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## RESEARCH ARTICLE

# Connecting Physician Preceptors with Medical Students in the Ambulatory Setting

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### Abstract

In 2012, the Ohio State University College of MEDICINE began implementing a new, competency based medical school curriculum. Early clinical service-learning experiences were one of the hallmarks of this new curriculum, giving first year students opportunities to work with real patients in clinical settings while meeting patient care learning objectives. Integration of the bioscience, clinical skills and social curriculum within a safe teaching environment helps to promote the professional identity of the student [1,2]. A similar longitudinal model was introduced at Johns Hopkins University School of Medicine for their first-year students [3]. The College developed the Longitudinal Practice Program (LPP) to provide necessary structure for ~200 first year medical students to spend one-half day every other week with a clinical preceptor.

### Keywords

Medical education, Ambulatory care, Preceptors

- o Physical Exams
- o Navigating the Office Setting

### The LPP Curriculum

Prior to starting the longitudinal preceptorship, students must successfully complete a clinical skills course in which they must demonstrate competence in skills such as blood pressure, EKG lead placement, injections and venipuncture. This skills course is taught by certified nurse instructors who “check off” the students when they demonstrate competency in the required skills. In addition, they must complete an Objective Structured Clinical Examination (OSCE) assessed by a physician preceptor demonstrating physician patient interaction and communication skills. Once the student has completed these two required activities, they are able to begin the clinical experience.

The LPP curriculum can be thought of as a hands-on application of what the students are learning in their basic science courses (physiology, anatomy, diseases, etc.) and Longitudinal Small Group sessions (interviewing skills, developing differential diagnosis). For example, students might learn about the anatomy of the shoulder and conditions such as osteoarthritis. Prior to the LG session, students would watch a video of a shoulder exam and then, in the small group setting, would practice the shoulder exam on a Standardized Patient. Later, when the student is at their clinical site, they can practice the shoulder exam on real patients

### Key Elements of the Longitudinal Practice Program

- Longitudinal over the first two years of medical school
  - o 17 months
  - o 22 4-hour sessions
- Pre-program Skills Training to learn basic clinical skills
- Learning objectives focused on patient care skills
  - o Medical History Taking



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and potentially see patients with some of the conditions they learned about in lecture.

Students were given “huddle cards” at the beginning of each curricular unit, which outlined the specific tasks and skills to be practiced during each individual session (e.g., practicing taking a family history, practicing a cardiac exam). Then, at the end of the curricular unit, the preceptor completed a direct observation of the student performing one of the skills. Throughout the 22 sessions, the students gain confidence and skills to perform detailed histories and physical exams on ambulatory patients. They progress to giving oral presentations about their patients.

## LPP Preceptors

The preceptors are recruited in the program based on their interest in teaching and their specialty. The recruitment focused on physicians in primary care including Family Medicine, Internal Medicine, Med Peds and Pediatrics. As this limited the student’s experiences and the number of preceptors, it has been expanded to include specialties and subspecialties. For the physicians associated with the academic medical center, there is no payment, yet many departments have teaching requirements, and this is an opportunity to meet those expectations. The physicians who are not associated with the academic center are paid a stipend. All preceptors have access to the academic medical library, online teaching resources, faculty development and free CME opportunities. The average preceptor will spend about 4 hours with the student every other week and is required to complete regular assessments of the student which may take 10-15 minutes to complete every academic block. The academic blocks range from 6-10 weeks. The preceptors are given the goals and objectives of the course through various modalities, monthly emails, a preceptor manual, a program website, and a laminated pocket sized objective resource.

## Methods

To evaluate the longitudinal practice curriculum, all students and preceptors completed evaluations at the end of the course. These evaluations were based on a 5-point Likert scale, with 5 being the best. A comment section was also available for evaluators to make free text comments. Results presented are from the preceptor program evaluation and student program evaluation.

## Results

### Preceptor program evaluation

Preceptor feedback on Longitudinal Practice Program (LPP) and their experience as preceptors were collected using a survey that contained Likert-type scale items ranging from poor to excellent, questions about their experiences as a preceptor, and open response

questions asking for the strengths and weaknesses of the program. The survey items analyzed in this study are from the end of their 2-year LP experience. Only select items are reviewed for this study. Items not represented in this study were about LP resources (e.g., handbook, syllabus notes, website). [Table 1](#) gives a summary of the number of items in each category.

### Preceptor sample

The following analyses encompass data from preceptors from two cohorts:

Preceptor Cohort 1: 2014-2016 (n = 106)

Preceptor Cohort 2: 2015-2017 (n = 118).

Preceptor Cohort 1 consisted of 27% (n = 31) non-OSU affiliated preceptors. The remaining 73% (n = 82) were OSU faculty. Preceptor Cohort 2 consisted of 35% (n = 41) non-OSU affiliated preceptors. The remaining 65% (n = 75) were OSU faculty.

### Specific experiences

The Likert scale items concentrated on the appropriateness of course objectives (2 items), communication of expectations (1 item), and helpfulness of administration (1 item). Across Preceptor Cohort 1 and Cohort 2, responses values were highest in assessing the helpfulness of course administration. In course objectives, the appropriateness of course objectives for the student’s level of training received consistently received the highest scores as well. See [Table 2](#).

An independent samples t-test indicated no significant difference in mean scores between Preceptor Cohorts 1 and 2 and no significant difference between feedback from OSU-affiliated faculty and non-OSU affiliated faculty ( $p > 0.01$ ).

### General experience

There were three items used to investigate preceptors’ overall experience with LP. These three items were targeted for feedback on whether preceptors enjoyed their role, whether or not they would recommend the position to another faculty member, and whether or not

**Table 1:** Preceptor Feedback Item Breakdown.

Category	Number of Items
Specific Experiences	4
Overall Experience	2
Open Response Questions	2

**Table 2:** Descriptive Statistics.

Question	Overall Mean	Cohort 1 Mean	Cohort 2 Mean
Q1208: Communication	4.11	4.04	4.18
Q1209: Helpfulness	4.18	4.11	4.25
Q1210: Course objectives-student level of training	4.11	3.99	4.22
Q1211: Course objectives-practice site	3.86	3.82	3.91

**Table 3:** Preceptor Cohort 1: Frequency (percent) of Responses.

	<b>Q1218: Enjoyment</b>	<b>Q1219: Recommendation</b>	<b>Q1220: Student preparation</b>
Yes	91.2%	91.2%	88.5%
No	3.5%	2.7%	1.8%
Undecided	5.3%	6.2%	9.7%

**Table 4:** Preceptor Cohort 2: Frequency (percent) of Responses.

	<b>Q1218: Enjoyment</b>	<b>Q1219: Recommendation</b>	<b>Q1220: Student preparation</b>
Yes	94.8%	94.8%	94%
No	0%	0%	0.9%
Undecided	5.2%	5.2%	5.2%

**Table 5:** Early Exposure.

	<b>Exemplar</b>	<b>Reference count</b>
Early exposure	"Students get a chance to see how the material gained in class room can help them better understand the application of the materials in the office setting".	61
Community	"Having students go out in community practices to learn. This gives them a different environment which just widens their experiences and perspective".	11
Patient interactions	"It helps the students to become more comfortable with the patients and become more confident. They learn the bedside manners. Helps them to develop skills for history taking and physical examinations".	9
Clinical practices	"exposes students to many aspects of clinical practices outside of simply seeing patients (i.e. works with medical assistants, office staff)".	8
Rotations	"Integrating the students into interprofessional practices is key".	3

LP prepares students for future medical school experiences. The following tables (Table 3 and Table 4) show the percent of responses for each option.

Results indicate that almost all participants enjoyed being an LP preceptor and would recommend this teaching role to other faculty. Additionally, most faculty felt that this specific new component of the curriculum will better prepare students for ambulatory patient care. Both faculty enjoyment and likelihood of recommending this teaching role increased between Preceptor Cohort 1 and Cohort 2.

### Open Response 1: Program Strengths

The first open response question on this survey asked preceptors to list 1-2 things that LP curriculum is doing well and should continue to incorporate for the future. These responses were coded for emerging patterns. Each response may have included references to multiple themes. There was a total of 232 responses. The majority fell into three categories: early exposure (92 references), preparation for the future (24 references), and programmatic and logistic (27 references).

#### Early exposure

Many preceptor comments on the strength of the LPP is that it provides an opportunity for students to be exposed to clinical experiences early in their medical schooling. This provides a context for the didactic learning that occurs and helps to solidify their foundational knowledge. Of the 92 references to early exposure, 61 made general comments about early exposure. There were also 11 references to specific early exposure to communities (e.g., low income and vulnerable populations) and that these interactions with various community's supplement learning. The remaining 20 references describe a strength of LP's early exposure to be patient exposure, which includes early introduction of patient interactions, interviewing, and practicing physical exams. Beyond exposure to patient

interactions, preceptors felt the structure of LP allowed students to learn about working with ancillary staff as well as non-medical aspects of office practice (e.g., referrals, billing, and interpreter use). Lastly, LP gave students experiences in rotations. Table 5 provides exemplar comments and reference counts.

#### Preparation for the future

Preceptors also identified preparation for the future as a significant benefit of students' participation in LP. There were 24 references to the fact that this experience would better prepare students for clinical rotations in year 3. An exemplar comment from this category contends: "Exposing students to clinical care early in their medical education which is helpful in allowing them to prepare for clerkships".

#### Programmatic and logistic

The remaining strength of LP that was mentioned by a majority of preceptors involved the structure of the program (e.g., communication, resources, learning objectives). The program was described to be well-communicated and structured with clear learning objectives for students that aligned with classroom curriculum. Preceptors felt that there were many resources available to them for additional support, as needed.

### Open Response 2: Opportunities for Improvement

In this open response item, preceptors were asked to identify 1-2 ways in which LP curriculum could be improved. A majority (56 references) indicated that there are no suggested changes for the curriculum. The next highest numbers of references were suggestions that students should be assigned to clinical sites that involve primary care for the variety of patient care experiences. Some preceptors in sub-specialties felt it was difficult to meet the learning objectives for all of year 1 and/or 2 curriculum.

## Student program evaluation

The student evaluation of the program was administered after their 2-year experience in Longitudinal Practice (LP). This survey contained Likert-scale type items and open response items. Items included in this analysis falls in four categories: 1) General experience, 2) Basic procedures training, 3) Professionalism and collaboration, and 4) Patient care experience. For overall experience, students were given options ranging from poor to excellent. In the remaining categories, students selected from options ranging from strongly disagree to strongly agree.

### Sample

Similar to the preceptor sample, student samples fall in two cohorts:

Student Cohort 1: 2014-2016 (n = 184)

Student Cohort 2: 2015-2017 (n = 189)

Table 6 shows a breakdown of the number of items in each category.

### General experience

In student feedback, every item scored very well both in overall means and Student Cohort 1 and Cohort 2 break downs. Students rated the overall quality of LP

**Table 6:** Student Feedback Item Breakdown.

Category	Number of Items
General Experience	1
Basic Procedures Training Session	2
Professionalism and Collaboration	2
Patient Care Experience	2

**Table 7:** Descriptive Statistics.

Question	Overall Mean	Cohort 1 Mean	Cohort 2 Mean
General Experience	4.48	4.51	4.44
Basic Procedures and Training 1	4.26	4.17	4.34
Basic Procedures and Training 2	4.07	4.03	4.11
Professionalism and Collaboration 1	4.80	4.75	4.85
Professionalism and Collaboration 2	4.48	4.40	4.57
Patient Care Experience 1	4.20	4.19	4.20
Patient Care Experience 2	4.54	4.49	4.58

**Table 8:** Student Exemplars.

Area	Exemplar	Reference count
Practices	"My site was an integrative medicine site, so I learned a lot that I would not have otherwise been exposed to in our curriculum about alternative medical techniques and particularly about the importance of nutrition. I also was exposed to a private practice (which I also would not be exposed to in our curriculum) and got a lot of value in seeing the benefits/drawbacks of private practice".	8
Differential diagnosis and oral presentation	"My preceptor always encouraged me to develop differentials, testing, and treatment plans and I feel like working in LP increased my clinical skills by leaps and bounds".	31
Technology	"I was able to regularly practice my vitals-taking skills, room patients, enter their data into their electronic charts, occasionally interview patients and report to a doctor, and shadow".	7
Varieties of patients	"I got to see a wide variety of cases and patients that will help me understand how to work with people of diverse backgrounds and conditions".	64

as very good. They indicated that the Basic Procedures and Training taught skills that they were able to use in practice and helped to raise awareness of the duties and responsibilities of ancillary medical staff. Additionally, LP experiences not only promoted professionalism but provided students an opportunity to be an active member of a healthcare team. See Table 7. In patient care, LP provided students with a variety of patients, which supported their learning. Even across the variety of patient care sites, students still felt that the level of patient care responsibility was appropriate for their level of training.

An independent samples t-test indicated no significant differences between Student Cohort 1 and 2 ratings on all items ( $p > 0.01$ ).

### Open Response 1: Program Strengths

Similar to the faculty program evaluation survey, the student program evaluation survey contained 2 open response questions. The first asked for 1-2 things that LP or the LP site did to help them. There were 374 total student responses. Within those responses, there were 171 references to observing and trying procedures, 112 references to various exposures.

### Observing and trying procedures

Students identified the most beneficial aspect of LP to be the experiences in interviewing patients, collecting patient history, and giving physical examinations. These experiences made students feel better equipped for 3<sup>rd</sup> year. It also increased their own confidence and efficacy in those aspects. This increased their general comfort in patient interactions.

### Exposures

Students listed four primary areas of early exposure provided by LP that they thought were beneficial: exposure to different types of practices, experiences in differential diagnosis and oral presentation, technology, and varieties of patients. Table 8 provides exemplars.

### Discussion

Students and preceptors both perceived a benefit from a set curriculum in the ambulatory setting delivered in the first and second years of medical school. This

curriculum helped to correlate the basic sciences with direct patient care. Students reported feeling that they were a valued part of the care team, and had the ability to reflect on their own achievements.

At the same time, preceptors reported seeing the value of teaching students in the early part of medical school. They described gaining self-appreciation for their contributions, and were reportedly encouraged by the success of their students. Notably, the vast majority of preceptors indicated interest in precepting again and reported that they attempted to recruit other preceptors among their colleagues as well.

With the rise of physician burn out, the ability to have meaningful teaching sessions and revive the sense of calling for many physicians is a way to decrease burn-out and increase physician satisfaction. From comments made by preceptors they are reminded of why they became a physician.

## Conclusions

Our initial data confirms the positive impact for

students and community preceptors of an early clinical integration with the basic sciences in the medical school curriculum. This is in part related to a dedicated focused ambulatory curriculum with frequent direct observations of competence as well as support and frequent contact with preceptor physicians. Future data collection will include United States Medical Licensing Examination (USMLE) Step 1 test scores and preceptor assessments of third year medical students.

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