Uncomposed, edited manuscript published online ahead of print.

This published ahead-of-print manuscript is not the final version of this article, but it may be cited and shared publicly.

**Author:** Atalay Alev J. MD; Osman Nora Y. MD; Krupat Edward PhD; Alexander Erik K. MD

**Title:** Building Longitudinal Relationships Into a Traditional Block Clerkship Model: A Mixed-Methods Study

**DOI:** 10.1097/ACM.00000000000003810
Academic Medicine

DOI: 10.1097/ACM.0000000000003810

Building Longitudinal Relationships Into a Traditional Block Clerkship Model: A Mixed-Methods Study

Alev J. Atalay, MD, Nora Y. Osman, MD, Edward Krupat, PhD, and Erik K. Alexander, MD

A.J. Atalay is instructor of medicine, Department of Medicine, Brigham and Women’s Hospital, Boston, Massachusetts.

N.Y. Osman is assistant professor of medicine, Department of Medicine, Brigham and Women’s Hospital, Boston, Massachusetts.

E. Krupat is associate professor of medicine, Department of Medicine, Beth Israel Deaconess Medical Center, Boston, Massachusetts.

E.K. Alexander is professor of medicine, Department of Medicine, Brigham and Women’s Hospital, Boston, Massachusetts.

Correspondence should be addressed to Alev J. Atalay, Department of Medicine, Brigham and Women’s Hospital, 75 Francis St., Boston, MA 02115; telephone: (617) 732-5500; email: aatalay@bwh.harvard.edu.

Acknowledgments: None.

Funding/Support: None reported.

Other disclosures: None reported.


Disclaimer: None.
Abstract

Purpose

The authors describe the implementation of the novel Longitudinal Clinical Experiences with Patients (LCEP) curriculum, designed to integrate continuity and longitudinal patient relationships into a traditional block clerkship (BC)—and present a mixed-methods analysis evaluating program effectiveness to assess its feasibility, value, and impact.

Method

This was a mixed-methods study of 54 Harvard Medical School students who participated in the LCEP during their core clerkship (third) year during the 2013–2014 academic year. Fifty-two students responded to an electronic survey about the patients they followed during the LCEP. Forty-two students completed confidential live interviews. Unique groups of 13–15 students were interviewed at three times during the year to assess students’ perceptions of the LCEP over time. The data were analyzed using a content analysis framework.

Results

On average, students followed 3.3 LCEP patients over the clerkship year. Ninety-four percent (n = 49/52) of students were able to follow two or more patients longitudinally. Most students met their longitudinal patient in the inpatient setting (71%, n = 37/52). Subsequent encounters were most often in the ambulatory setting. Students described scheduling logistics as key to the success or failure of the program. Many students described the challenges of competing priorities between their block clerkship responsibilities and longitudinal opportunities. Students found the LCEP deepened their understanding of the patient experience, the health care system, and disease progression. Over the course of an academic year, an increased proportion of students
(60%) highlighted understanding the patient experience as a core value obtained through the LCEP.

Conclusions

The LCEP was feasible and proved successful in promoting longitudinal patient relationships within a traditional BC model. Prioritizing the depth of experience with a smaller number of patients may reduce the barriers described by students. The results suggest that such a hybrid program promotes patient-centeredness.
Continuity in relationships—learner–teacher, learner–peer, learner–patient—is an essential educational principle.\textsuperscript{1} Despite demonstrated benefits of educational frameworks grounded in continuity,\textsuperscript{1} the inpatient educational milieu of undergraduate medical education (UME) has remained largely unchanged without large scale adoption of models that promote continuity. Indeed, in spite of the growing popularity of the longitudinal integrated clerkship (LIC) model, most medical schools continue to utilize sequential block clerkships (BCs) during the clerkship year(s). In this article, we describe a curriculum designed at one university-affiliated academic medical center to integrate continuity and longitudinal patient relationships into a traditional BC model. We present a mixed-methods analysis evaluating its feasibility and effectiveness in enabling students to create longitudinal relationships with patients. Finally, we present data describing student-perceived value and the program’s impact on the students’ views of patient relationships.

While the clinical landscape has changed dramatically over the past few decades, the structure and stance of education have not seen parallel changes. Despite increasing ambulatory, community, and public health needs, the current system predominantly trains students using the traditional inpatient-based educational framework first described by Flexner.\textsuperscript{2,3} A Lancet Commission Report (2010) described the need for health professions educators to shift from education systems that prioritize knowledge and skills to systems that prioritize competency-driven, team-based health care grounded in the needs of the community.\textsuperscript{4} Currently most UME programs do not afford students extensive opportunities to work in clinical environments with patients and populations over time. The restructuring of medical education worldwide requires creating systems that prioritize such longitudinal relationships and promote educational continuity.\textsuperscript{1}
LICs were one of the first educational initiatives designed to prioritize educational continuity. Although developed in part to address the health care needs of rural communities, they have now been implemented and studied in both rural and urban settings. LICs match the educational environment with needs of the health care system, as students trained in LICs are more likely to practice primary care or in underserved settings. Structures can vary in duration and content, but all provide continuity through longitudinal relationships with both patients and faculty. Several prior studies have directly evaluated the effects of LICs on the student experiences and on clinical performance and most have found promising results. In particular LICs have been shown to increase students’ patient-centered attitudes, limit the adverse effects of the hidden curriculum, inspire deeper learning by students about challenging patients and clinical scenarios, and promote professionalism through safe, longitudinal relationships with preceptors. The core principles of LICs—integration, continuity and longitudinality—have been documented in aspects of BCs in Canadian medical colleges. However, those studies that compared LICs to BCs in medical colleges in the United States found that students in BCs are less likely to experience continuity with patients and less likely to grow in their role as a physician over the clerkship year.

Despite the many benefits of LICs, logistical, financial, and other barriers have limited widespread adoption of such models for most medical schools in the United States and abroad. This has prompted educators to look to alternative models that prioritize continuity within a traditional BC model. These hybrid approaches promote relationships between learners and patients that may prove easier to implement and sustain than conventional LICs. Such hybrid curricula have also been shown to preserve patient-centeredness. Beginning in 2012 educators at Brigham and Women’s Hospital (BWH) and Harvard Medical School (HMS)
designed the Longitudinal Clinical Experiences with Patients (LCEP) curriculum, integrated into a BC model. Unlike the previously referenced hybrid programs, which were small pilots, the LCEP included all students who completed their clerkship year at BWH and was primarily focused on creating an infrastructure around which students could identify and follow patients longitudinally. We designed a mixed-methods evaluation of the LCEP to explore the benefits and complexities of the curriculum, describing the student experience and identifying benefits and barriers associated with integrating longitudinal experiences into a traditional BC model.

Method

Subjects and setting

All HMS students are enrolled for the entirety of their core clerkship year, referred to as the Principle Clinical Experience (PCE), at 1 of 4 HMS-affiliated teaching hospitals, including BWH. Although the HMS-affiliated hospitals are in the urban center of Boston and Cambridge, their large catchment areas extend deep into New England. This means that the patients who seek care at BWH come from very diverse socio-economic, racial, and ethnic populations ranging from dense urban neighborhoods to rural New Hampshire.

All students in the BWH PCE participate in 8 core clerkships: medicine, neurology, obstetrics–gynecology, pediatrics (at the adjacent Boston Children’s Hospital), primary care, psychiatry, radiology, and surgery.

The LCEP ran in parallel to the traditional BC structure of the BWH PCE. The program required students to recruit 2–4 longitudinal patients they met during any core clerkship, engage in 4 or more encounters with at least 1 such longitudinal patient over at least a 6-month period, and keep a log of all encounters with each patient. Longitudinal patients could be recruited from each of the core clerkships. Clerkship directors provided guidance at clerkship orientations and described
clinical scenarios that would be most appropriate for longitudinal patient encounters. Weekly individual check-ins allowed assistance with patient recruitment for those experiencing difficulty. Clerkship directors also managed difficulties or competing demands through this process, providing support, security, and clear communication on behalf of the student to other clerkship supervisors. The PCE facilitated longitudinal encounters by both eliminating 20 hours of previously scheduled didactic time during the BCs and allowing students to leave BC activities to see their longitudinal patients. For example, a student could meet a patient during her obstetrics–gynecology rotation, attend the patient’s delivery, and be excused from activities on subsequent clerkships to attend the patient’s postpartum visit and well-child appointments for the baby. In addition, 5 small-group LCEP conferences were held throughout the year to give students the opportunity to discuss their patients and themes related to longitudinal relationships.

**Study design**

We selected a mixed-methods study design using an electronic survey to gather quantitative data and semistructured interviews to gather qualitative data. The survey questions explored students’ encounters with longitudinal patients during the PCE. During the interviews students were asked about factors that facilitated longitudinal relationships with patients, challenges they faced when following patients longitudinally, their understanding of the goal of the LCEP, and the value that the LCEP adds to their clerkship year. The final 2 questions explored student perceptions of the importance of patient-centered care. All 54 students who completed their third-year clerkships at BWH in academic year (AY) 2013–2014 and participated in the LCEP were invited to participate in the survey and interviews. The LCEP was launched in AY2013–2014, which is why we chose that timeframe for the study. Clerkship directors were queried throughout the year to provide input on the LCEP implementation and feasibility of this model in conjunction with
their BC. This study was reviewed and determined to be exempt by the Partners Institutional Review Board.

**Quantitative data via survey.** In April 2014, at the completion of their core clerkship year, all students received an email notification with a link to an electronic survey. Students were asked details about the number of longitudinal patients followed and the number of encounters and the setting of each encounter for 2 of their longitudinal patients. Students provided free response answers to the number of patients followed. For two of their longitudinal patients, students provided a free response to total number of encounters and were asked to specify the setting of each encounter from listed options (inpatient, ambulatory clinic appointment, home visit, phone call, procedure, other). Surveys were conducted via Qualtrics.

**Qualitative data via interview.** Throughout the year, students were invited via email to participate in confidential individual interviews to discuss their understanding of, and experience with, the LCEP. Three unique groups of students were interviewed at 3 different times during the year. The 54 students were randomly divided into 3 groups by a program administrator who was not involved in this study. The interviews were conducted in August 2013, December 2013, and March 2014, which corresponded with months 2–3 (group 1), months 5–6 (group 2) and months 10–11 (group 3) of the PCE, respectively. All interviews were conducted by a single trained interviewer (A.J.A.) in private areas throughout the hospital at locations most convenient for the students’ participation. A small set of telephone interviews were conducted for students at off-site rotations. All in-person interviews were recorded with the student’s permission and transcribed verbatim. Telephone interviews were transcribed in real time.
Data analysis

**Quantitative.** Results are reported by the number of responses to the individual question, which is sometimes fewer than the total number of respondents due to non-response.

**Qualitative.** Two researchers (A.J.A., N.Y.O.) without connection to the LCEP performed a qualitative content analysis to identify the themes that emerged for each interview question. Both coders independently reviewed the transcripts and identified themes. They met to compare identified themes and arrived at consensus on the themes identified and which responses corresponded to each theme. Students’ responses could include components that fit more than one theme. If the same quotation fit multiple themes, it was counted within both. The themes and identified quotations within each theme were then shared with the principal investigator (E.K.A.), who oversaw the creation of the LCEP. He corroborated all themes and responses. We noted the frequency of each theme and contrasted these counts across the groups.

Results

Demographic characteristics

Fifty-four students (56%, n = 30/54 male; 44%, n = 24/54 female) completed their PCE at BWH in AY 2013–2014. All were in their third year of medical school. Fifty-two students (response rate = 96%; 52%, n = 27/52 male; 46%, n = 24/52 female; 2%, n = 2/52 unknown) completed the survey about the LCEP experience. Forty-two students (77% of students; 52%, n = 22/42 male; 48%, n = 20/42 female) completed the confidential interviews.

Quantitative survey results

As described above, students were asked to participate in 4 or more separate encounters with at least 1 longitudinal patient throughout the year. Nearly all (94%, n = 49/52) students fulfilled this requirement in addition to other block clerkship requirements. Importantly, nearly half (43%, n =
20/47) had at least 4 separate encounters with a second longitudinal patient, confirming feasibility and uptake of the curriculum. On average, students followed 3.3 LCEP patients, ranging from 1 to 9 patients, by the end of the clerkship year. The majority of students (58%, n = 30/52) followed 2–3 patients, and only 2 students followed 8 or more.

Students were asked to describe the setting in which they met 2 of their longitudinal patients and the context of up to 5 subsequent encounters with each patient. The type of encounter varied with each point of contact with an LCEP patient. The distribution of encounter type by encounter number for 1 longitudinal patient is detailed in Figure 1. The majority of students (71%, n = 37/52) met their first longitudinal patient in the inpatient setting. Subsequent encounters with patients were most commonly at an ambulatory clinic appointment but also included phone call check-ins as well as procedures. Similar trends were found when students were asked about encounters with a second LCEP patient. Students were not asked the clerkship on which they met their longitudinal patients, though faculty confirmed that patients were successfully recruited from all clinical departments. As an example, radiology clerkship directors successfully worked with colleagues in thoracic oncology to consider patients coming for chest imaging as possible LCEP patients.

**Qualitative interview results**

**Students’ experience with the LCEP.** Students described several factors that facilitated longitudinal relationships (Table 1). The most common themes were effective communication, such as email notifications in advance of appointments, and support from faculty and residents to make such encounters happen during times of competing demands on BCs. For example, students described how some teams would actively encourage the student to follow up with their longitudinal patients and adjust the clerkship schedule accordingly.
Students similarly described multiple barriers to following patients longitudinally during the LCEP (Table 1). The most common themes related to difficulties encountered were logistic planning and balancing competing priorities/cultures between the responsibilities on BCs and their desire to attend an appointment with an LCEP patient. Students found it more difficult to follow patients outside of the main hospital system, primarily because of travel time to appointments and lack of notifications about appointments. Many students highlighted the tension between leaving their inpatient clinical teams on their BCs to attend an appointment with a LCEP patient. One student said:

I just feel like I’m missing stuff…. I’m trying to become part of a team and work with people clinically and all of a sudden they are still working without me…. I like to build relationships with the team and see how they work. (Group 1, student 9)

We found that the number of perceived barriers to promoting longitudinal relationships with patients in a BC model exceeded the number of factors perceived to facilitate them. Students described worrying about identifying patients for the LCEP. Some referred to the requirements as a need to “check a box”; others agonized over finding the “right patient”; while others described “collecting” many patients in hopes that a handful would be successful. One extreme example of this was a student who was frustrated by the death of a longitudinal patient. The patient died before the student had known him for 6 months and thus the relationship, he worried, might not “count” based on the program’s requirements. Though uncommon, a feeling that the LCEP curriculum was quite rigid in terms of number of encounters and recruited patients led to additional stress for some students when identifying patients.
Students’ perceptions of the goals and value of the LCEP. Three themes emerged in students’ descriptions of their understanding of the goals and value of the LCEP. The frequency with which students described each of these themes varied over the course of the year. Students felt that the LCEP promoted an understanding of the patient experience, the health care system, and the progression of a disease (Table 2). It is important to note, however, that a small minority of students (n = 8) stated the curriculum offered no added value to the year. We included this uncommon yet important sentiment as a fourth theme.

The most commonly observed theme was that the LCEP program promoted an understanding of the patient experience. One student said:

> Definitely, I think as physicians, it’s important to appreciate all those things, because they have a huge impact on patient care. We can sit down and make perfect evidence-based decisions; but if for some reason, those don’t end up getting implemented or if we don’t appreciate how those things work out in the greater context of a patient’s health care situation, then it’s meaningless. (Group 2, student 12)

The frequency with which students identified “understanding the patient experience” as the goal of the LCEP increased over the clerkship year in relation to other themes, suggesting that students’ perceptions of the importance of the patient and the patient’s perspective became stronger over the course of PCE.

Some students shared stories about the relationships they formed with patients as part of the LCEP, also supporting the perceived value of the program. One student followed an 89-year-old man admitted to the student’s inpatient medicine team with painless jaundice who was ultimately diagnosed with pancreatic cancer. The student observed the patient’s initial endoscopic biopsies and interventional radiology drainage procedures during the admission. After the patient’s
discharge, he attended the patient’s outpatient oncology appointment and 2 subsequent interventional radiology procedures. When describing the experience, the student said:

> What blows my mind is that he thanks me for being there each time I’m there. But to me, I’m the one that’s thankful … it strikes me that [our appreciation] is mutual. (Group 2, student 6)

**Discussion**

Creating opportunities for medical students to form relationships with, and learn from, patients over time is critical yet often lacking in traditional BC programs. Our findings suggest that the LCEP is one model for achieving this objective without a complete overhaul of the traditional BC structure. By following patients longitudinally, students can form bonds with them that extend well beyond the walls of a single hospital admission or office visit.

The medical education literature shows that empathy erosion and compassion fatigue worsen over the course of undergraduate medical training and there is a growing interest to mitigate these changes.\(^{22,23}\) Longitudinal patient relationships have been shown to counteract the erosion of empathy.\(^{24}\) Though we did not directly study the erosion of empathy or patient centeredness, we suggest that students’ reflections on the value of the LCEP and understanding of the patient experience are a proxy for the LCEP’s ability to promote patient-centered values. Such core values are promoted by LICs and were found in earlier, smaller studies where longitudinal patient relationships were integrated into BC models.\(^{5,13,20,21}\) The relationships described by some students also highlight the importance of longitudinal relationships in forming their professional identities as future physicians. This observation supports the work by Hauer and colleagues that argues that LICs allow students to grow in their role as physicians over the clerkship year.\(^{17}\)
Despite the clear benefits, implementing hybrid programs such as the LCEP has challenges. Students cited logistics such as appointment notifications or appointments at distant locations as factors that could either facilitate or impede longitudinal relationships. Students cited the support and enthusiasm from clerkship faculty as critical to the success of the LCEP, however, they frequently described feeling torn between the responsibilities of the BCs and participating in the care of their longitudinal patients. Some students felt the culture of academic medicine favored continuity with their clinical teams more than continuity with their patients. Despite the benefits of the LCEP, it remained difficult for students to navigate competing demands and appeared to increase stress during an already busy year.

**Limitations and strengths**

We presented data from a single institution with a single cohort of students, which may limit generalizability of our data. However, the HMS BC structure is similar to that of most other medical schools accredited by the Liaison Committee on Medical Education across the country. The lack of a control group makes it difficult to isolate the effects of the LCEP from other components of the PCE at BWH. Nonetheless, interviews allowed us to understand students’ impression of the curriculum over the course of the year. Mindful of the challenges of scheduling interviews during the clerkship year, we elected not to interview the same group of students at 3 time points during the year. This limits our ability to describe trends for individual students over time. Additionally, we cannot describe the personal experiences of clerkship directors, faculty, and patients after the implementation of the LCEP—the other key stakeholders in this curricular intervention. We recognized the limitations of the frequency of codes in a qualitative analysis but found it useful to understand changes over time. Strengths of the study include the use of both
quantitative and qualitative data analysis methods with a high survey response rate and over 75% of students participating in interviews.

**Impact and implications for future work**

The LCEP is one model for establishing longitudinal relationships within BCs. We found that the number of perceived barriers to maintaining longitudinal relationships with patients exceeded the number of perceived factors that facilitated them. Future iterations of LCEP-like programs should be designed to reduce these barriers. For instance, programs could prioritize longitudinal relationships with specific types of patients—such as maintaining a relationship at the end of a patient’s life or through a pregnancy—over logistical requirements such as the number of encounters. Following fewer patients would also minimize disruptions within the BC structure.

There is ongoing work exploring how, where, and with whom students could develop meaningful longitudinal therapeutic relationships. The Legacy Teachers program pioneered at University of Missouri is one model by which students honor one patient who served as their greatest teacher. Future programs could work with information technology departments to create systems that prioritize virtual check-ins, such as phone calls or video interviews, and improve alerts that notify students about new results, admissions, and upcoming outpatient appointments. These modifications would allow students to maintain their connection to patients with fewer logistical barriers. Finally, faculty development sessions are critical to the success of such programs. The sessions should be designed to train preceptors to help students select appropriate patients and encourage longitudinal relationships and will encourage buy-in from this important group of stakeholders.
Prior work has demonstrated the importance of longitudinal patient relationships for preserving students’ patient-centeredness during clinical training. Our findings show that more participating students recognized the importance of an understanding of the patient experience as the year progressed, which suggests the LCEP allowed for preservation of or an increase in patient-centered views over time. As it is likely not feasible for all schools to transition to an LIC, we believe it is important to explore alternative curricula for promoting longitudinal relationships. We present one approach for promoting and preserving longitudinal patient relationships that expands the pedagogical and curricular landscape beyond a traditional block clerkship structure. To our knowledge, this is the first study that describes the success of a longitudinal patient curriculum that was implemented for all students in the clerkship year as part of a BC model. This hybrid program serves as a model from which others can design curricula that encourage students to participate in meaningful, authentic, and sustainable patient-centered lifelong learning.
References


Figure Legend

Figure 1

Description of the clinical setting of up to 6 encounters with 1 patient followed as part of the LCEP Curriculum. Data collected from students by electronic survey, 2013–2014. All students did not have 6 encounters with the described LCEP patient, therefore, there are fewer patients per encounter with increasing encounter number. The inpatient setting was the most common location for the initial encounter. Subsequent encounters were more likely to be in the ambulatory setting.

Abbreviation: LCEP, Longitudinal Clinical Experiences with Patients.
Table 1

Quotations From Student Interviews Illustrating Themes Involving Facilitators and Barriers to Longitudinal Relationships with Patients, Harvard Medical School, 2013–2014

<table>
<thead>
<tr>
<th>Theme</th>
<th>Theme frequency, count (% of total number of group comments)</th>
<th>Representative quotation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facilitators to students’ ability to follow patients longitudinally</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Total, N = 60</td>
<td>Group 1, n = 15</td>
</tr>
<tr>
<td></td>
<td>31 (52)</td>
<td>7 (4.7)</td>
</tr>
<tr>
<td>Support from faculty and residents</td>
<td>16 (27)</td>
<td>4 (2.7)</td>
</tr>
<tr>
<td>Patient characteristics</td>
<td>7 (12)</td>
<td>0 (0)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I feel like it was mostly just the patient being receptive to it. I didn’t feel awkward like he was wondering why I was there.” (Group 3, student 3)</td>
</tr>
<tr>
<td>Established relationship with the patient</td>
<td>4 (6.7)</td>
<td>3 (20)</td>
</tr>
<tr>
<td>Nothing</td>
<td>2 (3.3)</td>
<td>1 (6.7)</td>
</tr>
<tr>
<td>Biggest barriers to following patients longitudinally, number of comments</td>
<td>142</td>
<td>45</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>Logistics</td>
<td>81</td>
<td>22</td>
</tr>
<tr>
<td>“The biggest barrier was that there were appointments that were off site, so arranging with your team to go do that. Or a lot of times, I would say I have an appointment in the building but the appointments were always delayed, so I would say I would be back in half an hour, but after a certain point, I felt obligated to return to my team, because you also can’t miss a lot of time on the rotation you’re on.” (Group 3, student 9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competing priorities/culture</td>
<td>45</td>
<td>13</td>
</tr>
<tr>
<td>“I just feel like I’m missing stuff … I’m trying to become part of a team and work with people clinically and all of a sudden they are still working without me … I like … to build relationships with the team and see how they work.” (Group 1, student 9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“There’s always this tension between being there on the service you are on and being in step with your team and just being present and also going away for this longitudinal experience.” (Group 3, student 13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student characteristics</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>“That feeling of being overwhelmed by it. Like I said, in order tologistically make it work, the magnitude of what I would have to do would make it prohibitive.” (Group 1, student 10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identifying patients</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>“The other thing is, if you don’t go to these appointments, so the ovarian cancer patient is seen about once a month at Dana Farber and I feel like if I miss, there was a time that I missed like 3, so I didn’t see her for 3 months. And especially when it’s a sensitive topic like that, it’s hard to come back.” (Group 2, student 11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clerkship-specific barriers</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>“Other barriers, for example on consult psychiatry, our encounters were usually just one encounter and then we’d be done, so it was hard to build rapport.” (Group 1, student 5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The table includes the total number of unique comments identified per group. The percentages listed in the table represent the theme frequency by group. For example, 22 comments identified from student interviews in Group 1 fit the theme: “Logistics” as a barrier to forming longitudinal relationships. This represents 49% of all comments about barriers identified from student interviews in Group 1.*
Table 2

Quotations From Student Interviews Illustrating Themes Related to Students’ Perceptions of the Goals and Value of the LCEP Curriculum, Harvard Medical School, 2013–2014

<table>
<thead>
<tr>
<th>Goals and values</th>
<th>Theme frequency, count (% of total number of group comments)</th>
<th>Representative quotation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total, N = 130</td>
<td>Group 1, n = 40</td>
</tr>
<tr>
<td>The LCEP improved my understanding the patient experience</td>
<td>66 (51)</td>
<td>17 (43)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### The LCEP improved my understanding of the health care system

<table>
<thead>
<tr>
<th>Group</th>
<th>Comments</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32 (25)</td>
<td>10 (25) 14 (28) 8 (20)</td>
</tr>
</tbody>
</table>

*“With the goal to see patients in different environments and learn about coordination of care and elements of being a physician that are important to contribute to that.”* (Group 3, student 11)

“I’m really interested in health systems, so I think it adds huge value to really understand the full spectrum of care. But I think as medical providers, it will help us understand who we’re going to be working with in the future as doctors and how we can make that happen in the best way and what that means for patients—how it affects their actual daily life.” (Group 2, student 14)

### The LCEP improved my understanding of progression of a disease

<table>
<thead>
<tr>
<th>Group</th>
<th>Comments</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 (18)</td>
<td>10 (25) 9 (18) 5 (13)</td>
</tr>
</tbody>
</table>

*“To develop a longitudinal sense of their disease process over time so you get a sense of the pathophysiology and natural history of a disease.”* (Group 3, student 8)

### Lack of perceived additive value of the LCEP

<table>
<thead>
<tr>
<th>Group</th>
<th>Comments</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8 (6.2)</td>
<td>3 (7.5) 2 (5) 3 (7.5)</td>
</tr>
</tbody>
</table>

*“Honestly, it’s a bit of a burden. I think it’s a very well intentioned idea to see patients longitudinally and that’s an important part of our medical care and are experience, but I think there are a lot of well-intentioned ideas.”* (Group 1, student 2)

“I think in a practical sense it was really limited added value because of logistical challenges in trying to see patients in multiple days, multiple settings.” (Group 3, student 6)

---

**Abbreviation:** LCEP indicates Longitudinal Clinical Experiences with Patients.

*The table includes the total number of unique comments identified per group. The percentages listed in the table represent the theme frequency by group. For example, 17 comments identified from student interviews in Group 1 fit the theme “The LCEP improved my understanding the patient experience.” This represents 43% of all comments about the goals and value of the LCEP identified from student interviews in Group 1.*
Figure 1