LETTERS

Pharmacy Students' Exposure to a Culture of Safety and Their Communication of Medication Errors

To the Editor. As the pharmacist's role continues to evolve, communicating medication errors is of utmost importance for patient safety. It is an impressive task to assess the comfort and knowledge of pharmacy students in communicating, managing, and preventing medication errors. While the study by Rickles et al, "Pharmacy Student Knowledge and Communication of Medication Errors," depicts the unpreparedness of student pharmacists in communicating medication errors,[1] we disagree with some of their analysis decisions, as explained in the article.

In their analysis they excluded certain items because "they did not relate specifically to the study hypotheses."[1] These items included questions relating to pharmacies where the students had worked and whether those pharmacies: "(1) informed the pharmacy staff when an error occurred, why it happened, and how to avoid it happening again; (2) routinely discussed the occurrence of medication errors; and (3) routinely developed procedures to prevent errors from recurring."[1]

We disagree that these items do not relate to the study hypotheses. In fact, experiencing these items is an integral part of a student's knowledge and comfort in communicating, managing, and preventing medication errors. Each of the omitted questions relates back to the idea of developing a culture of safety. The Institute for Healthcare Improvement defines a culture of safety as "an atmosphere of mutual trust in which all staff members can talk freely about safety problems and how to solve them, without fear of blame or punishment, [which is] essential to improving patient safety in any organization."[2]

When a student is learning in an environment that has a culture of safety and observes the communication of errors and the process of preventing errors, the intent is that he or she will feel more comfortable with both reporting and preventing errors. Fostering learning in an environment where the student pharmacist does not fear recognizing and reporting errors and near misses is crucial. If students are not exposed to an environment where reporting errors is encouraged, health care will fall back into a punitive culture instead of moving in a direction where communication of errors leads to improvement in the system to prevent future errors.[3]

If someone is blamed or punished for communicating errors, he or she will develop neither the knowledge of how to handle a medication error nor the comfort level to communicate and prevent these errors in the future. For the student pharmacist, experiencing these activities in a hands-on manner is vital for perpetuating a culture of safety far beyond the classroom and pharmacy practice experiences. It will create a bank of ideas from which he or she can draw once in practice. For these reasons, especially in the context of the evolving role of pharmacists, the areas omitted from analysis are of significant importance; therefore, a clearer explanation of the rationale for omitting this data would be useful to readers.

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In Reply. We appreciate Drs. Fisher and Wilson's interest and comments about our recently published manuscript, "Pharmacy Student Knowledge and Communication of Medication Errors."[1] Their comments are important, and we appreciate the opportunity to further clarify our decisions to conduct the analyses as we did. Their concerns focus on 3 items about student observations of what occurred in pharmacies: the extent to which students agreed that 1 or more pharmacies they had worked with (1) informed the pharmacy staff when an error occurred, why it happened, and how to avoid if happening again; (2) routinely discussed the occurrence of a medical error; and (3) routinely developed procedures to prevent errors from reoccurring. Specifically, Drs. Fisher and Wilson suggest that the latter items are important to our hypotheses and are unclear why we did not include them in our bivariate/multivariate analyses. We agree that the latter items are important to our description of the culture of safety present in pharmacies. This is why we described the results of these items in Table 3 of our manuscript. However, our hypotheses for this particular study were specifically focused on the relationships between training in medication errors, knowledge of the procedures in the medication error process, and comfort with the procedures involving medication errors. These hypothesized

relationships were developed from basic educational theory that training of a topic leads to greater knowledge and self-efficacy/comfort with the topic, and that knowledge can directly lead to greater self-efficacy/comfort with a topic. Such educational theory is the basis for much of what we do in the education of our students and patients. The 3 study hypotheses are stated in a form to be tested mainly with bivariate statistics. We went beyond the specific bivariate hypotheses and explored the relationships using multivariate statistics and controlling for variables that might affect the hypothesized relationships. The 3 items in question were not related to the specific relationships being tested. We do agree with Drs. Fisher and Wilson that such observations can be critical to student learning of the culture of safety. Future work should explore the role of such observations in changing student knowledge and self-efficacy/comfort in procedures regarding what to do to prevent and manage medication errors. We do feel any additional analyses using the 3 observed items should be carefully explored since student self-report may not be accurate reflections of what is truly occurring. Ideally, a second method, such as interviews with staff at pharmacies, should be used to confirm the validity of student observations. We hope this explanation helps readers like Drs. Fisher and Wilson understand our rationale of not including the 3 observational items in our analyses.

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The National Association of Boards of Pharmacy Response to "Pharmacist Licensure: Time to Step It Up?"

To the Editor. In a recent publication of the *American Journal of Pharmacy Education* (Volume 74, Issue 5), author Frank Romanelli, PharmD, provided his viewpoints regarding the assessment of pharmacist competency and subsequent licensure in the United States. In the article, he describes the monumental strides taken over the last 40 years in educating pharmacists in US colleges and schools of pharmacy. He points out that while there have been "significant modifications to pharmacy curricula," the changes to the North American Pharmacist Licensure Examination (NAPLEX) have been "few." Dr. Romanelli makes some valid points regarding considerations to assessment tools that would provide additional information about a candidate pharmacist's knowledge, skills, and abilities to perform in a simulated clinical practice setting. However, he also makes misguided assumptions and commits errors of interpretation regarding the validity of the NAPLEX developmental processes. This response will address the views described by Dr. Romanelli.

Dr. Romanelli states the time has come to "reexamine the validity of the processes used to license new practitioners." The processes, however, are based on well-established industry-wide guidelines. Test developers follow standardized practices to ensure that tests measure what they purport to measure. From the inception of a test, through a practice analysis/job survey, item development, employment of experts and reviewers, piloting items, analyzing items, constructing tests, delivery, calibration, scoring, and reporting, the test developer states claims about the appropriate use of a test and the inferences that test users can justifiably make from the test scores.

According to the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education (1999), an integral component of the test development process in licensing and certification is to ensure the relatedness of examination content to job/performance tasks and the expected knowledge, skills, and abilities of candidates for practice. To accomplish this, test developers routinely conduct practice analyses so that the content in a credentialing test is linked to performance tasks as well as the knowledge, skills, and abilities necessary to safely practice in the occupational/professional field.

In 2008, a subcommittee of the NAPLEX Review Committee (NRC), which is comprised of advanced practitioners and academicians, completed a critical review of the NAPLEX competency statements. The NRC evaluated documents pertaining to entry-level practice and educational outcomes of pharmacy education programs and examined trends in pharmacy practice. The NRC represents a national cross section of pharmacy professionals who are recommended for appointment by the Advisory Committee on Examinations and subsequently appointed by the National Association of Boards of Pharmacy (NABP) president. Although no substantive changes were recommended

to the competency statements, the committee did recommend that a new content domain (pharmacoeconomics) be introduced to 3 subcompetencies. The subcommittee also documented how the introduction of this concept is relevant to patient care and pharmaceutical outcomes. In addition, in order to clarify some of the statements, minor revisions were made.

In the second and third quarters of 2009, NABP conducted a survey of pharmacist practitioners and academicians for the purpose of measuring outcomes for the expectations of the knowledge, skills, and abilities for entry-level practitioners. The survey instrument was completed by 2,865 practicing pharmacists and academicians in the US and Canada, with 84% of the respondents identifying themselves as experiential preceptors. The results of the survey analysis were the foundation for the changes to the competency statements and blueprint as indicated in the viewpoint article. The process is a sound method developed and validated by the testing community at large.

Dr. Romanelli described a disjoint between pharmacy academics and the NAPLEX implied by his report of the national pass rates for 2008 and 2009. Unfortunately, the pass rates reported for first-time test takers were erroneous. He reported that the NAPLEX pass rates for first-time candidates graduating from the American Council for Pharmacy Education (ACPE) accredited programs for 2008 and 2009 were 95.5% and 97.5%, respectively. The actual pass rate did not differ between the years and was 96.5%. It is likely the reference that Dr. Romanelli used to report the pass rates contributed to the error. He referenced the NABP Web link that reported scores for the Multistate Pharmacy Jurisprudence Examination, not the NAPLEX.

In addition, the article described how the use of objective structured clinical examinations would provide a comprehensive assessment for candidate-pharmacist abilities. Romanelli suggested that the model used by Canadian regulatory authorities is one that might be favorable for US licensure. This is a suggestion with which NABP agrees and will work with stakeholders to determine its suitability, feasibility, and appropriateness of fit in the US licensing model. Drawbacks to this approach are the significant additional cost to candidates (currently the fee in Canada for the performance-based examination is over US $1500), and there would be a delay in the licensing process as candidates would be required to take and pass 3 assessments.

Dr. Romanelli suggested that the profession consider a qualifier (step-based) examination to assess student level of mastery in pharmacy curriculum in addition to the licensing examination. This would be similar to the medicine model and could be used as benchmark examination qualifying candidates for the start of their advanced pharmacy practice experiences (APPEs). A tool developed by NABP may be used for this purpose. The Pharmacy Curriculum Outcomes Assessment (PCOA) was developed in response to the colleges and schools of pharmacy expressing a need for a national assessment that is psychometrically validated to assist with measuring curriculum development and student performance. The PCOA is similar to medical student progress examinations that are administered annually across years of study. The PCOA can be used:

- To measure the overall performance of pharmacy students and compare their scores to a representative national sample of students
- As a tool for faculty members to provide constructive feedback on the strengths and weaknesses of the student and to track individuals' scores from year-to-year and individual growth over time
- To document improvement in student performance after the school's curriculum has been modified or updated
- For research and correlational studies with existing assessments such as Pharmacy College Admission Test scores, current grades, and future NAPLEX administrations
- As a component and outcome measure of the evaluation plan suggested by the ACPE Standards.

As such, the PCOA:

- Has formative and summative measures
- Provides for collective analyses of findings
- Evaluates trends over time
- Includes standardized instruments and data analyses
- Documents that the school is providing the scientific foundation necessary for achievement of the professional competencies

Currently, the PCOA provides norm-referenced measures for interpretation; however, the development of a criterion-referenced assessment would meet the needs for a decision-making assessment tool that would contribute to the evaluation of student preparedness for APPEs. A national, standardized assessment such as the PCOA would be a good fit to Dr. Romanelli's suggestion. NABP welcomes the opportunity to work with the boards of pharmacy, AACP, and ACPE to further investigate the utility of a benchmark examination that could facilitate the awarding of advanced internships by the state and identify those students who are competent to begin APPEs.

In conclusion, NABP is fundamentally committed to provide the boards of pharmacy with the appropriate tools to assist them in making licensure decisions within their jurisdictions. Additionally, NABP has in the past and will continue in the future to support the educational efforts

forged by the missions of AACP and ACPE. As supporters of pharmacy practice and education, our common goal is to secure the means to ensure the public's safety by ensuring exemplary pharmaceutical care.

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In Reply. Thank you for the timely and thoughtful response to my Viewpoints article that was recently published in the *Journal*.[1] The primary intent of this editorial was to generate discussion, debate, and deliberation around current practices used to license pharmacists in the United States. Additionally, thank you for clarifying first time national pass rates associated with Accreditation Council for Pharmacy Education (ACPE) accredited programs. Of note, the American Association of Colleges of Pharmacy does not accredit doctor of pharmacy programs. It would be beneficial if the National Association of Boards of Pharmacy (NABP) reported calculated means on their Web site which relates individual college and school pass rates.[2]

I believe most educators and clinicians alike understand the rigors involved in designing, constructing, validating, and securing a major evaluation such as the North American Pharmacist Licensure Examination (NAPLEX). Educators struggle with these same tasks on a micro level each semester in the construct of valid evaluations and assessments that are used in classrooms every day. There is little doubt that NABP has worked tirelessly in this area. Most would agree the NAPLEX is a sound and valid multiple-choice objective assessment, but does it truly capture candidates' abilities to "put it all together" in an authentic fashion? We are all familiar with students who excel at "test taking"' but falter when challenged to apply their knowledge and skills to simulated or actual patients.

Understandably and as was acknowledged in the Viewpoints piece, even minor modifications to the NAPLEX would incur a significant resource burden. But to preclude discussions, debate, and consideration solely on the basis of resources or delays in licensure would be a disservice to the profession and patients alike. I am sure that most educators and clinicians are pleased that NABP is exploring the feasibility of objective structured clinical examinations (OSCEs) as a potential component of US licensing processes. The suggestion that the Pharmacy Curriculum Outcomes Assessment (PCOA) might play a role in a steps-based or milestone assessment process is intriguing and should be considered in discussions centering around examination philosophy.

NABP's NAPLEX has a long history of serving as a benchmark for the profession. There is little question that NABP approaches the NAPLEX examination and its construction and validation process in a scientific and methodical manner. For that, the profession and public are indebted. NABP should apply the same level of scrutiny and creativity in the constant challenge of keeping its assessments authentic and innovative.

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When Preceptors Fail Their Students

To the Editor. I am privileged to serve as a preceptor for advanced pharmacy practice experiences at Medco Health Solutions, Inc, for many colleges of pharmacy. As a preceptor at Medco for over 17 years, I have seen pharmacy students steadily become better prepared, more interested, more mature, and more professional. The students who come to us today are almost without fail utterly delightful to have in our midst (not to mention productive). It thus pains me all the more to hear so many of them tell of being told by other preceptors that they have wasted their time and money going to pharmacy school because their prospects for finding rewarding work, or maybe any work, are bleak. If only I heard this on rare occasions, but alas, I hear it from nearly every one of my students. This behavior among preceptors must stop and pharmacy schools are in the best position to put an end to it.

A distinguishing feature of professions is the role its members play in the education and training of students. Part of this role involves encouragement—indeed an objective of any teacher or preceptor should be to instill or enhance a sense of optimism in their students. A profession needs its new members to enter it with optimism to inspire new ideas and to generate the energy required to realize its full potential. More importantly, however, preceptors play an important role in the human development of their students. Thus, preceptors have a covenant with both their students and their profession. A preceptor's

action that implicitly or explicitly suggests to a student that he or she has made a mistake in selecting pharmacy as a profession based on the preceptor's own experiences is unethical and immoral, if not violent.

As a preceptor, I can help students traumatized by preceptors who have deflated their dreams and aspirations by giving them many reasons to be optimistic. I do this largely by showing students all the different professional paths available to them with their pharmacy education. Being at Medco, I can show them directly how pharmacy school graduates work in drug information, pharmacy benefit coverage, policy development, clinical program management, pharmacy operations, pharmacy network management, outcomes research, information technology, quality control engineering, law, regulatory, government affairs, sales, marketing, creative services, account management, and executive management, among other areas. Pointing out these possibilities—possibilities most students have never heard of or contemplated—and giving them opportunities to speak to pharmacists in these types of jobs always reverses the damage done by preceptors who told them their futures would be constrained and uninteresting. But, I should not have to be reversing damage, and I can only work with a few students over the course of an academic year. Pharmacy schools, however, could take on this problem more systematically.

First, an interested pharmacy education researcher or even a taskforce organized by the American Association of Colleges of Pharmacy could study the extent to which this problem exists and characterize the problem. For example, is this a problem specific to certain geographic regions, particular practice sites, preceptor age, preceptor gender, preceptor education, and preceptor title? Do these incidences affect student behaviors, attitudes, academic performance, national board outcomes, career choices, and job satisfaction? Second, pharmacy schools could, of course, emphasize or re-emphasize in its affiliation agreements that among expected behaviors of preceptors is that they are not to disparage their students' chosen professional pursuits. Third, schools could develop methods to discover incidents where preceptors have violated this trust, criteria by which to judge specific incidents, and procedures to remove offending preceptors.

Not all pharmacists are happy in their current jobs, and some unhappy pharmacists serve as preceptors. Some of these preceptors believe that if they are not happy and have neither the imagination nor wherewithal to address their particular situation, then the students they precept will never be able to either. These pharmacists are wrong, and they are wrong to transfer their frustrations and failures onto the next generation of pharmacy school graduates. Pharmacists who behave in this way should be

removed from their preceptor roles and use the time they would otherwise use to dash the hopes of aspiring professionals to instead consider their own situations. By selecting experiential sites for our aspiring professionals, pharmacy schools can and must remove those preceptors who threaten the human development of individual students and the human capital the pharmacy profession can produce and contribute to the growing health care needs of the US population.

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Legal Issues in Pharmacy Education: Making the Case for Engaging University Counsel

To the Editor. In the past 30 years, new laws and legal liabilities have emerged that have dramatically changed the landscape of the educational environment. No longer is it advisable to act and ask questions later about the potential impact or consequences of a decision. By necessity, administrative actions must be based on sound legal advice when significant decisions are contemplated. Truthfully, few administrative decisions in higher education lack legal ramifications.

What legal issues face pharmacy administrators and faculty today? Sexual harassment, student privacy, wrongful termination, discrimination, interviewing, disabilities, workers' compensation, employment contracts, employee handbooks, student rights, academic integrity, intellectual property and due process are but a few areas of legal concern. While administrators and educators are not intentionally unaware of legal issues, few may recognize the importance of a decision until a complaint is filed.

Why should faculty members and administrators be concerned about legal issues? One legal misstep, one failure to consider the legal consequences in a decision, or one lapse in judgment could have a dramatic and lasting impression on the university, school, and/or career of the employee. That is why many universities have enlarged their general counsel team to be able to provide adequate and clear legal direction. Take, for example, the University of Florida. Since 1987, the legal office has gone from 5 attorneys to 11.[1] It is not uncommon for attorneys employed at a university to become specialized in unique areas of law in order to address critical issues that regularly appear in higher education.

Does the pharmacy school have many of the same legal concerns or needs as the overall university? Absolutely.

In some ways the pharmacy program will have added concerns. Take for example Health Insurance Portability and Accountability Act (HIPAA). As students are placed in health care facilities, concerns are raised regarding both the privacy and security of patient information. Because of HIPAA, health care institutions may now impose certain contractual obligations, known as business associate agreements, on pharmacy programs in order for the school to place students at those sites. What are the obligations of the pharmacy school regarding these contracts? Does the university have obligations? Will there be short- or long-term obligations from such an agreement? Will liability attach to the administrator or faculty member for student breach of protected health information? Obviously many questions of a legal nature are raised with such an agreement.

With so many questions regarding liability, it is possible to become paralyzed with decisional fear, afraid to go right or left, up or down. Generals do not motivate or lead an army with indecision and neither will pharmacy school administrators. In such a litigation-prone environment, one must find a way to move with confidence. In many cases, it is the university attorney who can provide that needed assurance and direction. But this counsel must be sought out. An administrator or faculty member should not be reluctant to inquire of legal concerns. Questions regarding the impact of an action should be asked and done so in a timely fashion, prior to reaching a decision or taking action.

While inquiry of counsel may prevent some legal problems, no amount of legal counsel can reduce the risk of litigation to zero. When dealing with a decision that negatively affects an individual or group, perceived harm may result that involves litigation even with advice of counsel. Nevertheless, we cannot let the fear of litigation, intimidation by plaintiff's counsel, or the prospect of legal costs stop us from leading, acting, or doing what we believe is right. Education as a profession and a business has risks—always has and always will.

Are there any additional options administrators or faculty members can use to address legal issues? Legal counsel could be hired by the college or school on an as needed basis. The problem with such employment is while one attorney may be very knowledgeable with sexual harassment claims, the same attorney may know very little about the Family Education Rights and Privacy Act. Hence, you end up with a revolving door of counsel. Higher education attorneys frequently are affiliated with the National Association of College and University Attorneys, which offers a broad range of services that help members to identify, analyze, resolve, and prevent legal problems on campus. This organization allows member attorneys to share knowledge and work product on current legal issues for the benefit of the colleges and universities they serve. These attorneys truly are your experts, your go-to counsel for legal concerns. Call them, confide in them and trust them with your legal issues. It's the smart thing to do.

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Critical Considerations in Pharmacy Curriculum Development in South Asian and Southeast Asian Developing Nations

To the Editor. In the context of pharmacy education, curriculum development has always been a core issue for discussion.[1] The progressive role of pharmacists in patient care has made it necessary for pharmacy institutions to modify and upgrade their curriculum periodically. If we examine pharmacy curriculum development in the Asian scenario, we discover many limitations or weaknesses that act as hurdles to effective curriculum development.

Among these hurdles, the most important is the lack of skilled or qualified clinical pharmacists to develop an effective pharmacy curriculum and poor pharmacy practice setups that do not provide sufficient opportunities to practice the clinical aspects of pharmacy. In spite of these weaknesses, many Asian developing nations are offering programs like the doctor of pharmacy (PharmD) degree. This weakness may be compensated by following the curriculum made available online by universities in the United States (US) and Canada. In addition, periodic updates of the American College of Clinical Pharmacy (ACCP) regarding pharmacy practice provide additional resources for these nations to modify or review their curriculum. A drawback to this approach is the fact that the curriculum is updated or revised or sometimes copied directly from these resources without considering whether the course fulfils their own national needs. Similarly, not much attention is paid to whether the country has enough facilities in its local institutions and health care settings for the students to practice properly what they have learned theoretically. Common examples in this regard are the PharmD programs developed in Asian nations (Pakistan, India, Bangladesh, Philippines, and Thailand). Despite these weaknesses, the Pakistani PharmD program

mandates that all Pakistani pharmacy institutions (universities or colleges) follow the Higher Education Commission (HEC) approved PharmD syllabus, which is the essential requirement for accreditation and affiliation.

However, there are a number of South East Asian and South Asian countries that are still running bachelor of pharmacy (BPharm) programs that do not adhere to a standard syllabus. Malaysia is one such country with its own peculiar set of challenges. Although public universities offer BPharm programs that fulfil the needs of industry and hospitals, each has its own BPharm program. Further compounding the situation is the existence of a dual pharmacy education standard whereby private institutions that have a memorandum of understanding or a franchise with British or Australian universities teach the curriculum of the latter countries in 2-year split programs in which students spend the first 2 years in the home country and the other 2 years in the respective foreign country. Furthermore, the majority of such institutions offer master of pharmacy (MPharm) degrees that are not considered equivalent to the Malaysian MPharm; so graduated MPharm students have to study an additional year if they wish to enroll in a doctorate (PhD) degree program at a Malaysian public university. Additionally, the lack of synchronization between course contents and learning objectives is another limitation of the pharmacy professional programs offered by South Asian and South East Asian countries. In one pharmacy program in Malaysia, colleagues reported that the course contents are not in compliance with the learning objectives. This noncompliance not only hinders the students' effective learning process, but also the demonstrator's/lecturer's ability to discuss the course-oriented issues in detail.

Apart from the curriculum development and selection of course contents, the strategies adopted or recommended for student evaluation are also questionable. In general, the course evaluation is conducted on the basis of coursework, ie, midterm quizzes, assignments, projects and a final examination. Normally, the coursework evaluation countes 30%-40% of the course grade and the final examination counts 60%-70% of the course grade. The midterm quizzes, final examination, and in some cases projects and assignments are the only means of evaluating students' knowledge, and to some extent, their skills. Evaluation through midterm quizzes and final examinations are ideal for individual assessment. However, assignments and group projects may result in biased evaluation of the students. From my experience, students often plagiarize from electronic resources by resorting to the cut-and-paste technique. This problem can be countered if a handwritten assignment is requested, but in the case of group assignments like research reports or projects, evaluation would be more accurate if a viva is conducted for every student who participated in that project so that those who did not contribute substantively to the project do not benefit unfairly. Some institutions have adopted oral and poster presentations as an additional tool to evaluate student knowledge about the research design. However, these presentations again are insufficient because it is often the most proficient student who makes the presentation, with the others profiting from his/her contribution.

In addition, other strategies such as clerkships and hospital internships are assigned a mere 10% to 15% of the total grade. Even if we see clerkships in clinical-oriented pharmacy programs as an important training and evaluation technique, if we allocate a low percentage of the grade to students' performance of patient care activities, we limit the preceptor's ability to evaluate the student's knowledge properly. If clerkships are assessed separately from coursework, it would result in a more effective evaluation of the student's clinical skills and students would get maximum benefit from their practical skills training. Similarly, these programs give little or no consideration to public speaking and seminars, which are also important aspects of skills training for pharmacists.

The main aim of this perspective is to highlight the limitations in the pharmacy curriculum of the developing Asian nations so that they can be taken into consideration when revising or updating their curriculum. Adoption of the suggested strategies for rectifying such flaws in the pharmacy curriculum will go a long way towards producing skilled and knowledgeable pharmacists who can establish ideal pharmacy practice setups in their own countries.

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