Primary Intended Outcomes

1. Utilize experiential students as pharmacist extenders to provide extensive drug therapy management thus providing a realistic health systems experience,

2. Expand the experiential program in terms of types of experiences and number of students,

3. Maximize time spent per student experience on patient-care activities, and

4. Reduce student orientation and training time.

Relevant PPMI Recommendations

A9. All patients should have a right to the care of a pharmacist.

B23. The following characteristics or activities should be considered essential to pharmacist-provided drug-therapy management in optimal pharmacy practice models:

   B23l. Establishment of processes to ensure medication related continuity of care for discharged patients.

   B24c. Develop a plan to allocate pharmacy student time to drug therapy management services.

E4. The following are critical components in the implementation of optimal pharmacy practice models:

   E4n. Training for all pharmacy students on transitions of care (through collaboration between hospitals and health systems and colleges of pharmacy).
Situation Analysis

Cleveland Clinic Florida (CCF) is a 155-bed academic institution located in Weston. CCF has more than a decade of experience providing introductory and advanced pharmacy practice experiences (IPPE and APPE, respectively). Four clinical pharmacists were expected to take a minimum of one student monthly. Students were tasked with the passive observation of clinical pharmacists specializing in nutrition, critical care, infectious diseases, or anticoagulation, practicing in their daily workflow, and engaging in patient case discussions and drug literature reviews. Limitations of this process included the lack of individual computer access for students, narrow experiences provided, and minimal responsibility to the services the pharmacy department provides.

CCF committed to undergo a practice model change in August 2011 with the goal of affording all patients the opportunity for pharmacist interactions. Specialty clinical pharmacists were reassigned to be responsible for all patients within the hospital with the overarching principle that “every patient will know who his/her pharmacist is.” In addition to daily responsibilities (patient profile review, pharmacokinetic and anticoagulation dosing services, patient care rounds, and drug information provision), pharmacists would now be expected to interact with all patients via thorough medication histories, medication reconciliation, and disease state or discharge medication counseling.

With the appreciation that the amount of additional responsibilities expected of the clinical pharmacists had potential to be challenged logistically, CCF determined that it would be necessary to increase students’ patient responsibility, with appropriate training, by utilizing students as pharmacist extenders. This would mean that the number of available experiences at CCF would need to be increased. As a result, each preceptor would be expected to offer at least four rotations per month, and CCF would need to reach out to local schools of pharmacy to seek out additional affiliation agreements. Additionally, in order to efficiently use each student and to provide a realistic, more consistent health-system pharmacy experience, CCF began offering a three-month block.

Lastly, CCF also collaborated with Nova Southeastern University College of Pharmacy (NSU-COP) and Florida Agricultural and Mechanical University College of Pharmacy (FAMU-COP), in order to obtain three faculty members to further support the practice model change. Faculty would not only provide additional rotations to students (hence, broadening pharmacy services), but would also serve to supplement clinical pharmacy activities and provide support to the current pharmacy staff in medication safety, education coordination, and research.

Service Description

Despite having only 155 beds and four clinical pharmacists, CCF has effectively provided a valuable experience to an average of 15 APPE students per month since embracing the practice model change, with a potential of up to 24 APPE students monthly. Additionally, CCF provides six IPPEs per semester, translating to 1:6 to 1:10 APPE student-to-bed ratio and 1:25 IPPE student-to-bed ratio.
Student experiences focus on integrated clinical (APPE) and distributive (IPPE) patient care responsibilities. In order to succeed, students are expected to actively engage in realistic hospital encounters, an experience that provides the student with ample skills to continue a health-system pharmacy career path. Preceptors are tasked with continual student development, in order to instruct, model, coach, and facilitate student responsibilities with proper evaluation and constructive feedback.

The addition of pharmacist-extenders has successfully served to address the needs of every patient. On the first day of rotation (or a rotation block), students are simultaneously oriented as a group by one clinical pharmacist and one faculty member. The orientation process includes the electronic health record system, documentation practices, medication history and reconciliation processes, and targeted disease-state (heart failure, diabetes mellitus, and COPD) and discharge education. Students are also exposed to clinical and drug information resources. This experience affords students with near full autonomy to provide direct patient care by the second day of rotation, thus maximizing the experience. Students may have additional rotation-specific responsibilities.

Student presentations are streamlined, as well. Rather than multiple preceptor-specific journal article and topic discussions, students are divided into two groups to discuss one article and topic apiece. These presentations are accomplished in only four hours, monthly. Articles and topics are pre-selected to further enhance pharmacist development as clinical generalists.

Key Elements for Success
1. Streamline student orientation/training and activities.
2. Prepare students sufficiently to have independence as early in the rotation as possible.
3. Utilize faculty as education coordinators.
4. Provide block rotations.
5. Optimize decentralized pharmacy services.

Resource Utilization
Personnel: Although one education coordinator is desirable (which was accomplished with the help of faculty resources), no additional personnel is needed. Faculty also provided additional preceptors without added expense.

IT and other infrastructure: Students are provided individual computer accounts and can access patient information from any computer within the health system. Orientation and computer training is held in an on-site computer training lab to allow the students to simultaneously train and customize their accounts.

Supply Expense: None.

Return on Investment: The pharmacy department was able to reach essentially all patients within the hospital. In doing so, patient satisfaction scores have improved, and meaningful clinical interventions have increased. Students are able to attend patient-care rounds daily, providing a consistent pharmacy presence. The funding provided by the universities for taking students can be used toward continuing education and
other programming to further develop the pharmacists in both their clinical knowledge as well as preceptor development.

**Recognized Intangible Benefits**

By providing students with real-life practical experiences, they can continue to promote the practice model changes in future experiences and encourage other institutions to do the same. They can provide guidance to the practice of utilizing students as pharmacist-extenders. Pharmacy presence throughout the hospital develops relationships and builds rapport, further promoting the practice model change. Extending pharmacy services to cover all patient areas has the potential to reduce readmission rates, prevent or mitigate medication errors, and improve patient satisfaction with pharmacy services. Lastly, this program has provided CCF with a valuable PGY1 recruiting tool, as the number of local students applying to our PGY1 program has increased.

**Outcome Measures**

The program demonstrated success at the patient level with increased patient satisfaction scores (Hospital Consumer Assessment of Healthcare Providers and Systems or HCAHPS), increased volume and significance of clinical pharmacy interventions, and increased identification of adverse drug events. Additionally, student satisfaction grew as they became more independent.

**Lessons Learned**

1. It’s important to designate a point person to coordinate educational activities, such as orientation and student presentations. Ideally, this point person would be university faculty, rather than devoting a full-time employee or expecting a clinical pharmacist to take on the additional responsibilities.

2. Increasing the number of students who rotate through requires additional resources, including workspace and computer access. Student orientation and training is optimal if done simultaneously, which requires a computer lab or a large conference room. Additionally, formal student discussion sessions require access to a large conference room.

3. Preceptors will require additional training in preceptorship; thus, developmental programming is a key to success. By opening up the rotations to additional students, there is a greater income, which leads to more funding for pharmacist education.

**Other Considerations**

1. Clinical pharmacists must be willing to take on the added responsibility of precepting students.

2. Students must be able to operate independently; an assessment tool would be invaluable to determine readiness to interact with patients following a brief coaching session.
3. Residents are another form of pharmacist-extenders, in that they can also serve to precept, mentor, and set examples for the students to allow the clinical pharmacists to continue to adequately perform their tasks.

4. Ideally, students would apply for the three-month blocks to filter out those students who would be less able to perform these activities.

Suggestions for Other Hospitals/Health Systems

1. Work with the pharmacy staff to achieve buy-in. Students may be considered a burden to those uninterested or uninformed of their value.

2. Work with students during orientation and training in order to have student buy-in. Students must realize the responsibility they have, and preceptors must hold them accountable for patient care. Methodical orientation will prepare students for patient care responsibilities and avoid negative experiences.

3. Interprofessional collaboration will improve pharmacy relations and further provide valuable interactions for students.

4. Grant students access to the necessary drug information tools and hospital policies to ensure there is consistent and accurate information representing the pharmacy department.

Helpful References
