

Incorporating Pediatrics in Clinical Education: A Call to Action in Inpatient Pharmacy Practice

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ABBREVIATIONS ACCP, American College of Clinical Pharmacy; ACPE, Accreditation Council for Pharmacy Education; APPE, Advanced Pharmacy Practice Experience; ASHP, American Society of Health-System Pharmacists; EPA, entrustable professional activity

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Background

The recently revised 2025 Accreditation Council for Pharmacy Education (ACPE) Standards state the expectations of Advanced Pharmacy Practice Experiences (APPEs) are to “emphasize continuity of care and incorporate acute, chronic, and wellness-promoting patient-care services...[and] expose students to diverse patient populations as related to age, sex race/ethnicity, socioeconomic factors...and disease states.”¹ These expectations describe the conditions under which student pharmacists are expected to develop and demonstrate competence in the entrustable professional activities (EPAs), which were revised in 2022 to more accurately reflect current pharmacy practice.² However, the definition of required APPE (Standard 3.2.d.) states that the inpatient patient care APPE, specifically, must occur within an “adult” population.¹ The addition of this qualifier is confusing and raises questions related to the overall objectives of the inpatient patient care APPE. Further, this qualifier is not added to other required APPE, such as ambulatory care.

When considering the expectations of APPE (Standard 3.2.a.) it seems that an inpatient pediatric patient care APPE could only assist with meeting the expectations of this accreditation standard. As written, the Standards allow for student pharmacists to complete all their APPE in adult populations only, which raises the question of how Schools and Colleges of Pharmacy ensure that students are exposed to “diverse populations that include age...”¹

Well-designed APPEs across any age group should provide students with the opportunity to practice and demonstrate competence in the EPAs. This can be achieved by contributing medication-related knowledge as part of an interprofessional team, creating patient-specific pharmacotherapy plans using the

framework of The Pharmacists’ Patient Care Process, and/or utilizing literature to answer medication-related questions. Many skills described by the EPAs are also found in the North American Pharmacist Licensure Examination competency statements, which are not age specific.³ Further, the authors contend that an inpatient pediatric patient care APPE provides a deep exposure to key skills assessed on the North American Pharmacist Licensure Examination, such as pharmacy calculations.

In this commentary we explore concerns related to the definition of required inpatient adult patient care APPE and how this creates a missed opportunity for high-quality student learning experiences that meet both APPE expectations and society’s need for a practice-ready, generalist pharmacist. Additionally, we provide recommendations as to how Schools and Colleges of Pharmacy can and should encourage student participation in experiential education opportunities in pediatric practice settings.

Unintended Consequences of Requiring an Adult Inpatient Patient Care APPE

The lack of sufficient sites for experiential education has been a challenge for Schools and Colleges of Pharmacy, with many noting that organizing acute care opportunities for learners is especially difficult.^{4,5} Requiring an inpatient adult patient care APPE does not differ dramatically from Standards 2016⁶; however, by including the “adult” qualifier will likely continue to stress capacity in inpatient adult patient care rotations and the preceptors of those experiences. This comes at the expense of willing, enthusiastic, passionate pharmacists that work in inpatient pediatric patient care settings. The majority of Doctor of Pharmacy (PharmD) degree programs offer APPEs in pediatric practice

settings.⁷ Allowing for these experiences, specifically the inpatient patient care experiences, to count as required APPE could off-set some stress on inpatient adult patient care preceptors/sites. This is important at a time when preceptors, particularly volunteer preceptors, face increasing demands on their time/effort while at work and are at-risk for burnout.⁸

Another concern lies in the broadness of the inpatient adult patient care APPE requirement and how well (or not well) these experiences will prepare practice-ready, generalist pharmacists. Students could potentially meet the inpatient patient care APPE requirement with a variety of “adult” inpatient services, some of which could be relatively narrow in the patient populations cared for and drugs used (e.g., inpatient solid organ transplant or inpatient oncology). The care needed by each population varies widely, often utilizing specialized pharmacotherapy options not seen outside the given practice area, which may not consistently prepare student pharmacists for general practice. While one may assert that pediatrics is a “narrow” patient population, nearly 40% of all children and adolescents use at least 1 medication.⁹ Further, the drugs used to care for pediatric patients are often the same (e.g., antimicrobials) as those used for adult patients. The skills developed during an inpatient pediatric patient care APPE transcend practice environment and provide students with additional opportunities to perform drug calculations, retrieve/interpret drug information, analyze and provide recommendations on dosage forms/formulations, and formulate both patient-specific pharmacotherapy recommendations and education plans. All these skills align with the EPAs and are critical to developing a practice-ready, generalist pharmacist. In our opinion, it seems counter to the expectations of APPEs to restrict inpatient patient care to “adults” while permitting narrow-focused, specialized inpatient patient care rotations to satisfy the required inpatient patient care APPE simply because they occur in adult settings.

There may be upstream effects to how changes in APPE requirements impact the pre-APPE curriculum. Nearly 20 years ago, the American College of Clinical Pharmacy (ACCP) Pediatrics Practice and Research Network provided recommendations for improving pediatric pharmacy education in Schools and Colleges of Pharmacy and post-graduate training.¹⁰ While the number of pediatric pharmacy residency programs and positions have increased over the last several years,¹¹ provision of pediatric pharmacy education remains limited and variable among institutions.^{7,12} A joint publication released by the ACCP Pediatrics Practice and Research Network and the Pediatric Pharmacy Association in 2013 highlighted the then-current ACPE Standards⁶ for not specifically requiring pediatric pharmacotherapy content in pharmacy education.¹³ This joint publication also recommended offering experiential education in pediatric patient care settings and that all student

pharmacists should have the opportunity to engage in caring for pediatric patients. A subsequent publication by Cox et al¹⁴ amplified these recommendations by stating that pediatric pharmacotherapy learning outcomes should be present in the pre-APPE curriculum and that all students complete an APPE focused on provision of pediatric care. Lastly, the ACCP Pharmacotherapy Didactic Curriculum Toolkit, utilized by PharmD degree programs for curricular planning, has considerable pediatric content to be included in pre-APPE curriculum.¹⁵

As a result of the described changes, clinical-track pharmacy practice faculty with a focus in pediatric pharmacy practice who may be best equipped to teach pediatric topics within the pre-APPE curriculum and precept students on experiential education may be viewed as less valuable (on a per fulltime equivalent basis) than clinical track pharmacy practice faculty who practice in inpatient adult patient care. In unfavorable scenarios, these fulltime equivalents may be eliminated or converted to adult-focused clinical track faculty who will be able to contribute availability to a required APPE that is required for all student pharmacists. Without trained, knowledgeable pediatric faculty to introduce student pharmacists to the specialized needs and considerations of pediatric patients, concern exists about how prepared practice-ready, generalist pharmacy graduates will be in providing safe and optimal care to pediatric patients in all pharmacy settings. Such concerns may be exacerbated if well-intentioned attempts to reduce curricular bloat result in further diminished exposure to pediatric content within the pre-experiential curriculum. This limitation in APPE access may also stifle opportunities to inspire future pediatric pharmacists, who provide invaluable care for our nation's children.

Value of an Inpatient Pediatric Patient Care Advanced Pharmacy Practice Experience

The majority of pharmacy graduates practice in the outpatient setting¹⁶ where prescriptions for pediatric patients are common.⁹ Education on how to best serve this patient population and communicate with and advocate for these patients is a vital component of PharmD degree programs. At a minimum, students must know the fundamentals of pediatric patient care, including weight-based dosing, age-related pharmacokinetic and pharmacodynamic changes, medication safety, and communication strategies.¹³ Current pediatric content in the didactic curriculum often falls short, and the argument has been made for expanded coverage of pharmacy practice topics that connect with pediatric populations in the required PharmD curriculum.¹⁴

Many inpatient pediatric patient care APPEs already meet the goals and expectations of exposing students to a variety of patient demographics, disease states, and pharmacotherapy. Assessing and accounting for socioeconomic factors is paramount in caring for

pediatric patients. An inpatient pediatric pharmacy rotation can also emphasize the importance of continuity of care and the need for effective communication and transitions of care for patients, often providing exposure to unique and important considerations which may not be present in comparable adult populations. Pediatric patients face a variety of acute and chronic illnesses, and managing these disease states while promoting overall wellness is a common theme in pediatric care. The diversity inherent in caring for pediatric patients and the skills gained from these interactions prepare students for practice in a variety of pharmacy fields.

Pediatric patients often face challenges related to medication administration, dosage form selection and availability, and lack of primary literature and data. An inpatient pediatric patient care APPE also provides students the opportunity to sharpen skills including critical thinking, drug information, literature analysis, communication with an interdisciplinary team, patient and caregiver counseling, patient assistance programs, social determinants of health, pharmaceutical and medical calculations, medication safety, inpatient hospital operations, formulation selection, and pharmacokinetics.¹⁷ Since 25% of the patient population is less than 18 years of age,¹⁴ understanding how to provide effective and high-quality care for pediatric patients is undeniably valuable, and the skills developed by students while on these experiential rotations will be transferrable to the care of all patients.

An inpatient pediatric patient care APPE is a feasible and appropriate option to achieve the desired learning outcomes established through the intents and purposes of the ACPE Standards. This is further supported through the American Society of Health-System Pharmacists (ASHP) residency standards for post-graduate training. ASHP's rigorous accreditation standards are applied globally to all accredited programs, regardless of institution or patient population.¹⁸ Post-graduate year 1 pharmacy practice residency programs at a free-standing children's hospital satisfy ASHP criteria to earn program accreditation and their standards are not differentiated from programs at adult institutions. We contend that inpatient pediatric patient care APPE should be treated similarly when fulfilling the requirements for APPE.

Where Do We Go from Here?

Standards 2025 have been approved, and the requirement of an inpatient adult patient care APPE has been codified. We, as pharmacists seeking to advance pediatric pharmacy practice, must continue to advocate for the inclusion of pediatric pharmacy topics within the pre-APPE curriculum. This can include discussion of pediatric-focused disease states, incorporating pediatric patients into discussion of other disease states, and reinforcing skills in the context of care of

pediatric patients.^{7,14} Similarly, we must advocate for pediatric-focused experiential education to be valued at the same level as other "adult" experiential education opportunities. These opportunities fulfill APPE expectations, develop necessary pharmacy skills, and improve care of pediatric patients.¹⁴

Today, we can still partner with PharmD degree programs to offer other valuable experiential education opportunities, including pediatric ambulatory care, hospital/health-system within a children's hospital, and elective inpatient pediatric patient care. These opportunities are important to continue to offer to train the next generation of pharmacists and those particularly interested in pursuing careers in pediatric pharmacy practice.

Conclusion

The "adult" qualifier for the inpatient patient care APPE, as described in Standards 2025, is a missed opportunity for both patients and student pharmacists. By prioritizing inpatient adult patient care over inpatient patient care more broadly, student pharmacists will miss high-quality learning experiences that occur with inpatient pediatric patient care. These experiences can positively contribute to developing a practice-ready, generalist pharmacist to at least an equal, or even greater, extent than some inpatient patient care experiences that occur in adult populations. A more inclusive recommendation for inpatient patient care APPE is desired. For now, we need to continue to advocate for didactic and experiential education opportunities for student pharmacists that advance pediatric pharmacy practice and promote safe and effective medication use in children.

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