Director's Forum

Role of Pharmacy Education in Growing the Pharmacy Practice Model

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The *Director's Forum* series is designed to guide pharmacy leaders in establishing patient-centered services in hospitals and health systems. This article focuses on pharmacy academia's ("Academy") role in transforming an organization's pharmacy practice model. Pharmacy students can assume an integrated and accountable role in the practice model by having defined responsibilities for patient care. This role will produce students who are best trained to meet the challenges of pharmacy practice and health care reform. To make the students successful in this role, the pharmacy director must have a specific plan for integrating pharmacy students into the model and establishing relationships with Academy leadership, most importantly with the dean of the school or college of pharmacy. If successfully executed, the relationship between the Academy and the pharmacy department will enhance the mission of developing patient-centered pharmacy services.

Since 1960, costs of health care exceed the growth in the US gross domestic product (GDP) by an average of 2.5 percentage points per year.¹ This growth in health care expenses is not sustainable; recent health care reform requires insurance coverage for all people, which further strains the economic system. To address rising costs in most hospitals, pharmacy departments are being asked to improve their efficiency and effectiveness because medications represent almost 7% of a hospital's expenses.² In addition, because of concerns with quality and safety in health care, pharmacists are being required to develop systems to prevent harm in health care (eg, preventing serious medication errors). The American Society of Health-System Pharmacists' (ASHP) Pharmacy Practice Model Initiative (PPMI) was created to assist hospital pharmacy leaders in managing the consequences of limited resources and providing safer expanded services.

Many stakeholders were engaged in creating the PPMI, and a critical component of the recommendations was pharmacy education. During the November 2010 meeting of the PPMI Summit, participants discussed the role of pharmacy education in advancing practice models. The Summit recommended that the pharmacy education academic community ("Academy") prepare students for a contemporary

role in drug therapy management.³ This role requires that the students have a grasp of skills in communication, clinical reasoning, time management, and the technical aspects of health-system pharmacy practice. Further, the PPMI suggested that the Academy implement curricular changes to prepare students for a larger (both integrated and accountable) role in health-system pharmacy practice.

While the PPMI recommended changes in pharmacy curriculum to best prepare student, the Accreditation Council on Pharmacy Education (ACPE) also revised its standards to require expanded experiential education. The Introductory and Advanced Pharmacy Practices Experiences (IPPE, APPE) changed in 2010 to provide for a more aggressive introduction of students to pharmacy practice. These changes include increasing the number of required rotations for fourth-year students and increasing the students' exposure in their first 3 professional years to both community and hospital practice.⁴

The changes in the IPPE and APPE requirement have been met with some resistance; the logistics of providing expanded experiential education can be difficult given the limited pharmacy preceptor resources and training sites. We suggest that these requirements be used to further enhance the pharmacy practice model. Pharmacy directors should be planning for

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pharmacy students to be an integral and accountable part of the practice model.

The goal of this article is to provide a framework for pharmacy directors to incorporate pharmacy students into their practice model. The article will discuss (1) the need for educating students in direct patient care activities, (2) examples of patient care roles filled by pharmacy students, (3) strategies for working with colleges or schools of pharmacy to enhance student engagement, (4) programs to integrate pharmacy students into patient care, and (5) keys to successful integration of pharmacy students into patient care. Transforming pharmacy students' experiential education to an integrated and accountable role as part of a patient care team has many benefits for both the department and the student. It is yet another strategy for developing patient-centered services in the pharmacy department.

NEED FOR EDUCATING STUDENTS IN DIRECT PATIENT CARE ACTIVITIES

The traditional role of pharmacists operating out of a central dispensing location with primarily distribution-related activities is becoming a rarity. A trends report from the ASHP and ASHP Research and Education Foundation's Center for Health-System Pharmacy Leadership indicates that the emphasis on direct patient care is likely to continue. According to the survey, 71% of respondents thought it was very likely or somewhat likely that at least 50% of hospital pharmacists will spend all of their time handling complex medication issues as members of patient care teams. This is separate from time devoted to product preparation or tasks related to distribution or order verification.⁵

ACPE also emphasizes the national trend toward pharmacist involvement in direct patient care. The most recent version of their accreditation guidelines are explicit in the requirements for pharmacy practice experiences that "must include direct interaction with diverse patient populations in a variety of practice settings and involve collaboration with other health care professionals." This is further expanded to require face-to-face interactions between students and patients as well as students and health care providers.⁶

A position statement from the American College of Clinical Pharmacy (ACCP) entitled "Ensuring Quality of Experiential Education" echoes the importance of direct patient interaction as a component of pharmacy school curriculum. It states that students should be proficient as entry-level practitioners in the areas of direct patient care for inpatient, ambulatory, and

community care patients.⁷ The participation of students in a defined, active role in the care of patients is essential for them to acquire direct patient care experiences. The quality of their advanced practice pharmacy experiences will be a direct indication of how prepared students will be to assume patient care roles upon graduation from any accredited program.

The rapid expansion in the number of educational pharmacy programs in recent years impacts the quality of experiences that pharmacy students receive. As of July 2012, there are 124 accredited colleges and schools of pharmacy in the United States with an additional 5 schools with precandidate status. There are concerns about the ability of experiential practice sites to meet the demand for more rotation opportunities for students.

To expand the breadth of direct patient care services and continue to meet the demand for experiential education without taxing the limited resources of health systems, pharmacy students need to be viewed and utilized as an asset to the health system, serving as an extension of the pharmacist. To achieve such a model, pharmacy students must begin their advanced pharmacy practice experiences with a sound pharmacotherapy knowledge base and a complete skill set to enable them to be effective members of an interprofessional team.

PATIENT CARE ROLES OF PHARMACY STUDENTS

As the paradigm for educating pharmacy students begins to shift to a focus on integrating them as a key component of the pharmacy practice model, it is important to consider what roles they are able to fulfill. This assessment should take into consideration their pharmacy school year and their experiences.

First-, second-, and third-year pharmacy students will be more limited in their ability to perform advanced direct patient care services. However, it is important that they be exposed to interactions with patients and health care providers as early as possible. This will prepare them to be more effective members of the patient care team as they enter their fourth year, when they can be relied on for independent direct patient care responsibilities. Depending upon the structure of the didactic curriculum, first-, second-, and third-year pharmacy students can be utilized to varying degrees to perform patient care activities. Ideally, at this point in their educational path, they should be able to assist with obtaining patient medication histories and patient discharge counseling.

Pharmacy students who are in their fourth year of pharmacy school should have received sufficient

exposure to communication with patients and health care providers to allow for an easy transition into direct patient care responsibilities. With the didactic portion of their education complete, they should have the knowledge base to be an active member of the team and to care for a variety of patient types. Pharmacy students can be integrated into the practice model by performing tasks such as pharmacokinetic or anticoagulation monitoring, antimicrobial stewardship activities, target-drug and renal dosing programs, and patient profile review for appropriate medication use. They can assume these responsibilities in addition to tasks that are appropriate for first-, second-, and third-year pharmacy students. These activities are further outlined in Table 1.

RELATIONSHIPS WITH COLLEGES AND SCHOOLS OF PHARMACY

Historically, there have been challenges in building relationships between academic medical centers and colleges or schools of pharmacy. This lack of a collaborative relationship is unfortunate considering the

ideal training environment that they can provide to pharmacy students. There may be some disadvantages in providing experiential education to students, but these are outweighed by the benefits that can be realized by integrating students into the pharmacy practice model.

The decision by an academic medical center to serve as an experiential training site should take into account the resources that are necessary to provide a quality experience. In some cases, students have been viewed as a barrier to the expansion of clinical services due to the time that practitioners spend training students to utilize the system and to appropriately interact with patients and the health care team and adding to their content knowledge. Preceptors may think that the time that they have to devote to student teaching may inhibit their ability to perform their own patient care responsibilities. In addition to time practitioners spend with students, the medical center has to allow for time to perform administrative tasks associated with a training program. These tasks include scheduling students, providing orientation to the institution, and tracking institutional compliance for requirements such as tuberculosis screening. With all these considerations in mind, it is clear that it takes a significant investment of resources to provide pharmacy practice rotations.

Despite this investment, the integration of students into the pharmacy practice model with defined patient care roles has numerous benefits. First, it allows the students to interact with students in other areas of medicine, such as nursing and respiratory therapy, and with mid-level providers. Furthermore, if students have multiple rotations at one institution, they will become familiar with the systems and operations of that institution and will be able to assume additional patient care responsibilities with each rotation. By assigning specific tasks to students such as obtaining medication histories, some of the time pressures placed on clinical pharmacists to perform these functions can be alleviated. Integrating students into the pharmacy practice model and providing them with a range of experiences will result in an applicant pool for pharmacy residency programs and entry-level pharmacist positions that is better prepared to assume direct patient care roles. This will offset the initial investment by the medical center in providing this training.

For such a model to be successful, there needs to be close collaboration between the health system and the college or school of pharmacy. One strategy to include colleges and schools of pharmacy in decisions surrounding practice model development is to focus on

Table 1. Description of pharmacy student duties in a practice model

Patient care responsibilities

Pharmacy student years 1-3

- Obtain medication history by applying motivational interviewing skills and gathering medication use information from pharmacies, relatives, and other care providers.
- Provide patient discharge medication education that involves reviewing key uses and side effects of medication along with suggestions/strategies to maintain or improve compliance.
- Participate in quality assurance data collection and pharmacy operational activities.

Pharmacy student year 4

- Participate in pharmacokinetic or anticoagulation monitoring, involving designing a therapeutic regimen based on pharmacokinetic parameters and blood test results. Recommend dosage changes and monitoring to the preceptor (responsible pharmacist).
- Perform antimicrobial stewardship activities, including checking culture data against drug therapy and antibiotic sensitivities and suggesting antibiotic de-escalation to the preceptor.
- Participate in target-drug and drug dosing programs, reviewing a list of monitored medications and applying evidence-based guidelines to those medications and calculating appropriate drug doses for patients with renal and hepatic impairment.
- Review patient profiles for proper drug dose and frequency along with recognition of drug interactions and duplicate therapy. Recommend any changes to the preceptor.

the relationship between the director of pharmacy and the dean of the college or school of pharmacy.

The relationship between the pharmacy director and the pharmacy dean can be structured in 2 ways. The first way places the director of pharmacy in a dual reporting structure to the medical center administration and the pharmacy dean. The director will also serve as an assistant or associate pharmacy dean at the college of pharmacy. The second way is a less integrated model in which the director of pharmacy does not have a dual reporting structure, but instead reports to a hospital administrator and supports an affiliation with the school or college of pharmacy. The latter relationship is most common. There are only 126 academic medical centers in the United States, so a majority of relationships between the Academy and a medical center are structured as an affiliation.

A collaborative relationship between the medical center and the college of pharmacy will allow for better integration of practicing clinical pharmacists to contribute to both the didactic and experiential education of pharmacy students. Working together, these institutions will be more likely to achieve the goal of providing students with quality patient care experiences while efficiently expanding clinical pharmacy services by integrating them into the pharmacy practice model.

SUCCESSFUL PROGRAMS

Historically, the Academy's role in the pharmacy practice model has been limited due to the focus of tenure-track faculty members on didactic lectures and academic research with less active participation in direct patient care. The role of direct patient care was assumed by non-tenure-track or adjunct faculty members who had limited time to devote to teaching and precepting students.

It is unrealistic to develop a model where every tenure-track faculty member plays an equally active role in direct patient care, but the role of the faculty member must be expanded to support the current trends in the pharmacy practice model. This means that colleges of pharmacy, academic medical centers, and community hospitals must view pharmacy students as being part of the patient care team.

The Academy must commit to utilizing students as an integral and accountable part of clinical services. In a health care environment that is increasingly focused on efficiency, pharmacy students can help improve the level of patient care while minimizing costs.

There are several published reports that demonstrate the successful integration of pharmacy students

into hospital and ambulatory settings to expand the breadth of clinical services. In an ambulatory setting, the University of Colorado Skaggs College of Pharmacy created a partnership to establish pharmacy-based diabetes clinics in rural and underserved Colorado communities. The clinics provided direct patient care advanced pharmacy practice experiences to 120 students and gave them responsibility over the drug-related outcomes of diabetic patients. As a result, there was clinically significant improvement in A1c, blood pressure, total cholesterol, low-density lipoprotein (LDL) cholesterol, and triglyceride values for patients who received care from student pharmacists.⁸

At the University of Pittsburgh Medical Center, students were integrated into the pharmacy practice model and given direct patient care responsibilities including assessment of patient needs for medication education and identification of drug-related problems. Pharmacists supervised the students who were providing medication education and medication therapy management. This program increased the number of patients at the hospital who received these services. In addition to the benefits to the medical center, the students reported a positive effect on their ability to impact patient care.⁹

Colleges of pharmacy need to collaborate with academic medical centers to provide the quality interdisciplinary experiences that are necessary to produce well-rounded pharmacy graduates. With the number of pharmacy schools in the United States continuing to increase, we can expect greater competition amongst schools to secure quality rotation sites for students. Furthermore, the availability of rotation sites may ultimately impact the success of pharmacy education programs.

KEYS TO SUCCESS

The integration of pharmacy students into the pharmacy practice model as direct patient care providers relies on cooperation between the schools and colleges of pharmacy with those who are consistently providing direct patient care. Keys to achieving effective integration of pharmacy students into an organization's pharmacy practice model include the following:

- Develop a positive and collaborative relationship between the director of pharmacy and the dean of the college of pharmacy where mutual goals are established;
- Establish a joint evaluation (between the medical center and the school or college) of the competency

of pharmacy students to provide patient care with a consistent feedback mechanism to the students;

- Design new and innovative practice programs to enhance the role of pharmacy students;
- Design early practice experience roles for pharmacy students (in the first 3 professional years) that best prepare them for more advanced roles;
- Allow for numerous rotations in the same institution for fourth-year experiences (APPE) for maximum learning and patient care continuity.

CONCLUSIONS

Pharmacy students can assume an integrated and accountable role in the practice model by having defined responsibilities for patient care. This expanded role will result in students who are best trained to meet the challenges of pharmacy practice and health care reform. To make the student successful in this role, the pharmacy director must have a specific plan for integrating pharmacy students in the model and for establishing relationships with Academy leadership, most importantly the dean of the school or college of pharmacy. If successfully executed, the relationship between the Academy and the pharmacy department can enhance the mission of providing patient-centered pharmacy services.

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