

ACCP COMMENTARY

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The Importance of Direct Patient Care in Advanced Pharmacy Practice Experiences

American College of Clinical Pharmacy

R. Chris Rathbun, Pharm.D., E. Kelly Hester, Pharm.D., Lindsay M. Arnold, Pharm.D., Allison M. Chung, Pharm.D., Steven P. Dunn, Pharm.D., Lisa M. Harinstein, Pharm.D., Molly Leber, Pharm.D., Julie A. Murphy, Pharm.D., Kristine S. Schonder, Pharm.D., Sheila M. Wilhelm, Pharm.D., and Kristine B. Smilie, Pharm.D.

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Address reprint requests to the American College of Clinical Pharmacy, 13000 W. 87th St. Parkway, Suite 100, Lenexa, KS 66215; e-mail: accp@accp.com; or download from <http://www.accp.com>.

Abstract

The Accreditation Council for Pharmacy Education issued revised standards (Standards 2007) for professional programs leading to the Doctor of Pharmacy degree in July 2007. The new standards require colleges and schools of pharmacy to provide pharmacy practice experiences that include direct interaction with diverse patient populations. These experiences are to take place in multiple practice environments (e.g., community, ambulatory care, acute care medicine, specialized practice areas) and must include face-to-face interactions between students and patients, and students and health care providers. In 2009, the American College of Clinical Pharmacy (ACCP) identified concerns among members that training for some students during the fourth year of pharmacy curriculums are essentially observational experiences rather than encounters where students actively participate in direct patient care activities. ACCP members also stated that there is a need to identify effective mechanisms for preceptors to balance patient care responsibilities with students' educational needs in order to fully prepare graduates for contemporary, patient-centered practice. The 2010 ACCP Educational Affairs Committee was charged to provide recommendations to more effectively foster the integration of pharmacy students into direct patient care activities during advanced pharmacy practice experiences (APPEs). In this commentary, the benefits to key stakeholders (pharmacy students, APPE preceptors, clerkship sites, healthcare institutions, academic pharmacy programs) of this approach are reviewed. Recommendations for implementation of direct patient care experiences are also provided, together with discussion of the practical issues associated with delivery of effective APPE. Examples of ambulatory care and acute care APPE models that successfully integrate pharmacy students into the delivery of direct patient care are described. Enabling students to engage in high quality patient care experiences and to assume responsibility for drug therapy outcomes is achievable in a variety of practice settings. In our opinion, such an

approach is mandatory if contemporary pharmacy education is to be successful in producing a skilled workforce capable of affecting drug therapy outcomes.

Introduction

The Accreditation Council for Pharmacy Education (ACPE) issued revised standards (Standards 2007) for professional programs leading to the Doctor of Pharmacy degree in July 2007.¹ The new standards require colleges and schools of pharmacy to provide pharmacy practice experiences that include direct interaction with diverse patient populations. These experiences occur in multiple practice environments (e.g., community, ambulatory care, acute care medicine, specialized training areas) and must include face-to-face interaction between students and patients, and students and health care providers. The American College of Clinical Pharmacy (ACCP) has published guidance on the interpretation of the ACPE standards for pharmacy practice experiences, indicating that introductory pharmacy practice experiences (IPPEs) should consist of at least 300 hours of structured experiential activities to meet the ACPE requirement for no less than 5% of the curriculum, and advanced pharmacy practice experiences (APPEs) should comprise a minimum of 36 weeks to meet the requirement for at least 25% of a standard four-year academic curriculum, including a minimum of 24 weeks of direct patient care experiences.²

Written comments submitted as a part of ACCP's 2009 member survey requesting identification of important issues in clinical practice, education, and research, expressed concern that the experiential education of some students during the fourth year of the pharmacy curriculum were, in effect, observational experiences with limited involvement in direct patient care. ACCP members also suggested the need to identify effective mechanisms for preceptors to balance students' patient care responsibilities with educational activities (e.g., assigned reading, topic discussions, and so forth) in order to fully prepare graduates for contemporary patient-centered practice. In some instances, students' experiential education is perceived to be a burden by health care institutions and preceptors because preceptor time is diverted to teaching activities

and clinical service productivity diminishes. This can lead to reduced institutional commitment to experiential education because students are not perceived to contribute positively to the practice activities of the pharmacy department or clinical site.

The ACCP Board of Regents recognized that these observations are not necessarily associated with most doctor of pharmacy programs. However, given that these issues were familiar to current and past ACCP board members, they were viewed as credible by the organization's leadership. Therefore, the 2010 ACCP Educational Affairs Committee was charged to provide recommendations to better integrate students into the delivery of direct patient care, including delegating to students responsibility for drug therapy outcomes. In this commentary, the benefits of this approach will be reviewed. Examples of the integration of students into direct patient care practice are also provided, together with a discussion of practical issues associated with delivery of effective APPEs.

Benefits of Student Involvement in Direct Patient Care

Student Benefits

We believe that the benefits of increasing student involvement in direct patient care during APPEs are undeniable. Doctor of pharmacy students who actively participate in patient care activities can be expected to gain increased proficiency in managing drug therapy problems through the longitudinal exposure to diverse practice environments that occurs during the experiential component of the professional degree program. Practical, real world experiences are necessary for students to refine thinking and problem-solving abilities, build confidence, deepen their understanding of clinical disease and pharmacotherapy, and mature professionally. It is expected that integrating students into the preceptor's workflow will foster greater knowledge retention and satisfaction with their clinical experience—students are also more likely to actively

engage in their own learning and recognize the value of their contributions to patient care. Delegation of responsibility for direct patient care induces students to take ownership of patient-specific drug therapy outcomes. They learn to be more accountable by having to provide and justify a rationale for their drug therapy recommendations, enabling preceptors to affirm correct therapeutic approaches while also facilitating recognition of students' misconceptions or knowledge deficits. Using this approach, students can improve problem-solving skills and receive formative feedback to advance their professional development.

APPEs should also help prepare students for postgraduate residency training. For example, interactions with other health care professionals in the direct patient care setting can help increase the student's understanding of the health care process and the individual contributions of each health care professional to the delivery of patient care.³ In our experience, the diversity of patient care settings and degree of involvement in patient-specific pharmacotherapeutic management have a profound impact on students' future career directions. In addition, direct patient care activities help build student confidence and instill a desire to render pharmaceutical care—outcomes that clearly benefit both patients and the pharmacy profession.

Benefits to Experiential Sites and Health Care Institutions

The inclusion of students in direct patient care activities can yield significant benefits to individual practice sites and health care institutions.³ According to the American Society of Health-System Pharmacists (ASHP) 2006 National Hospital Pharmacy Survey, the most commonly cited barriers to providing medication information to patients was lack of pharmacist time and inadequate pharmacy staffing.⁴ During APPE, students can extend clinical services to patient care areas that are either underserved or that don't have existing services. For example, inclusion of students in inpatient medical teams, or assigning them to work collaboratively with

specific physicians, enables the provision of additional pharmacotherapy evaluation and monitoring. In ambulatory care settings, pharmacy students working with other health care professionals can see patients who would not otherwise undergo a clinical pharmacist's assessment of their pharmacotherapy. Pharmacist-managed programs or quality assurance initiatives such as medication reconciliation, anticoagulation monitoring, or antimicrobial stewardship can be expanded when students are involved. Within existing patient care services, additional activities such as conducting medication histories, referring cases to clinical pharmacy specialists, answering drug information questions, and performing discharge counseling can be accomplished by students. More complex patient care services may still be reserved for the preceptor, with students assigned to critically analyze and critique the preceptor's actions. Students are particularly well-suited to conduct medication reconciliation, structured counseling services (e.g., warfarin, insulin, disease-state management), and therapeutic drug monitoring (TDM) in the early stages of their clinical education. In community pharmacy settings, students can further the provision of pharmaceutical care by providing additional health and medication information, conducting health screenings, or developing new services such as medication therapy management or immunization delivery. Expanding services in this manner can facilitate identification of more drug-related problems and lead to interventions that help optimize medication therapy. Involving APPE students in these patient care activities develops the skills and confidence needed to assume direct patient care responsibilities while also working with preceptors to resolve more complex drug therapy problems (e.g., management of drug-drug interactions).

When students are integrated into direct patient care activities, they learn to address drug-related problems more efficiently. In addition, when the preceptor establishes these activities (i.e., to identify and resolve drug-related problems) as a routine expectation, students accomplish

higher-level interventions. Consequently, preceptors are more likely to experience greater satisfaction as student interventions positively affect patient care.

A number of tangible benefits to health care institutions can be realized by involving students in patient care activities.⁴ Although many clinical pharmacists who provide direct patient care at academic medical centers are funded by health care institutions, relationships with schools of pharmacy may lead to additional funding to support other activities. Collaboration between health care institutions and academic pharmacy programs provides a mechanism to communicate institutional expectations for the essential knowledge and skills that students must possess upon graduation. Increasing the role of students in direct patient care can also enhance the institution's clinical pharmacy services by freeing preceptors to participate in expanded patient care activities or to focus on other activities that directly benefit the pharmacy department and institution (e.g., staff development, formulary or pharmacy and therapeutics committee activities, etc.). Health care institutions that take an active role in educating students may also benefit from the enhanced staff retention and recognition associated with serving as an experiential site. Preceptors are often awarded faculty appointments with affiliated academic pharmacy programs. In addition to preceptor training and development, continuing education, tuition waivers, travel support, and library resources may be provided by the school of pharmacy. State and national professional societies also offer awards to excellent preceptors. Finally, education of students by health care institutions can aid in personnel recruitment by attracting students to postgraduate residency training and/or staff positions.

Benefits to Academic Pharmacy Programs

Several benefits of greater student involvement in direct patient care may accrue to academic pharmacy programs. First, direct patient care provides the real-world opportunities that are necessary to achieve the ability outcomes required to provide pharmaceutical care.

Given ample time, direct patient care experiences will allow the student to progress such that his/her performance of patient care activities steadily improves. This improvement requires increasingly less direct supervision by the preceptor. Eventually, the successful student is able to complete even complex tasks independently. Second, the professional confidence of graduates is strengthened when experiential activities are designed to consistently challenge students to attain higher levels of performance. Consequently, as students recognize the impact on their individual personal and professional growth, they derive increased comfort in confronting the challenges of clinical practice. Ultimately, the academic pharmacy program can point to its skilled and confident graduates who are prepared to enter the next phase of career development. This creates a favorable reputation for the academic institution that can promote competitive applicant pools and productive relationships with pharmacist employers. Students who experience satisfaction with their clinical education and training are also more likely to have a positive view of their academic experience and thus serve as active alumni involved in the clinical training and mentoring of future students.

Faculty and Affiliate Preceptor Benefits

Faculty and institution-based, affiliate preceptors benefit from experiences that incorporate students into direct patient care in a number of ways. Students are most helpful in assisting preceptors with patient care activities when they function with greater autonomy. This autonomy (and the competence that facilitates it) results from deliberately delegating to students direct patient care responsibilities that enable repeated application of their growing knowledge and skills. High-performing students can help divide the patient care workload with the preceptor, contributing to greater efficiency while extending care to a greater patient base than the preceptor can address alone. In addition, the increased visibility and accessibility of clinical pharmacy services has the potential to result in greater demand among other health professionals

and patients for clinical pharmacists' services. The value of expanding clinical pharmacy services by integrating students into patient care has been quantitatively and qualitatively demonstrated through documented patient care interventions.^{5,6}

Barriers to Student Involvement in Direct Patient Care

A number of practical barriers to cultivating productive patient care experiences for students during APPEs exist. These usually focus on issues pertaining to 1) student readiness for advanced clinical experiences, 2) competing priorities of preceptors and health care institutions to meet other responsibilities not related to student education, and 3) logistical issues related to individual practice sites. A brief discussion of how these issues impact the delivery of high quality APPEs is followed by recommendations on how to mitigate their effects on experiential education.

Adapting to patient care delivery in diverse practice settings can be challenging for students due to their limited exposure to many practice settings prior to entering APPEs and the need to apply problem-solving skills to the treatment of more complex patients. Patient case scenarios used in the didactic setting may in some instances be relatively straightforward and result in a "one best answer" approach. This can discourage the retrieval and assimilation of clinically-relevant information, minimize the application of problem-solving skills, and lead students to a false sense of the complexity that often surrounds clinical decision-making in the real-world setting. Depending on the professional program's curriculum, insufficient time may be devoted to some specialized practice areas (e.g., intensive care, oncology) and students may have had limited practice in applying the practical aspects of routine pharmacotherapy (e.g., dosing, pharmacology, pharmacokinetics) to these specialized practices. Students may also experience varying degrees of receptivity to their drug therapy recommendations by health care

professionals. In our experience, this is often due to some practitioners' uncertainty regarding the extent of a pharmacy student's pharmacotherapeutic knowledge base and his/her ability to effectively participate in direct patient care.

Facilitating Direct Patient Care Roles During APPEs

Learning Experiences Prior to APPEs

Effective use of IPPEs, simulations, and classroom-based case scenarios that foster integration of treatment concepts and a progressive development of pharmacotherapeutic knowledge and skills can help prepare students for increasingly complicated issues that arise in real-world practice. Sequencing these activities in a manner that facilitates stepwise, integrative application of drug therapy concepts can allow students to build confidence and develop foundational skills before being faced with managing complex patients. This limits the student's tendency to become overwhelmed when transitioning to APPEs. In addition, teaching and reinforcing a systematic approach to patient and pharmacotherapeutic assessment is necessary to develop problem-solving and critical thinking skills across the broad spectrum of experiential rotations. Such practical preparation prior to APPEs can positively influence student performance and, in turn, the perceptions of other health care providers of pharmacy students' ability to contribute to positive patient outcomes.

Preceptor Roles and Expectations

Academic program and practice site leaders should work with preceptors to promote viable student practice roles and establish clear performance expectations for APPE students. Faculty and institution-based affiliate preceptors serve as vital contributors to experiential learning. However, they may encounter difficulty integrating students into their respective practices. The role of the pharmacist in patient care delivery may be ill-defined in some practice

settings. For example, when preceptors are not consistently present at a practice site throughout the year, it may be more challenging for students to “step into” direct patient care roles at the site. College-based faculty preceptors often supervise students for more than 50% of an academic year, requiring the faculty to balance other academic responsibilities (e.g., didactic teaching, committee service, scholarship) with the time they devote to teaching students in experiential settings. Preceptors who are partially funded by both a clinical site and a college of pharmacy may also struggle to effectively balance the needs of the practice site and the academic program. For institution-based affiliate faculty, practice site workloads may not be adjusted to allow the time needed to model clinical pharmacy practice and effectively supervise and educate students at an advanced level. Affiliate faculty may also be unfamiliar with students’ previous didactic and experiential learning prior to entering an APPE. Hence, they may have expectations for student performance that vary widely from those of full-time faculty or the students themselves.

Balancing Preceptor Roles and Responsibilities

In order for students to have rewarding and productive training experiences, it is critical that clinical practice roles be sufficiently developed and maintained so the clinical pharmacist’s impact on patient care is clearly evident. It is also vital that the institution demonstrate a commitment to experiential education by ensuring that preceptor workloads are apportioned appropriately and that institutional priorities do not detract from the experiential learning. Similarly, the academic program must ensure that faculty workload is appropriately balanced so that student learning is not compromised by other faculty responsibilities. Faculty developing new practice sites should be allowed sufficient time to establish direct patient care roles within the practice environment before they are assigned students to precept. Continual communication between academic experiential program directors and practice site preceptors can harmonize

expectations for student performance and promote more consistent student assessment.

Guiding Students' Direct Patient Care Involvement

Supervisory requirements for students can vary greatly among practice settings. In acute care settings where patient management is more medically complex, immediate drug therapy decisions are often required. It can be difficult for preceptors in this environment to strike a balance between being involved enough to ensure effective delivery of patient care and not being a hindrance to student involvement, because the medical team seeks the preceptor's input in making real-time decisions, leaving little or no opportunity for the student to participate in the decision-making process. In addition, academic pharmacy programs may require that a larger number of students be assigned to faculty members than the practice site can adequately support, resulting in competition for one-on-one contact with the preceptor. This can impact the quality of student experiences, particularly at ambulatory care sites where space is limited and patient volume may be relatively low. With the movement to electronic medical records (EMR) among many health care institutions, student access to patient medical information may be restricted by licensing agreements, thereby limiting their involvement in direct patient care. It is our impression that this restriction may be more common at practice sites where patient care roles for pharmacy students are not recognized or valued. Of course, EMR access for students can also be contingent upon contractual commitments between a college of pharmacy and a health care institution.

Student-Preceptor Interactions

It is incumbent upon preceptors to maintain a learning environment that enables students to develop professional abilities and confidence while still meeting the practical needs of patients and health care practitioners. In instances where preceptors must intercede because students are unable to provide timely drug therapy recommendations to practitioners, preceptors should

subsequently review with students the thought processes used to formulate such suggestions, thereby preparing them to formulate their own recommendations in the future. Ongoing review of students' patient-specific assessments and drug therapy plans can also provide the preceptor with opportunities to facilitate student preparedness to provide meaningful contributions in direct patient care settings. Academic pharmacy programs must ensure that there are an appropriate number of student learners at each experiential site to avoid compromising individual student learning. Impediments that limit student access to patient medical records (e.g., hard-copy or electronic charts, progress notes, and laboratory and test results) should also be identified and addressed through coordinated efforts between the academic program and the practice site.

Ambulatory Care and Acute Care APPE Models

Summary of Published Literature in Ambulatory Care

A limited number of studies have been published describing the involvement of APPE students in patient care in community and ambulatory care practice settings.⁷⁻¹² In general, these reports demonstrate that students are capable of expanding the scope of services (e.g., health screenings, medication therapy management) delivered to patients and can increase the number of patients served. Improvement in hemoglobin A1C levels was noted in one study of diabetic patients receiving care from pharmacy students.¹⁰ Improved accuracy of medication records was noted in another report where pharmacy students participated in medication reconciliation.¹² Medication therapy management services involving APPE students in the community pharmacy setting have been reported to result in reimbursement for those services.⁹ Overall, pharmacy students have consistently cited more engagement in their experiential rotations when they are involved in direct patient care activities. These experiences also result in identification of a larger number of medication problems and improved preceptor satisfaction with the higher levels

of student performance.⁸

Example: HIV Primary Care Clinics

An example of clinical pharmacy services provided to two federally-funded HIV outpatient clinics exists at Auburn University and the University of Oklahoma Health Sciences Center, where students play a central role in the delivery of care to patients with HIV infection.^{13,14} Through collaboration with the schools of pharmacy at each of these universities, students are integrated into direct patient care services and assume the clinical pharmacist's role, under the supervision of a preceptor. Direct patient care activities carried out by the pharmacy students include patient health education and medication therapy counseling on new prescriptions, medication reconciliation and histories, and adherence assessments. Clinical pharmacy services can be extended in this setting by pairing pharmacy students with other health care practitioners where medication therapy review for drug-related problems, recommendations for optimization of therapy, and drug information responses are provided. In addition, students provide antiretroviral resistance evaluations, review of abnormal laboratory tests, and answers to drug information inquiries.

For patients referred for medication therapy management services for hypertension, dyslipidemia, smoking cessation, and diabetes, students perform a medical chart review to formulate a pharmaceutical care plan in advance of seeing the patient. Students routinely interview patients, perform physical assessment, and educate patients regarding their individual therapeutic plans and medications. Immediate feedback is provided by the preceptor regarding the student's therapeutic plan in advance of the patient encounter. Once students have developed a response to a consult and have reviewed this with the preceptor, they report their clinical impressions and recommendations to the health care provider. Following each patient visit, students document their patient care activities in the medical record. As a result, students gain

experience in clinical decision-making and develop confidence through the development of drug therapy plans and consultative interactions with other health care practitioners. The benefits of this APPE model include the students' extensive interaction with health care providers and patients, involvement in delivery of direct patient care, and the opportunity to assume well-defined clinical pharmacist direct patient care roles.

In the course of establishing these practice sites, several barriers were overcome to facilitate student participation in direct patient care. Student access to medical records was initially limited by health care institutional policies and procedures, requiring coordination with the department of pharmacy at the institution. In addition, implementation of an EMR platform provided no means for students to view medical records because of site license requirements, requiring purchase of site licenses for students by the college of pharmacy to enable students to gain access to the EMR.

Summary of Published Literature/Abstracts in Acute Care

A number of studies of APPEs in acute care settings have described the positive impact on patient care that can be realized when students are delegated direct patient care responsibilities. These studies report student involvement with a variety of activities including medication history taking and reconciliation, medication counseling, therapeutic drug monitoring, adverse event reporting, and intravenous to oral therapeutic conversions.¹⁵⁻¹⁹ In these reports, student interventions accounted for 13–29% of total pharmacy department interventions, with about half of the student interventions classified as being of moderate to high significance.^{6,20,21} Additionally, 92–97% acceptance of student interventions was reported.^{20,21} In order for students to assume these direct patient care responsibilities, time must be devoted early in the APPE to adequate training and assessment of student abilities. One study described involving current pharmacy residents or other APPE students at the practice site in the training of

incoming students to expand the length of this initial training period beyond the extent that a preceptor alone may be able to offer.¹⁹ Student activities also resulted in substantial financial benefit to the institution. Based on 63 4-week experiential rotations, a total cost benefit of \$354,752 was realized during one year of student rotations.⁶ In addition to the institutional benefits, students reported gaining confidence as well as acquiring a sense of responsibility for the patients that they recognized as being reliant on them for provision of quality care.¹⁷

Practical Example: Henry Ford Hospital APPE

The APPE training program utilized by Henry Ford Hospital provides an exemplary model of integrating students into the institution's pharmacy services. Henry Ford Hospital participates in the Wayne State University longitudinal advanced pharmacy practice (LAPP) program that allows students to spend the majority or all of their seven 6-week APPE rotations within one institution.²² After completion of a 6-week general hospital practice experience, students are assigned to a variety of rotations, including core inpatient practice experiences (infectious disease, internal medicine, nephrology, cardiology), as well as elective, ambulatory care, and community rotations in 6-week blocks.

Within the core areas of care, rotations are designed so that a clinical pharmacy specialist preceptor, or a co-funded faculty preceptor, is responsible for a floor of patients which each encompasses two patient care teams. The preceptor has two trainees (one or two fourth year LAPP students or a pharmacy resident) most of the year, one to cover each of the two teams on the floor. Since the preceptor does not round with the team, the student or resident is relied upon to serve as the pharmacy department's representative on each team. Students are responsible for fully evaluating patients covered by the team, rounding daily, providing appropriate therapeutic recommendations, answering drug information questions, and providing all other services a clinical pharmacist would be expected to render for that medical service. Students carry cell

phones and are the individuals called if there is a question or problem associated with a medication order for a patient covered by their team. They are required to provide comprehensive care for their patients, including anticoagulation and pharmacokinetic dosing services. Students meet regularly with the preceptor to discuss the patients for whom they have responsibility. They possess state internship licenses and are fully trained as student members of the pharmacy department. Because of this, they are included in the delegated authority agreements that have been approved by the institution's pharmacy and therapeutics committees and do not require a co-signature from a preceptor for the services they provide. Students are also ACLS-certified and attend medical emergency codes with one of the institution's pharmacists. Students document their interventions in an electronic tracking system that allows annual assessment of interventions made as a department as well as assessment of the impact of student interventions on individual patient care teams. During the months that a student is not assigned to one of these teams, a pharmacy specialist is responsible for providing care to patients assigned to that team.

The Henry Ford Hospital LAPP allows students to gain valuable experience in becoming autonomous, independent practitioners in a setting where preceptors and other pharmacists are available to provide guidance. From the preceptor's standpoint, this model provides an incentive to have students assigned to a patient care team because it allows the preceptor to devote time to other institutional responsibilities, such as quality assurance projects, protocol and pathway development, and research projects. From the pharmacy department's viewpoint, students help to expand the provision of clinical pharmacy services to teams that couldn't otherwise receive these services.

Final Comments

Students integrated into direct patient care environments can be expected to gain firsthand experience by fulfilling the role of the clinical pharmacist within the interprofessional health care team. Such experiences are essential to the development and advancement of patient care skills. Motivated students who acquire extensive direct patient care experience have the potential to contribute to the development of a highly-trained and competent clinical pharmacy work force. Benefits to other key stakeholders can also be realized through student involvement in direct patient care. Development and extension of clinical pharmacy services to more patients can be achieved at substantially lower costs to health care institutions. When APPE are structured properly, faculty and affiliate preceptors can devote more time to other professional obligations while at the same time providing responsible patient care experiences to students. Academic pharmacy programs can develop stronger collaborative relationships with practice sites, resulting in access to diverse patient care environments and support for other academic priorities.

In order to achieve these benefits, APPE sites must be provided with support from academic institutions to enhance APPE outcomes. Affiliate faculty and new faculty should be provided access to preceptor development programs, such as the ACCP Academy Teaching and Learning Certificate Program, other national professional development programs, and precepting programs developed by individual institutions. Equitable allotment of workload for preceptors that balance teaching activities with other responsibilities is necessary. Faculty establishing new practice sites should precept a limited number of students initially to allow time to determine how students can best be integrated into direct patient care activities and to maximize those activities at the practice site. Academic pharmacy programs that offer training and educational sessions for affiliate and junior faculty should communicate clearly their expectations for student performance and assist in identifying mechanisms to incorporate students into direct patient care

roles in diverse practice settings, leading to more well-rounded and consistent learning experiences for students. Improved communication between institution-based preceptors and academic pharmacy programs can provide affiliate faculty with the opportunity to express both their individual preceptor developmental needs and the expectations for the students they precept. By addressing these factors prospectively, both preceptors and students will be better positioned to maximize the learning potential at each practice site.

Where possible, sequencing of APPEs should be coordinated in a manner that facilitates progressive growth of clinical knowledge and skills, attempting to avoid assignment of students to more complex patient care experiences before they are adequately prepared (e.g., assignment to a level 1 trauma unit as a student's first APPE). Preceptors should create a learning environment that both challenges and supports students toward achieving progressively higher levels of practice performance as they progress from basic to more complex patient care environments. Institutions involved in residency training are particularly well-positioned to provide advanced clinical practice experiences with the added mentoring and guidance of a PGY-1 or PGY-2 resident. Involving pharmacy residents as co-preceptors in APPEs can provide greater flexibility for preceptors while at the same time complementing students' learning experiences. Residents may more readily empathize with student fears or concerns and can model positive attitudes and behaviors that bring another dimension to student learning.

In summary, enabling students to engage in high quality, direct patient care experiences and assume responsibility for drug therapy outcomes is achievable in most practice settings. This is an essential foundational step in the profession's preparation of a skilled workforce capable of optimizing drug therapy outcomes and a clear commitment to this objective by all stakeholders is critical. While practical barriers to the integration of students in the delivery of direct patient care exist in some APPE settings, the immediate benefits to students, patients, academic

pharmacy programs and health care institutions, and the long term benefits to the profession, far outweigh these barriers.

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