be to reach out to pharmacy professionals/educators and other health care professionals/researchers in the United States, such an endeavor to cover certain universally important topics would bode well in developing the community of pharmacists across the globe. Some of these topics include: (a) case studies of fatalities, if any, as a consequence of serious drug-drug interactions; (b) case studies of unsuspected drug-drug interactions; (c) patient care in certain critical medical conditions; (d) recent drug withdrawals due to serious clinical safety issues; (e) approvals of some innovative medicines. It is not the intention of the author to suggest original research publications in the suggested topics. However, introduction of a forum within the journal that caters to the review of published clinical pharmacology, safety, and/or medical information on the above topics, with expert opinion of the presenter and its implications to pharmacy professionals would add significant benefit to the *Journal's* readership.

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### **Educational Renaissance: A Student's Viewpoint**

*To the Editor.* With the profession of pharmacy expanding exponentially and pharmacists taking on more

extensive roles that require the use of problem-solving and critical-thinking skills, the necessity for reshaping the way classroom content is delivered will become paramount to the success of both the profession and colleges and schools of pharmacy graduating future pharmacists. The recommended tenets of an initiative such as this have been well articulated previously<sup>1</sup>; therefore, my intent is to elucidate, from a student's viewpoint, the philosophical need for such an educational renaissance.

I would first like to reflect on the epistemological implications of such an initiative. Generally, 3 branches of epistemology, or the theory of knowledge, exist: empiricism, rationalism, and constructivism. Rationalism rests upon the *a priori* attainment of knowledge, and thus, I would posit that traditional learning in pharmacy curricula instill learners with these *a priori* "pharmacy domains" in which further development of these key "domains" can be fostered. (To clarify, the definition of *a priori* here should only be used within the context of pharmacy education, in that no prior domain has been established until delivered in the classroom. The tenets of pharmacotherapeutic decisions are made *a posteriori*, based upon empiric, evidence-based medicine.) I would parallel this theory with the "bottom rung of the ladder." A traditional philosopher might accuse my theories of being crassly reductionistic and a distinct detachment from the embodiment of philosophy; however, I simply posit this to draw further conclusions. I feel that education should embody all 3 epistemological categories. A complete education, especially in a discipline such as pharmacy, which has a pining for a defined, pronounced role in the ever-evolving scope of interdisciplinary medicine, should reach the top of the ladder, which embodies learning through experience (empiricism), traditional, didactic education (rationalism), and, the "top of the ladder," synthesis and critical reasoning (constructivism).

The "climbing" to the "top of the ladder" is the driving force behind the proposed educational renaissance. With synthesis and critical reasoning crying out as the needed framework by which pharmacotherapeutic decisions should be made, why then should the pharmacy curriculum not embody the "top of the ladder" philosophy? Blouin and colleagues elucidated pharmacy students' main concern: the metrics by which they will be measured.<sup>1</sup> From a student's viewpoint, I could not agree more! Several times I have found myself falling prey to the same thing I criticize; I worry more about my final grade than the applicability of the information I am learning. Using the standard metrics of grades and regurgitation of content on examinations detracts students from the ultimate goal of synthesizing information and considering application of that material for future practice. (I realize

that there is need for some metrics to define whether individuals are capable of educational progression, but I will leave that for another discussion.)

The focus of traditional educational delivery was well defined by Blouin et al,<sup>1</sup> and I feel that as a student, I can weigh in on the consensus that not only students, but the general population, is evolving in the methods by which they learn information. As I tend to borrow heavily from the discipline of epistemology, we have naturally evolved as learners, I feel, to a more constructive learning style (one embodying synthesis and critical reason). As a general population, individuals are more adept to divulging information quickly and from reasonably accurate sources. Comparatively, students are equally more adept to finding basic facts and are no longer challenged by traditional content-rich delivery and metrics requiring them to regurgitate factual information. I feel a transition to education resting upon synthesis and critical reasoning will revitalize the love for education and will represent a mutual positive for both faculty members and students. Faculty members will be able to deliver material on a higher level of thinking for their respective discipline, and students will gain greater perspective and walk away with a deeper appreciation of the topic at hand.

As a student, I hope to one day see the full realization of the educational renaissance. Should we undertake the challenge and engage ourselves in this type of educational delivery and hold each other as students and faculty members to a higher standard? I feel that if so, we will one day reap the rewards of a deep student-faculty relationship in which the tenets of the educational renaissance are practiced and well-prepared pharmacists are educated.

(I thank Dean Robert Blouin and all authors in the referenced article for the inspiration to draft this letter and Dean Pamela Joyner for her suggestion to submit this letter and for reviewing it.)

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## Clinical Pharmacy Education in China

*To the Editor.* With the rapid development of China's economy, medical resources gradually have become more abundant, driving people to set higher expectations for the quality of medical services in this country. To satisfy the increasing demand for enhanced medical services, China's

Ministry of Public Health has set forward a recommendation that “the clinical pharmacist should take part in the diagnosis and treatment of disease, provide pharmaceutical care, and improve the quality of medical care” in 2002. With the importance that the Chinese government attaches to clinical pharmacy, training programs were established in many colleges and universities; the programs are equivalent to the doctor of pharmacy (PharmD) curriculum in the United States.

In 1989, the West China School of Pharmacy at Sichuan University offered the first 5-year bachelor of science (BS) degree in clinical pharmacy. Henceforth, clinical pharmacy education in China began to increase. However, because the development of clinical pharmacy was not considered practical at the time, it was abolished in 1998.<sup>1</sup> In 2006, China Pharmaceutical University was allowed by the Ministry of Education to re-establish the 5-year BS degree in clinical pharmacy. From 2006 to 2010, the number of colleges and universities that offered clinical pharmacy education increased yearly. By 2010, 23 colleges provided clinical pharmacy education.

The duration of the programs and the degrees awarded for clinical pharmacy remain inconsistent. The program durations include 4, 5, 6, and 7 years, for which students are awarded the degrees BS, bachelor of medicine, master of science, and master of medicine, respectively. School officials have not implemented uniform standards for program duration and degree titles. Most of these programs entail establishing a lengthy schooling system for training clinical pharmacists before a professional degree is awarded,<sup>2</sup> similar to the PharmD program in the United States. According to the statistics of the Pharmacy Administration Commission of the Chinese Hospital Association, more than 2400 clinical pharmacists will be needed annually up to 2015 to satisfy the requirements of the Ministry of Public Health. However, the total number of enrollees in all the programs amounts to only approximately 1700 students each year, which is far from adequate to satisfy social needs. Therefore, gradually expanding the enrollment capacity and training more clinical pharmacists are necessary measures.

Each school offered a different curriculum, but courses basically included a mix of humanities and social sciences (including physics, mathematics, pharmacoeconomics, ethics, professional communication, and statistics), bio-

medical sciences (including anatomy, pathology, microbiology, and immunology), pharmaceutical sciences (including medical chemistry, pharmacology, bioanalysis chemistry, pharmaceuticals, pharmacokinetics, and biopharmaceutics), clinical sciences (including diagnostics, pharmacotherapy, and internal medicine), and pharmacy practice experiences (PPEs). PPEs were mainly completed in hospitals. A 6-month practice is normally arranged for the 4-year program, whereas a year’s practice is usually arranged for the 5-year program.<sup>3</sup> Compared with the curricula of pharmacy and other medical courses, a standardized curriculum for clinical pharmacy has not been established. The teaching content of this program involves the simple assembly of pharmacy and medical courses, as is currently implemented in some colleges. There is a lack of a systematic curriculum that encompasses the requisite tools for comprehensive training.

In recent years, China has made considerable progress in improving clinical pharmacy education. Colleges and universities that offer clinical pharmacy programs are steadily increasing each year. Because of the lack of accreditation standards and guidelines, colleges and universities have yet to achieve consistency in terms of training goals, curricula, program duration, and degree titles. Thereby, the need to promote the sound development of pharmacy education necessitates the establishment of a national accreditation agency that can formulate standards and guidelines.

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