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Research

# Making student pharmacists indispensable: The added value of introductory pharmacy practice experience students to patient care

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## Abstract

**Purpose:** This study evaluated the impact of an admission medication reconciliation process conducted by student pharmacists during an introductory pharmacy practice experience (IPPE).

**Methods:** Patients aged 18 years or older admitted to a general medicine service and who received medication reconciliation from a student pharmacist were included. Data were collected retrospectively from electronic medical records.

**Results:** Student pharmacists performed medication reconciliation on 21.8% of 6395 patients admitted to the target service, directly involving the majority of patients/caregivers (78.9%) in the process. Potential medication discrepancies were found in 43.8% of patients; the average number of potential discrepancies found per patient was  $1.0 \pm 1.6$ . The most common potential discrepancy was “omitted prescription medication.” Prescribers responded to notification about potential discrepancies by correcting or clarifying 74.9% of all potential discrepancies and 77.2% of discrepancies with the potential to cause severe patient discomfort or clinical deterioration.

**Conclusion:** IPPE student pharmacists contributed to patient care by performing medication reconciliation on patient admission to hospital. Student pharmacists identified and facilitated correction of unrecognized medication issues that could have adversely impacted patient well-being.

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**Keywords:** Introductory pharmacy practice experience; Pharmacy students; Medication reconciliation

Student pharmacists are valuable and important to practice model transformation. Recommendations of the American Society of Health System Pharmacists (ASHP) Pharmacy Practice Model Summit (PPMI) convened to identify how pharmacy practice models need to change to

meet contemporary societal needs and to more effectively deliver patient care, recommended integration of student pharmacists into meaningful practice roles.<sup>1</sup> Specifically, recommendation B24c states, “Every pharmacy department should develop a plan to allocate pharmacy student time to drug-therapy management services.”<sup>2</sup> This is a direct call to more fully integrate student pharmacists into the pharmacy department’s work to better serve the needs of patients. ASHP’s policy, “Role of Students in Pharmacy Practice Models,” further emphasizes the role of students by encouraging “pharmacy practice leaders to incorporate

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students, including those in introductory and advanced pharmacy practice experiences and interns, into active, meaningful roles in new and evolving practice models.”<sup>3</sup> In his 2011 Harvey K. Whitney address, Ashby<sup>4</sup> recommended that students be made indispensable to the practice model and rearticulated key elements of pharmacy’s vision of the future that have emerged from both the PPMI and the 2011 Pharmacy Residency Capacity Stakeholders Conference. Among those key elements are the following:

Activities for pharmacy students and pharmacy residents should support the educational goals for both groups though their active involvement in the care of patients.<sup>4</sup>

To achieve desired outcomes, the practice model should be team based, with a representation of specialist and generalist pharmacists, pharmacy residents, pharmacy students, and pharmacy technicians.<sup>4</sup>

Students comprise a resource that can help expand pharmacy’s capacity to care for patients, enable current services to be extended, and allow gaps in services to be filled. A recent commentary enumerated potential benefits to both students and experiential training sites that can result from effective engagement of advanced pharmacy practice experience (APPE) students in patient care.<sup>5</sup> Mersfelder’s and Bouthillier’s<sup>6</sup> recent review of 35 studies evaluating the contributions of APPE students to the work of experiential sites concluded that significant economic and clinical benefits may accrue to sites when APPE students are involved in patient care and that these benefits often exceed the costs invested by sites in supervising and training students. Stevenson et al.<sup>7</sup> also describe benefits from the patient care activities of APPE students.

In contrast, the impact of introductory pharmacy practice experience (IPPE) students, whose skill sets may differ from those of APPE students, has not been well described. According to the 2007 Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree, which were applicable at the time of this study, IPPEs “must involve actual practice experiences in community and institutional settings and permit students, under appropriate supervision and as permitted by practice regulations, to assume direct patient care responsibilities,” and they should “continue in a progressive manner leading to entry into the advanced pharmacy practice experiences.”<sup>8</sup>

Student pharmacists are required to complete a minimum of 300 IPPE hours in the first three years of the pharmacy curriculum.<sup>8</sup> This requirement for early practice experiences has stretched the capacity of health systems to support these experiences and challenged colleges to identify creative ways to meet the requirement using existing, often scarce resources.<sup>9</sup> IPPEs involving shadow experiences, service learning, vaccination programs, actual patient encounters in a variety of settings (inpatient venues, home, etc.) and other innovative approaches have been described.<sup>10–20</sup>

Effectively integrating IPPE students into practice models and involving them in direct patient care activities can help students meet educational requirements but should also provide benefit to the experiential site. However, little information about the benefit of IPPE students to the experiential site is available. Although Stevenson et al.<sup>7</sup> included third-year pharmacy students enrolled in IPPE courses in their study, the contribution of IPPE students represented only a small percentage of overall interventions documented, and their specific impact was not reported.

We have previously described the development and implementation of a direct patient care IPPE that engages third-year student pharmacists in the admission medication reconciliation process of at the University of Michigan Health System.<sup>20</sup> The direct patient care IPPE enables students to achieve predefined curricular ability-based outcomes (Appendix) while engaging them in meeting the experiential site’s need to enhance admission medication reconciliation, which is required by national patient safety goals.<sup>21</sup> This article describes the outcomes associated with a pharmacist-supervised P3 IPPE student admission medication reconciliation program.

## Methods

The direct patient care IPPE is a structured 12-week course for P3 students. Prior to the IPPE course, students complete a communications course in which they develop communication and medication history-taking skills. During the course orientation, students receive a one-hour lesson on medication reconciliation, that consists of a discussion about medication reconciliation and active learning exercises in which they apply a structured approach to medication record review and discrepancy identification. On the first day at the hospital, students receive four hours of instruction in the medication reconciliation process, including how to use the hospital’s information systems, as we have previously described.<sup>20</sup>

1. Review the patient’s admission history, physical examination results, and other pertinent information.
2. Review medications being taken prior to admission as indicated by the physician’s admission history and physical examination results, as well as any home medication list documented in the Problem Summary List (PSL) section electronic medical record (the PSL provides a list of home medications that is maintained by the health system’s outpatient care providers) and current inpatient medications.
3. On the patient care unit, seek out and meet the patient’s nurse to address any questions (e.g., patient status or appropriateness of the timing of the interview) and determine if the patient is currently available for the interview.
4. Conduct a patient (or caregiver, if the patient was unable to communicate) interview including a medication

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