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## Optimizing student learning at the Regional Medical Campus: The experience of an amalgamative clerkship model in a single small community

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### Abstract

**INTRODUCTION:** Both benefits and challenges are associated with training medical students in a community-based setting at a Regional Medical Campus (RMC). At the RMC, close relationships between learner and teaching faculty can truly be fostered. However, those volunteer teaching faculty are frequently conflicted due to time constraints, and practice productivity requirements that may run counter to maximizing learner involvement. Longitudinal integrated clerkships (LICs) have been studied and promoted as clinical clerkship structures that optimize the learning environment for medical students on clinical rotations by taking full advantage of the ongoing relationship between learner, teacher, patients, and practices. In our resource-limited environment, we created longitudinal educational relationships for all University Park Regional Campus (UPRC) students with preceptors, practices, and patients that would achieve the educational benefits of a true LIC yet not overwhelm the limited resources of this small community.

**METHODS:** We created an amalgamative LIC clerkship model that provided a year-long family medicine experience integrated with 4 other clerkships in the following longitudinal fashion: one-half of the clerkship students did a half year (22 week) integrated OB-GYN/surgery clerkship subsequently followed by a half year longitudinal pediatrics course with 3 one-week inpatient adult medicine mini-immersions spaced over that time. The sequence of integrated clerkships was reversed for the other half students. Neurology, psychiatry, and underserved/rural medicine (4 weeks each) and subspecialty/elective rotations (2 weeks each) remained in traditional self-contained blocks and were interspersed within the longitudinal experiences in different times throughout the year. At 6 and 12 months, we administered a 5-point Likert-type survey to both medical students and teaching faculty asking their perceptions of the educational value and resource requirements for our clinical rotation structure and solicited free text answers as well. Descriptive averages of the ordinal values were reported.

**RESULTS:** Eleven out of 12 students (92.7%) and 11 out of 21 faculty (52.4%) responded to the survey. Both students and faculty believed that some of the longitudinal benefits of the amalgamative structure were achieved. The students especially noted that attending feedback was beneficial due to the longer interaction and that they had a greater ability to interact with patients. The faculty teachers found the amalgamative LIC to be slightly less satisfying than the students.

**CONCLUSIONS:** While logistical limitations necessitated our unique rotation design, some optimization of education was achieved. Faculty concerns toward adopting this new structure should be considered for other programs structuring LICs in a similar sparsely resourced environment such as a RMC.

### INTRODUCTION

Clinical training for medical students at the regional campus of a medical school provides unique opportunities for learning due to the small and intimate nature of community settings. This smallness, however, can also present challenges for providing optimal learning for medical students due to limited teaching resources. Furthermore, practice incentives in community-based settings are frequently misaligned with the inherent 'inefficiencies' that medical student clerks often impose upon private physician practices.<sup>1,2</sup>

The longitudinal integrated clerkship (LIC) structure is becoming more widespread for the clinical training of medical students.<sup>2</sup> In a traditional block clerkship structure, student

clerks rotate in one discipline for a brief set period of time, learn from the teachers and patients in that discipline, and then move on to the next discipline on their schedule, often never returning to the first discipline again. The cycle recurs multiple times a year as each clerkship student progresses through different core clinical rotations.

In an LIC, the student is scheduled in several different disciplines within the same, longer time frame and their experience with each 'rotation' is spread-out over the entire year. This prolonged exposure allows for longitudinal continuity to occur,<sup>2</sup> and studies suggest that compared to the traditional block clerkships, the LIC promotes medical student learning through taking full advantage of the ongoing

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relationship between learner, teacher, patient, and practice.<sup>2,3,4</sup> These longitudinal relationships can optimize the learning environment for medical students in the 3 domains of retaining medical knowledge, performing procedural skills, and demonstrating humanistic attitudes in a fashion that has been called transformative when compared to traditional block clerkship models.<sup>3,5</sup> As the student develops over the course of her clinical year, the developmental gains from increasing clinical experiences can be demonstrated in all of the different disciplines. LICs have been reported to improve student satisfaction with clinical medicine and have demonstrated retention and/or improvement of humanistic empathy in medical students.<sup>3,6,7</sup> The improvement in humanistic empathy was manifested in student-patient interactions including successfully dealing with ethical dilemmas and genuinely caring when dealing with patients.<sup>6</sup> While potentially resource intensive, the LICs also have inherent flexibility for scheduling learners in practices at times convenient for the practice. In addition, 'white-space' time, provided in the students' schedules for following continuity patients in 'real-time', can provide some respite for busy private practices normally unseen in a more traditional block rotation.<sup>8,9</sup>

Starting in 2012, the University Park Regional Campus (UPRC) of the Penn State College of Medicine (COM) became a clinical training site for third-year Penn State COM clerkship students. This campus, located in State College, PA is approximately 100 miles from the main COM campus in Hershey, PA. In this small town of approximately 42,000 people, third-year medical students rotated in traditional block time core clerkships. Recognizing the potential learning benefits of the LIC structure, the curriculum was partially altered in each of the academic years, 2015-16 and 2016-17, wherein 4 of 24 students (in each year) elected to perform their clerkships in an LIC structure. The remainder of the students rotated in a block fashion and thus, given the limited clinical resources, the LIC students were often in those shared clinical practices simultaneously with other students on block clerkships. Some of these concepts were subsequently implemented in the model of this report. Coordinating both LIC and block students' schedules concomitantly, based on anecdotal reports from the faculty teachers themselves, was challenging for the clinical sites and was felt to adversely impact learning. Furthermore, only a small percentage of learners benefited from the LIC experience and so an expansion of the LIC was strategically planned. However, the limited resources in the small medical community of State College posed a challenge to these plans. Our challenge was the following: creating the best structure in a longitudinal learning experience in multiple clerkships for a larger number of learners in a sparsely resourced community of volunteer teachers.

## METHODS

In 2016, Worley, Couper, Strasser, et al, crafted a descriptive typology of LICs by collecting and analyzing survey data from all LIC structured training programs known to the international Consortium of Longitudinal Integrated Clerkships.<sup>10</sup> Three typological clusters were described based primarily on program length and discipline coverage. Cluster "A", an amalgamative-type LIC structure, is notable for shorter clerkships that combine learning from a number of disciplines that are longer than the usual block rotation length. Cluster "B", a blended LIC structure, is comprised of an LIC that incorporates all, or a majority, of the clinical disciplines, but still use complementary discipline-specific rotations to complete the academic year. Cluster "C", a comprehensive LIC structure, incorporates all of the years' disciplines as their core, are delivered as an integrated program, and incorporate only brief in-patient discipline-specific immersive experiences.<sup>10</sup>

Our clerkship schedules most closely represented a Cluster "A" amalgamative structure. Longitudinal experiences of 22 weeks were constructed for OB-GYN, surgery, and pediatrics, and the family medicine experience was extended for the full 45 weeks. Internal medicine clerkship in-patient immersions, while not technically longitudinal, did account for the learners' developmental growth as the immersions were dispersed over the 22 week period. These longitudinal learning experiences were interspersed with block clerkships in neurology, psychiatry, and underserved medicine/rural health and these 4-week blocks were interspersed throughout the year (Figure 1).

**Figure 1**  
**Schematic for the Clerkship Year**



Outcome measures included the clinical clerkship grades and student performance scores on the USMLE subject examinations administered through each clerkship. A comparison of 2017 LIC-student scores with 2016 UPRC block clerkship student scores was performed using the student t-test comparing means ( $p < 0.05$ ). In addition, a 5-point Likert-type survey instrument was created and administered to the learners and the teachers involved in the clerkships affected by the amalgamative structure at the mid-year (6-month) and end-of-year (12 month) periods. The survey questions were

adapted from those points identified as potential benefits and drawbacks of learning/teaching in a LIC by published works<sup>2,6,8</sup> and asked for the respondents' state of agreement (1= strongly disagree to 5= strongly agree) with statements (Figure 2). Comparisons of mean data scores between the 6-month and 12-month intervals were also compared using the student t-test as above.

1. Thinking about your rotations with longitudinal experiences "built-in" to them, please provide your level of agreement on the following statements using the following scale:
- |  | 1                 | 2        | 3       | 4     | 5              |
|--|-------------------|----------|---------|-------|----------------|
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
1. My teaching attending(s) were able to accurately assess my abilities and thus provide meaningful feedback 1 2 3 4 5
  2. My ability to effectively function in the office-based setting was enhanced by the longitudinal schedule 1 2 3 4 5
  3. I was able to see patients more than once in follow-up for their condition(s) 1 2 3 4 5
  4. My ability to perform clinical skills and procedures was enhanced by the longitudinal schedule 1 2 3 4 5
  5. Switching frequently between disciplines was distracting for my learning 1 2 3 4 5
  6. Peer learning from colleagues on the same longitudinal experiences added to my learning 1 2 3 4 5
  7. Instead of "just being a medical student", I believe I played an authentic role in patient care 1 2 3 4 5
  8. I feel confident in my ability to relate to patients 1 2 3 4 5
  9. I believe that maintaining my compassion for patients has been fostered by the longitudinal experience 1 2 3 4 5
  10. Overall, the longitudinal experience was beneficial to my learning 1 2 3 4 5

Results were reported as descriptive averages for the groups. Additionally, free text questions asking about the "best aspect" of the LIC structure and the "one thing they would change" about the LIC structure were collected.

**RESULTS**

All students were successful in passing their clerkship evaluations. The 2017 LIC-students' USMLE subject examination scores were slightly higher than the 2016 block clerkship students' cohorts scores although no statistically significant difference was found (Table 1).

**Table 1**  
Comparison Subject Examination Scores

Shelf Exam	2017 LIC Students Mean Scores	2016 Block Students Mean Scores	P-value (student t-test)
<b>OB-GYN</b>	<b>80.25</b>	<b>76.75</b>	<b>0.328</b>
<b>Pediatrics</b>	<b>80.75</b>	<b>72.24</b>	<b>0.09</b>
<b>Surgery</b>	<b>79.0</b>	<b>73.05</b>	<b>0.017</b>
<b>Psychiatry</b>	<b>83.0</b>	<b>79.85</b>	<b>0.221</b>
<b>Internal Medicine</b>	<b>80.75</b>	<b>74.25</b>	<b>0.031</b>
<b>Neurology</b>	<b>78.25</b>	<b>78.3</b>	<b>NS</b>
<b>Family Medicine</b>	<b>80.0</b>	<b>74.75</b>	<b>0.184</b>

Ninety-two percent (11/12) of the clerkship students and 52% (11/21) of the teaching faculty in the affected clerkships responded to the survey. In general, the majority of students' responses to the amalgamative LIC structure were favorable. Table 2 shows the students' responses at 6-month and 12-month intervals. The items that students felt were most beneficial about the amalgamative LIC were that the LIC structure allowed for more meaningful feedback to the learners (mean of 4.27 at 6-months/mean of 4.36 at 12-months) and that the learner's ability to relate to patients was enhanced (mean of 4.45 at 6-months/mean of 4.59 at 12-months). A similar table was also analyzed for the teachers' responses but is not shown. In general, the teachers' responses tended to be clustered around the "neutral" to "slightly unfavorable" rating without any of the items at the extremes (i.e., > 4.00 or < 1.00).

Table 2  
Student Survey Responses

Student	Attending Providing Feedback	Office based Function	Longitudinal patients	Improved clinical skills	Frequent switching disruptive	Peer learning helpful	Authentic role	Ability to relate to pts	Developing Compassion	Overall										
1	4	5	2	4	1	3	1	3	5	3	4	5	4	2	5					
2	3	5	3	4	3	4	3	3	4	5	3	5	3	5	4	2	3	2		
3	5	4	3	4	3	3	4	5	3	2	5	3	4	4	4	3	3	4	4	
4	4	3	4	3	5	2	4	2	3	4	4	4	2	4	3	5	4	4	3	
5	4	4	5	3	3	2	2	3	5	5	3	4	3	4	5	5	3	3	2	2
6	5	4	4	3	5	5	4	3	4	5	5	5	3	3	5	5	4	3	4	3
7	4	5	3	1	4	2	3	1	3	5	4	3	2	5	4	5	3	3	3	2
8	4	4	4	4	3	4	4	3	5	4	4	4	4	5	5	5	4	4	4	4
9	5	5	3	4	3	4	4	3	2	2	4	3	5	4	5	5	4	4	4	5
10	4	5	4	4	4	4	3	3	5	4	3	3	5	4	5	5	4	4	4	4
11	5	4	4	5	4	3	5	5	4	3	5	4	5	4	4	4	5	4	4	5
6 MOS	4.27	3.55	3.45	3.36	3.91	4.00	3.73	4.45	3.91	3.45										
12 MOS	4.36	3.55	3.27	3.09	3.82	3.91	3.91	4.59	3.45	3.55										
T-TEST	0.74	1.00	0.69	0.58	0.85	0.79	0.65	0.64	0.18	0.84										
Yr MEAN	4.32	3.55	3.36	3.23	3.86	3.95	3.82	4.52	3.68	3.50										

A majority of the free text responses from the students centered about the longitudinal aspects of the teacher-learner relationship. A representative statement is as follows:

*“I enjoyed having my preceptors getting to know me over longer periods of time. They were able to see my growth over the course of months after working together closely.”*

A majority of the free text responses from the teachers were related to scheduling logistics. A representative statement is as follows:

*“I think working what a smaller group of student for a longer period of time was better, but the hit and miss of when they would be in clinic with me was difficult”.*

DISCUSSION

While the overall rotation length of the continuity portion of our experience was briefer than what is seen in a Cluster “C” comprehensive LIC structure, the data from our survey suggest that several of the benefits attributed to LICs were nonetheless achieved through our amalgamative clerkship structure. LICs have been reported to improve learning as well as patient care.<sup>11</sup> One of the reasons cited is that the idea of ‘continuity’ as an organizing principle for clinical education in LICs better allows for a therapeutic relationship between patient and learner as well as teacher and learner to develop.<sup>12</sup> Patients often value this increased continuity with learners.<sup>13</sup> In our experience, both the teachers and the learners perceived an enhance ability to form meaningful longitudinal relationships with patients, although corresponding data from patients was not collected. We hypothesize that this finding may be due to the small and intimate size of our campus.

Volunteer teaching faculty at Regional campuses are often pulled in different directions related to their roles and their relationships with academic medical centers. Volunteer faculty in the community are frequently productivity-based and have, as a central metric, the number of patient visits completed in a given patient care session. Having learners in that environment tends to slow clinicians downs and thus can impede their productivity. Besides the educational benefits noted above, one of the underlying purposes for creating the

amalgamative LIC structure was to attempt to address the limitations of the community-based faculty practices by trying to more effectively schedule a smaller number of learners over an extended period of time. This smaller number of familiar learners was mentioned anecdotally by the teaching faculty as a positive change created by the amalgamative LIC structure.

None of our community-based faculty had trained in an LIC structure and the academic years of 2015-16 and 2016-17 did not provide a great deal of experience. Thus, we believe some of the faculty dissatisfaction may stem from the unconventional structure of the clerkships. Faculty development for community-based teaching faculty is one aspect thought to be important in the successful implementation of a LIC.<sup>14</sup> We are examining this aspect in greater detail going forward. The learners at our Regional campus were not provided a choice in how to experience their clerkships. Based on a sampling of free text responses from the students, some were very pleased with the LIC structure, but others did not feel that it worked best for them.

Our data are strictly self-reported by learners and teachers and were not objectively or externally verified. Additionally, this project was specifically designed to address local need and there is no assurance that a similar structure could work in another locale. However, the limited teaching resources in the small town of State College are likely similar to those in small towns elsewhere in the country. Based on the CLIC research group’s published work,<sup>8</sup> as well as further conversations within the consortium, the structural varieties of LICs are probably only limited to one’s imagination as long as the underlying principles of the LIC are maintained.<sup>2,14</sup> If those principles are maintained, it is possible that the expected benefits will be achieved.

Our campus is striving to move the clerkships to more of a Cluster “B” or Cluster “C” type structure for future years.<sup>10</sup> We believe that potentially greater educational benefits can be achieved for our learners, but acknowledge that scheduling logistics will be an ever present challenge in our small community.

CONCLUSIONS

We have reported our one-year experiences of an amalgamative clerkship model for our small group of learners at the RMC. In our first iteration, we were able to realize many of the benefits attributed to the LIC clerkship structure, but also experience many of the challenges also associated with LICs. Our past experiences, careful planning, improved coordination, and faculty development are all apparent keys to our future success. We are striving to evolve into more of a Cluster “B” or “C” structure in the future.



## References

1. Adams C, Cathcart-rake W. Attending Physician Perceptions of the Benefits and Disadvantages of Teaching Medical Students on Clinical Clerkships at a Regional Medical Campus. *J Reg Med Campuses*. 2018;1(2).
2. Poncelet AN, Hirsh DA, eds. *Longitudinal Integrated Clerkships: Principles, Outcomes, Practical Tools, and Future Directions*. First. North Syracuse, NY: Gegenstaz press, North Syracuse, NY; 2016.
3. Greenhill J, Poncelet AN. Transformative learning through longitudinal integrated clerkships. *Med Educ*. 2013;47(4):336-339. doi:10.1111/medu.12139
4. Hirsh D, Walters L, Poncelet AN. Better learning, better doctors, better delivery system: Possibilities from a case study of longitudinal integrated clerkships. *Med Teach*. 2012;34(7):548-554. doi:10.3109/0142159X.2012.696745
5. Strasser R, Hirsh D. Longitudinal integrated clerkships: Transforming medical education worldwide? *Med Educ*. 2011;45(5):436-437. doi:10.1111/j.1365-2923.2011.03939.x
6. Hirsh D, Gauferberg E, Ogur B, et al. Educational outcomes of the Harvard medical school-Cambridge integrated clerkship: A way forward for medical education. *Acad Med*. 2012;87(5):643-650. doi:10.1097/ACM.0b013e31824d9821
7. Ogur B, Hirsh D. Learning through longitudinal patient care-narratives from the Harvard Medical School-Cambridge Integrated Clerkship. *Acad Med*. 2009;84(7):844-850. doi:10.1097/ACM.0b013e3181a85793
8. Teherani A, O'Brien BC, Masters DE, Poncelet AN, Robertson PA, Hauer KE. Burden, responsibility, and reward: Preceptor experiences with the continuity of teaching in a longitudinal integrated clerkship. *Acad Med*. 2009;84(SUPPL. 10):50-53. doi:10.1097/ACM.0b013e3181b38b01
9. Hirsh D, Worley P. Better learning, better doctors, better community: How transforming clinical education can help repair society. *Med Educ*. 2013;47(9):942-949. doi:10.1111/medu.12278
10. Worley P, Couper I, Strasser R, et al. A typology of longitudinal integrated clerkships. *Med Educ*. 2016;50(9):922-932. doi:10.1111/medu.13084
11. Hauer KE. Longitudinal, integrated clerkship education: Better for Learners and Patients. *Acad Med*. 2009;84(7):821. doi:10.1097/ACM.0b013e3181a843b1
12. Hirsh DA, Ogur B, Thibault GE, Cox M. "Continuity" as an Organizing Principle for Clinical Education Reform. *N Engl J Med*. 2007;356(8):858-866. doi:10.1056/NEJMs061660
13. Poncelet AN, Wamsley M, Hauer KE, Lai C, Becker T, O'Brien B. Patient views of continuity relationships with medical students. *Med Teach*. 2013;35(6):465-471. doi:10.3109/0142159X.2013.774335
14. Ellaway R, Graves L, Berry S, Myhre D, Cummings BA, Konkin J. Twelve tips for designing and running longitudinal integrated clerkships. *Med Teach*. 2013;35(12):989-995. doi:10.3109/0142159X.2013.818110